

# FULLER

## Construction Documents - 60%

Fuller Middle School, Framingham, Massachusetts

### Owner

City of Framingham, Massachusetts

### Client

City of Framingham, Massachusetts

### Architect

Jonathan Levi Architects LLC

### Owner's Project Manager

SMMA

### Construction Manager at Risk

Consigli Construction Company

August 9, 2019



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## 6B.1 Summary Comments

### 1.1 Basic Project Information

#### *Introduction*

The Fuller Middle School project is anticipated to serve 630 students in grades 6-8. When the new school is complete, the students will move out of the adjacent existing middle school, which will then be demolished. The proposed building program based on Framingham's Educational Program and the Project Funding Agreement comprises 137,100 GSF. The project will be constructed under the Construction Management at Risk methodology in accordance with M.G.L. Chapter 149A. Consigli has been formally selected as the CMR for the project.

Construction on the site enabling package, including temporary parking, new permanent parking, utility work, geotechnical ground improvement, and geoenvironmental soil abatement has been underway since the students finished their school year in June 2019. Phase 1 work is proceeding on schedule and will be completed in time for the new school year starting August 28.



### ***Schedule Summary***

The project's scheduled milestones are as follows:

#### Design

Site enabling 100%: 5/10/19

60% CD, 100% Early Concrete and Steel Package: 8/9/19

100% Masonry Package 10/2/19

90% CD: 10/11/19

100% CD: 11/15/19

GMP approval 1/3/20

### ***Construction***

The project will have 3 construction phases

Phase 1 site enabling substantial completion 8/20/19

Phase 2 building substantial completion 6/15/2021 FF&E technology installation 6/15/2021 - 7/30/2021

Phase 3 Demo and site work substantial completion 12/20/2021

## 6B.2 OPM Deliverables

### 2.1 Submittal Review and Coordination

The OPM has reviewed the Designer's 60% Construction Documents Submission and recommends the Owner approve the submission. Following is the submission letter from OPM.





August 9, 2019

Mr. Brian Lynch  
Project Coordinator  
Massachusetts School Building Authority  
40 Broad Street, Suite 500  
Boston, Massachusetts 02109

**Re: Fuller Middle School**

**Framingham, Massachusetts**

*60% Construction Documents Submission to the MSBA*

*SMMA No. 17050*

Dear Brian:

Attached please find the Module 6 60% Construction Documents submission to the MSBA. The team has followed the guidelines set forth in Module 6 to develop this submission. We look forward to reviewing the information contained in this submission with you and your team.

SMMA certifies that (1) we have reviewed and coordinated the materials, (2) the submittal is complete, (3) the Proposed Project as documented within the submittal is within the District's Budget, and (4) the District has approved the materials for submission to the MSBA.

Please contact me at 617-520-9403 if you have any questions, comments, or would like to schedule a meeting.

Thank you.

Very truly yours,

**SMMA | Symmes Maini & McKee Associates**



Joel G. Seeley  
Project Director

JGS/sat /P:\2017\17050\03-DESIGN\3.4  
Submissions\5-60% CD  
Submission\OPM  
Deliverables\Northbridge  
Sample\0\_OPM Cover Transmittal  
Letter\L\_Blynch@MSBA\_60%  
Construction  
Documents\_9August2019.Docx

cc: Framingham School Building Committee; Philip Gray, Jonathan Levi Architects (MF)

enclosures: 60% Construction Documents Submission

1000 Massachusetts Avenue  
Cambridge, MA 02138  
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[www.smma.com](http://www.smma.com)



### 2.1.1 Submission Review

Please reference the attached OPM and CM Submission Review.

#### *OPM REVIEW*

The OPM performed a review of the Progress 60% Construction Documents, dated July 8, 2019. The OPM comments are documented in the OPM Design Review, dated July 26, 2019 and appended to the end of this section.

1. Technical Accuracy, Coordination and Clarity – The design documents at this 60% Construction Documents Phase contain the typically expected level of technical accuracy. Areas of the building are laid out in plan, elevation, and section, and are generally consistent with the space summary and design requirements of the MSBA and DESE. The sitework documents are developed to a more complete level due to site permitting completion and the Early Site Package development. The 60% Construction Documents drawing set includes detail and schedule development appropriate to this level and reflects the complexities of the project design, systems and site constraints. The design documents at this 60% Construction Documents phase contain the expected level of coordination and clarity.
2. Efficiency and Cost Effectiveness – The project as designed represents a very efficient and compact floor plan that allows the existing building to remain operational for the duration of construction. The location of the mechanical room and electrical room maximizes the efficiency of the system, while also allowing for an efficient piping distribution. The building layout is a cost-effective solution. The materials and equipment included in the design represent generally accepted materials for school construction projects. The District's Buildings and Grounds Staff has participated in the material and equipment selections.
3. Operability – The project is designed for ease of operation. The location of support spaces are within appropriate distances to the spaces they serve. Access to equipment for preventative maintenance is thoughtful. Lastly, the easy segregation of the public spaces from the instructional spaces, facilitates community use in an efficient and easily maintained manner.
4. Constructability – Several meetings between the Construction Manager, the OPM and the Designer on constructability and logistics have occurred. The OPM review of the progress 60% Construction Documents set did not surface any significant constructability issues.
5. Phasing – The new school is located on the site to allow for the continued operation of the existing school. Once the new school is completed, it can operate unimpeded while the existing is demolished and the parking lot and fields are completed.
6. Bid-ability – The MEP elements of the progress 60% Construction Documents drawing set have been coordinated to the level of 60% Construction Documents set. The general layout of the building, floor to floor construction height and the relationship

between spaces will facilitate further coordination. The OPM review did not surface any significant bid-ability issues.

7. Site Access During Construction – As noted in the Phasing section above, the project has been designed to allow for site access to the operational school during both Phase I and Phase II construction.

***CM REVIEW***

The CM performed a review of the Progress 60% Construction Documents, dated July 8, 2019. The CM comments are documented in the CM Design Review, dated August 5, 2019 and appended to the end of this section.



OPM Design Review Comments

<b>Project Name:</b>	Fuller Middle School, Framingham, Massachusetts	<b>Project Phase:</b>	60% Construction Documents
<b>Project Number:</b>	17050	<b>Reviewed Date:</b>	July 26, 2019
<b>Document Reviewer:</b>	Mariana Hernandez, Robert Smith, John Hart, Paul Livernois, Christopher Davis, Robert Marshall, Rafael Gurevich, Patrick Weygint, and Joshua Delaplain-Zook	<b>Discipline</b>	All Disciplines

DESIGN REVIEW NOTES

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
1.	Architecture	LS101-103	Define the fire and smoke separation required for the 3-story atrium.	MSBC Section 404.6 required atrium spaces to be separated from adjacent spaces by 1-hour fire barriers in accordance with Section 707. A fire barrier is not required for this project as the building will include a smoke control system, which is currently being modelled by Howe Engineers using FDS. Refer to the Atrium Design section of the Fire Protection and Life Safety Code Compliance Strategy report drafted by Howe Engineers.	A code compliance drawing should be included. Showing rated walls, separations construction type for ISP review. The Code Report is not typically submitted with Permit documents.			
2.	Architecture	LS101-103	No reference shown to type of construction, allowable areas, etc.	The building is currently designed to be Type IB construction as noted on page 7 of the code report.	A code compliance drawing should be included. Showing rated walls, separations construction type for			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
3.	Architecture	LS101	Exit 6 is from a storage room, should not be counted towards egress totals.	The exit tag will be changed and updated in future submissions to indicate "Direct Exit" from the storage room. The exit will be called out on the Life Safety sheet, but will not be counted towards the overall egress totals.	ISP review. The Code Report is not typically submitted with Permit documents. Closed			
4.	Architecture	LS103	Some areas between corridor and atrium seem to be missing a railing	Railings will be provided on upper levels of the building.	Still appears to have missing railing at locations near breakout rooms.			
5.	Architecture	A101-A103C	Provide overall dimensions, angles and working points	Dimensions will continue to be added	Open item			
6.	Architecture	A101-A103C	Indicate partition types on plans	Tags will be added	Partially done, wall tags still missing. Ex 3134,3130,2160			
7.	Architecture	A101-A103C	Some structural grid lines are not appearing on the floor plans	Will continue to be coordinated	Open			
8.	Architecture	A101-A103C	Coordinate brace locations w/ openings, plumbing and HVAC ductwork	Will continue to be coordinated	Open			
9.	Architecture	A101-A103C	Reference enlarged toilet rooms back to floor plans.	Will continue to be developed	Open			
10.	Architecture	A101-A103C	Indicate ramp and stair direction	Will continue to be developed	Partially done, still needs additional direction arrows. Closed			
11.	Architecture	A101	The interior finish notes mention a bubble skylight on the Auditorium ceiling, this skylight doesn't show on RCP or on Roof plans	Will be revised	Closed			
12.	Architecture	A101	Top right corner of Auditorium was cropped out from view	Will be revised	Closed			
13.	Architecture	A101A	Exterior HM single egress door from Corridor 1020 may need to be widened to accommodate reach required on a thick wall	Door is now double door	Closed			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
14.	Architecture	A101B and A101C	Cohort Common and Learning Common are each 1'-0" off from the main floor elevation, provide cane detection per Code.	Measures have been added to meet code.	Closed			
15.	Architecture	A101D	Room name missing from room facing exterior between Gym and Aud.	Will be added	Closed			
16.	Architecture	A102A	Four apparent flues showing next to Closet 2017 seem in conflict w/ the walls and structure	Will continue to be coordinated in upcoming submissions.	Open			
17.	Architecture	A102B	Indicate HVAC elliptical duct risers and connection detail.	Will continue to be developed in upcoming submissions.	Open			
18.	Architecture	A102B	Railing missing near Breakout room	Railings will be provided	Open, needs more refinement			
19.	Architecture	A1022B	East stair not showing	Will be fixed	Stair shown provide direction.			
20.	Architecture	A102C	Ensure required door reach clearance at TP rooms typ.	Will continue to be refined to meet code.	Do you have 18" clearance on pull side of breakout 2068			
21.	Architecture	A102D	How is the roof between Classroom 2224 and Auditorium drained?	With tapered insulation and roof drains.	Closed			
22.	Architecture	A103A	Screenshot image is confusing should be higher or not shown	Has been clarified	Closed			
23.	Architecture	A103A	Roof south of Classroom 3144 shows as flat on the framing plans, coordinate with Structural drawings	Roof steel intended to be flat, insulation will be sloped.	Closed			
24.	Architecture	A103B	Coordinate hanging post locations with bridge, indicate railing	Will continue to be coordinated in upcoming submissions.	Closed			
25.	Architecture	A104	Indicate tapered insulation and how drain slopes will be achieved. Roof framing plans don't show sloping steel	Main drainage will be shown on the 100% DD set.	Open			
26.	Architecture	A104	Indicate different roof levels and how different roof levels are accessed	Minor roof access will not be fully resolved for 100% DD set.	Open			
27.	Architecture	A104	Any roof ladders required to access the different roof levels?	An access ladder will be provided from the main roof level to the	Open - not shown			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
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				raised roof area at the skylights.				
28.	Architecture	A104	Indicate amount and layout of roof walk way pads	Walk Way pads will be indicated on the roof plan in the 100% set.	Partially done, consider all mechanical equipment needing servicing should have walkway pads			
29.	Architecture	A104	Include view for stair and elevator roof.	Will be provided in the 60% DD set.	Closed			
30.	Architecture	A-104	Smoke vent hatches not shown on roof plans	Smoke vents will be shown at the auditorium only.	Open			
31.	Architecture	A104	Indicate roof types, canopy construction	Roof types will be indicated in the 100% DD set.	Open			
32.	Architecture	A104	Show openings in Mechanical screen to allow access	Roof screen will allow for access at the line of the raised roof area 4'-0 clear.	Closed			
33.	Architecture	A141A-A143C	Consider consolidating room finishes to one location. They are shown/ listed as a note on the A101 series, scheduled on these sheets and with room tags as well	Roof finishes will be consolidated to the A14 series	Closed			
34.	Architecture	A141A-A143C	Show floor transitions for detailing	Floor transition details are indicated on door schedule	Partially done, show transition details where occur other than door locations.			
35.	Architecture	A161A-A163C	Coordinate furniture locations with architecture. Ensure clearance around furniture and doors, walls, equip., etc.	Will be further developed in upcoming submissions	Partially done, charging carts, mobile furniture or makerspace equipment that are not yet shown on plans.			
36.	Architecture	A181-A183C	Show HVAC diffusers, return grills and exposed ductwork	Will be further developed in upcoming submissions	Partially developed			
37.	Architecture	A181-A183C	Show light fixtures, sprinkler heads, smoke detectors, motion detectors, etc.	Will be further developed in upcoming submissions	Partially developed			
38.	Architecture	A181-A183C	Indicate ceiling elevations	Will be further developed in upcoming submissions	Needs further development, ceiling elevations missing or incorrect. Ex. Classroom 1244			



Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
39.	Architecture	A181-A183C	Show ceilings legend on all ceiling plans.	Will be further developed in upcoming submissions	Legends are shown but not all symbols are shown on ceiling plan legend. Ex. Smoke detector, motion detector.			
40.	Architecture	A181-A183C	In some areas exposed deck is shown with a line pattern, in other areas is shown blank show one consistent way.	Line pattern is meant to indicate a painted deck, will be clarified in upcoming submissions.	Has been clarified. Confirm classroom closet ceiling will have no finish.			
41.	Architecture	A201	Drawing is very hard to read. Consider highlighting cut areas and fading out planes behind	JLA will review. This drawing will be refined for 60% DD.	Drawing is easier to read but needs further refinement and detailing.			
42.	Architecture	A211-A217	More detailed information and notes required, consider graphic refinement of patterns to provide more clarity Windows, CW and storefront need to be tagged, brick control joints need to be indicated. Applicable structural gridlines should show on the partial elevations. A key plan for the partial elevations may help in locating them.	JLA will review. A key plan will not be provided for the 100% DD set.	More refinement needed including brick control joints.			
43.	Architecture	A300 and A301	Hard to read what is cut and what is beyond. Work w/ line weights. Label spaces.	JLA will review. This drawing will be refined for 60% CD set.	Partially refined, will cut rooms have room #'s to identify the space.			
44.	Architecture	A311 - A320	Wall sections not developed, need to show dimensions, exterior wall and roof types, indicate insulation and AVB continuity, roof edge treatments, flashing conditions, sun screen structure, overhang structure and insulation criteria, how ceilings meet with exterior walls, windows	Wall Section drawings will be further developed for 100% DD.	Open, including additional drawings from A311-A326 needing further development.			
45.	Architecture	Floor plans	Confirm door reach clearance on both pull and	Will continue to be refined to meet code.	Open			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
			push side, on the Break Out spaces					
46.	Architecture	Specs	Specs indicate precast concrete and none shown on drawings.	There is no precast concrete in the project. This section will be removed.	Drawings call for a precast planter on drawing A102A. As well as precast stair treads.			
47.	Architecture	Specs	Specs call for mineral wool insulation, drawings show Polyiso	The intent is to use both types of insulation Pending confirmation of final detailing for masonry walls. Polyiso is preferred for masonry veneer walls.	Open			
48.	Architecture	Specs	Drawing A501 shows Concrete Unit Masonry block w/ insulated cores. There is no mention of it in the specs	Insulated CMU has been removed from the project based on CM cost analysis.	Closed			
49.	Architecture	Drawing Index			A001 drawing not present.			
50.	Architecture	Drawing Index			Add drawing to indicate toilet fixture and accessories mounting heights.			
51.	Architecture	LS101			Does the number of seats in the Gymnasium take into consideration ADA seating? Non shown.			
52.	Architecture	LS101			If gymnasium and auditorium both have after hours permits for events are there a sufficient number of toilet fixtures to accommodate all occupants.			
53.	Architecture	A101A			No door number tag on doors to room 1134.			
54.	Architecture	A101A			Kitchen serving countertop indicates PLAM on drawings. Specifications indicate Quartz stone countertop			
55.	Architecture	A101C			Is there a separate plan for the loading dock?			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
56.	Architecture	A102A			Provide additional detail and dimensioning of precast planter and railing connection.			
57.	Architecture	A102A			Provide additional detail and dimensioning of wood slat seating.			
58.	Architecture	A102A			Provide additional detail and dimensioning for phenolic bench with sloped back.			
59.	Architecture	A101-A103			Classroom dividing walls indicate both a wall type F6 and a folding partition.			
60.	Architecture	A102A			No door tag on closet 2017.			
61.	Architecture	A102A			Should the flues in chase behind closet 2017 be in a rated shaft.			
62.	Architecture	A103A			Room # missing from A3134.			
63.	Architecture	A104			Provide additional drawings indicating roof and edge details.			
64.	Architecture	A11A-A113C			EOS Legend does not match hatched out areas on floor plans.			
65.	Architecture	A11A-A113C			Include EOS legend on all pages.			
66.	Architecture	A141A-A143C			Not all abbreviations are included on legend. Needs further refinement.			
67.	Architecture	A141A-A143C			Legend indicates power troweled concrete-should that be polished concrete to coincide with specifications.			
68.	Architecture	A201			Remove curtainwall from elevations.			
69.	Architecture	A221			Is there a window type D2?			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
70.	Architecture	A311-A326			Need further refinement and detailing. Ex. Drawing refer to a details on drawing A511 that has not been developed.			
71.	Architecture	A400			Call out glazed partition with gradated pattern on details 4&5.			
72.	Architecture	A400			Elevation #7 needs further refinement and labeling.			
73.	Architecture	A403			Elevation #12 needs further refinement and labeling.			
74.	Architecture	A404			Elevation #7 needs further refinement and labeling.			
75.	Architecture	A404			Call out plumbing fixtures on elevation #5.			
76.	Architecture	A405			Elevations #2&7 need further refinement and labeling.			
77.	Architecture	A406			Elevations need further refinement and labeling.			
78.	Architecture	A400-A406			Drawings should include keynotes and legends.			
79.	Architecture	A410			Elevations need further refinement Elevation#6 calls out paint on door glass, elevation #5 has exterior glazing arrow pointed to nothing.			
80.	Architecture	A410-A416			Is there a detail on supporting sink counter if cabinet bases are mobile on casters?			
81.	Architecture	A420-A442			It might be beneficial to have a plumbing legend on these drawings.			
82.	Architecture	A425			Detail for PLAM work Counter in center of admin office 2010.			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
83.	Architecture	A430			Detail #2 railing does not connect to breakout room.			
84.	Architecture	A431			Locker/railing detail unclear at connection to breakout room.			
85.	Architecture	A430-A433			Breakout elevations need further labeling and dimensioning.			
86.	Architecture	A450			Indicate duct risers in gymnasium and connection details.			
87.	Architecture	A450			Is there enough space for a timekeepers table for basketball and volleyball games?			
88.	Architecture	A450			Gymnasium game lines need dimensioning. Will any graphics be included (school mascot or name of school).			
89.	Architecture	A451			All tag callouts are not indicated on keynote legend.			
90.	Architecture	A452,A453			Should basketball shot clocks be shown above main court backboards.			
91.	Architecture	A460-A463			Callout auditorium stage curtains. Also mounting between stage curtains b			
92.	Architecture	A461			Will standard sprinkler connection with concealed plate apply to clouds or is sprinkler head exposed?			
93.	Architecture	A470			Show arrows with stair direction.			
94.	Architecture	A470			Indicate finishes example handrails are they painted?			
95.	Architecture	A470			Indicate large details and connection details. Example railing at top landing looks unfinished.			

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			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
96.	Architecture	A470			Reference all details on A652			
97.	Architecture	A471			Are metal risers and side stops indicated to be painted?			
98.	Architecture	A471-A473			Will matching wall base be applied to GWB below stairs			
99.	Architecture	A471-A473			Will additional dimensioning be added for posts between perforated panels.			
100.	Architecture	A480			Layout of elevator equipment should be included in elevator mechanical room.			
101.	Architecture	A480			Will an elevator sill detail be provided?			
102.	Architecture	A480			Should corridor floor finish be identified on elevator sections?			
103.	Architecture	A502			Provide additional roofing details.			
104.	Architecture	A540			Will a skylight end detail be provided?			
105.	Architecture	A540			Provide additional detail and description to skylight edge section detail.			
106.	Architecture	A570			Canopy details need more refinement to show connections, dimensions and materials.			
107.	Architecture	A600-A625			Need additional refinement indicating reference details, dimensioning and details.			
108.	Architecture	A621			Should show a dimensioned plan view of bench in corridors			
109.	Architecture	A650			Detail 7, Section-Guardrail locker. Is additional metal framing necessary to install GWB soffit?			
110.	Architecture	A651			Stair detail indicates both precast stair tread			

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111.	Architecture	A651			and metal pan with concrete fill. Details need further refinement and coordination to			
112.	Architecture	A652			Stair detail indicates both precast stair tread and metal pan with concrete fill. Detail #7&12.			
113.	Architecture	A652			Interior stair details with 1/2"x3" steel stanchion. Is this within reach of students and should it be rounded instead of square edge			
114.	Architecture	A690			Some details need further refinement			
115.	Architecture	A690			Is there a mounting detail for the chain of the roller shade?			
116.	Architecture	A690			Is addition vertical metal framing required for sloped ACT to GWB Soffit at Corridor.			
117.	Architecture	A691			Should a ceiling legend be included on this drawing for reference.			
118.	Architecture	A691			The wood trim piece covering the anchor for the cloud, is this piece a custom turned piece or supplied from manufacturer. If custom provide additional details.			
119.	Architecture	A700			Partition type "D6" indicates a 7 1/4" wall thickness with a 3 5/8" stud.			
120.	Architecture	A700			Partition type "H6" indicates a 7 1/4" wall thickness with a 3 5/8" stud.			
121.	Architecture	A715			Is there any exterior signage details?			
122.	Architecture	Drawings			Provide mechanical enclosure on roof elevations and details.			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
123.	Architecture	Drawings				Show calculations and counts of toilet fixtures. Details are hard to follow without callbacks or reference to locations on plans where they apply.		
124.	Architecture	Drawings				Indicates to refer to P202 for enlarged kitchen plan.		
125.	Architecture	Plumbing P101A				Detail 7 indicates a 6" water service please verify with site utilities changes.		
126.	Architecture	Plumbing P002				Should the application include the procedure to repair any hairline cracks in concrete surface to receive polished concrete.		
127.	Architecture	Spec Section 03 35 10				Subsection 3.4 Installation -casework and countertops. Should you include after installation applying a continuous bead of specified sealant to all joint which about walls or partitions.		
128.	Architecture	Spec Section 06 40 00				Page 2 Subsection 1.2.H has Question (?) marks for all listed drawing numbers.		
129.	Architecture	Spec Section 07 00 02				Section 1.7 Quality Assurance. Roofing manufacturer's representative should be onsite during roofing installation and not just provide a final inspection.		
130.	Architecture	Spec Section 07 54 19				Section 2.3.A.2.a.1) Wood Species and cut indicated as "xxx". Please indicated species and cut.		
131.	Architecture	Spec Section 08 14 16				Should you indicate wider width of top and		
132.	Architecture	Spec Section 08 14 16						



Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
133.	Architecture	Spec Section 08 34 57			bottom rails that have closers and lock blocks at door stiles with exit devices.			
134.	Architecture	Spec Section 08 35 15			Can more than 1 manufacturer be specified.			
135.	Architecture	Spec Section 08 45 13			Can more than 1 manufacturer be specified.			
136.	Architecture	Spec Section 09 91 00			Should joint sealants be specified at locations were GWB comes in contact with metal frames, sills, countertops, casework. Or at locations were metal frames come in contact with flooring but has a gap from shimming frame.			
137.	Architecture	Spec Section 09 91 00			Will exterior doors be numbered and painted with stencils?			
138.	Architecture	Spec Section 11 53 00			Has wrong page numbering and section at bottom of pages			
139.	Architecture	Spec Section 11 53 13			Has wrong page numbering and section at bottom of pages			
140.	Architecture	Spec Section 12 35 53			Has wrong page numbering and section at bottom of pages			
141.	Architecture	Spec Section 12 36 53			Has wrong page numbering and section at bottom of pages			
142.	Architecture	Spec Section 12 61 00			Section 12 61 00 subsection 2.2 B. refers to City of Boston Fire Prevention Code.			
143.	Architecture	Spec Section 12 61 00			Section 12 61 00 subsection 2.3 D.1. refers to City of Boston Fire Marshal.			
144.	Civil	All	Include Legends for all series of plans.	Legends will be included in 100% DD	Abbreviations are provided, but not			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
145.	Civil	All	Include detail references.	Detail references will be included in 100% DD	No detail callouts are provided on Civil Plans.			
146.	Civil	C-0.1 & 0.2	Include parking stripes for clarity	Existing spaces were not surveyed	Closed			
147.	Civil	C-1.0, 2.0 & 3.0	Phase 1 Notes: Note 1 – Clarify? Note 2 – Fence Limits are unclear & not in legend., Note 4 – Nothing shown as bold	Items to be demo are shown in bold (darker than other existing items). Fence is called out on plan.	Closed			
148.	Civil	C-1.0, 2.0 & 3.0	Clarify the disposition of utilities within demo areas. Remain, remove, abandon, cut/cap, etc.	Items in bold are to be demo'd.	Closed			
149.	Civil	C-1.0, 2.0 & 3.0	Identify salvage items.	No items have been identified to be salvaged.	Closed			
150.	Civil / LA	C-1.1 & L1.2	Civil and LA indicate different parking layouts, curbing, striping and sidewalk materials	Will coordinate Civil / LA	Closed			
151.	Civil	C-1.1	Does Phase 1 construction include both binder and wearing course? If just binder, striping will be done twice, & structures reset, this needs to be noted.	Pavement detail calls for only binder on temp parking areas. Temp striping and structure reset, will be based on CM's paving schedule.	Closed			
152.	Civil	C-1.1	Reconsider using SGC directly against sidewalk on west side of parking lot. Coordinate Phase 3 Fire Access Road with sidewalk and curbing.	Revisions have eliminated SGC, and most of the curb.	Closed			
153.	Civil	C-1.2	DMH3 indicates a stub for Phase "4", not Phase 3	Revised to indicated P3.	Closed			
154.	Civil	C-1.2	Consider a filter strip or stone apron at north edge of parking with no curb.	A grass and gravel filter strip was shown	Closed			
155.	Civil	C-1.3 & 2.3	No utility text/callouts are indicated. Pipe sizes etc.	Proposed sizes are shown, see MEP plans for additional info & sizing not called out.	Closed			

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			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
156.	Civil	C-1.4	Clarify limits of pavement, binder or full depth asphalt.	Pavement detail calls for only binder on temp parking areas.	Closed			
157.	Civil	C-2.x	Clarify limits of Phase 1 and Phase 2 work on Phase 2 drawings.	Phasing plans were updated based on Consigli's phasing.	Closed			
158.	Civil	C-2.3 & C-6.x	Clarify if utilities are in Phase 2 or Phase 3, no roof drains shown.	C-2.3 shows the utilities to be installed for P2. Roof drains are shown.	No further comment, see new comments.			
159.	Civil	C-2.3	Has City Fire and Water Depts approved a 600' + dead end water pipe for the hydrant to the north?	Its been reviewed, CDW is not aware of a requirement to loop the main.	Closed			
160.	Civil	C-2.3 & C-6.1	Coordinate building utilities and roof drains	Roof drains are shown. Bldg. utilities will continue to be coordinated.	See new comments, coordination not complete.			
161.	Civil	C-3.0	Is entrance drive constructed at the end of Phase 2 or in Phase 3.	The construction entrance is for P2.	Not shown on Civil Phase 2 plans			
162.	Civil	C-3.0	Define Phase 3 enabling and/or temporary work.	P3 is the demolition of the exist bldg	Closed			
163.	Civil / LA	C-4.X & L	Coordinate sidewalk locations, curbing and striping.	Plans have been revised.	Closed			
164.	Civil	C-4.1	Are gates proposed for the Fire Access Road?	Gates are shown.	Closed			
165.	Civil	C-4.1	Review loading geometry with truck turning movements	Loading area revised.	Closed			
166.	Civil	C-5.X	Has it been Closed that no stormwater recharge is required for the project?	Recharge is required, plans have been updated.	Closed			
167.	Arch/Plumb/ Civil	C-6.1	Is the FDC located in the raised main entrance plaza? Is this acceptable.	Yes, and a hydrant is shown within 100-ft of the entrance.	Closed			
168.	Civil	C-7.2 & 7.3	Repeated and conflicting details on these 2 sheets.	Has been revised	Closed			
169.	Landscape		Building Footprint does not match Arch or Civil dwgs.	Will be coordinated	Closed			
170.	Landscape		Coordinate drainage system structures with civil.	Will be coordinated	Closed			
171.	Landscape		Show light poles on all enlargements and Planting Plans for coordinating design.	Light Poles will be shown.	See new comments to coordinate locations with Electrical			

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172.	Architecture	Specifications	TOC is missing 320000 & 329000, headers are not consistent throughout.	Will be revised.	No further comment			
173.	Civil	Specifications	Check that cross-referenced sections are included.	Will review and revise as necessary.	No further comment			
174.	Civil	Specifications	Storm Drainage piping materials do not match what is on plans.	Piping on plans and specs is a mix of HDPE, PVC, and RCP.	No further comment			
175.	Civil				No Detail callouts are provided.			
176.	Civil	C-4.1			No details for retaining walls either side on building entrance.			
177.	Civil	C-4.1			Provide concrete pads at building exterior doors, and walkways where needed.			
178.	Civil	C-4.1			Building doors at rear center are not coordinated with Architecture			
179.	Civil	C-4.1			Is there a solution to the fire access road being so close to the building in 2 locations due to the 50' wetland setback and the width of the road?			
180.	Civil	C-4.x			Additional layout & dimensioning needed			
181.	Civil	C-5.1			An enlarged grading plan with spot elevations for the entire front entry loop would be very helpful.			
182.	Civil				Add Generator, adjust Transformer			
183.	Civil / FP / Plumbing	C-6.1 / FP101A / P101A			Coordinate size and location of Fire Protection Service.			
184.	Civil / Plumbing	C-6.1 / P100A-C			Coordinate size, location and inverts of roof drains, water service and gas service			
185.	Civil / Plumbing	C-6.1 / P100A			Show size, detail and invert information for grease trap & SMH			

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186.	Landscape	L1.1			Dimension & locate fields and BB Court.			
187.	Landscape	L1.1			What is 2' wide strip at north edges of pavement in loading area?			
188.	Landscape / Civil / Architecture / Electric	L1.3			Coordination of items referenced in other disciplines: Entrance Plaza, Guard Rail, Concrete Ramps, Concrete Pavers, CIP & Unit Block Retaining walls, Pavilion, and lighting.			
189.	Landscape	L1.3			Provide Detailed Layout information and dimensioning.			
190.	Structural	S-000	Some additional design load information for the structure should be provided. Refer to IBC Section 1603.1	A design load schedule is provided in the 60% CD drawings.	Noted. Still missing the snow drift surcharge loading and extent. This is usually indicated on the roof plans where the snow drifting applies.			
191.	Structural	S-101A	Indicate slab on grade size and reinforcing.	Comment addressed in 60%CD drawings	OK. However, slab not indicated on drawing 1-101A.			
192.	Structural	S-101A, S-101B, S-101C, S101D	Indicate slab on grade sawcut control joint locations.	In exposed concrete areas joints are to be shown on architectural drawings. At non-exposed areas, the typical detail showing control joint layout can be used.	Closed.			
193.	Structural	S-101A, S-101B, S-101C, S101D	Column sizes should be shown.	Comment addressed in 60%CD drawings where there is a column schedule.	Ongoing. Columns schedule inClosed, base plate sizes, elev. and anchors not shown.			

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194.	Structural	S-101A, S-101B, S-1011C, S101D	Pricing notes are vague and should be more specific for DD level. Typical wall and pier sections with reinforcing should be shown	Pricing notes have been removed and reinforcement is shown in section.	Ongoing. Limited foundation details provided in 60% set.			
195.	Structural	S-101A, S-101B, S-1011C, S101D	MSBA requires footing elevations to be shown on the plan along each section and not just in a note.	Bottom of footing elevations will be shown in the next set of drawings.	Ongoing. Elevations not shown,			
196.	Structural	S-101A, S-101B, S-1011C, S101D	Gridlines and dimensions should be shown.	A geometry layout plan will be generated to define the complex geometry of the grid system.	Closed.			
197.	Structural	S-101A, S-101B, S-1011C, S101D	More info is required on the extent and depth of the Geo Piers under the footings and the slab-on-grade.	This information is described elsewhere as part of the ESP.	Closed.			
198.	Structural	S-102A, S-102B, S102C, S102D	Typical grid and general framing dimensions should be shown at DD level submission.	Comment addressed in 60%CD drawings	Ongoing: There are no grid dimensions shown on any of the foundation or framing planes.			
199.	Structural	S-102A, S-102B, S102C, S102D	Typical member sizes for beams and girders should be shown for DD Level submission,	Comment addressed in 60%CD drawings	Closed.			
200.	Structural	S-102A, S-102B, S102C, S102D	What is the fire rating of the floor assembly? Are the framing members fireproofed?	Floor rating and steel members are rated 2HR, refer to code report.	Noted. There should however, be some reference to the code drawing on the structural drawings. Are all members fireproofed, or do some get other treatments such as Intumescent paint, etc.			
201.	Structural	S-102A, S-102B, S102C, S102D	Typical framing details should be shown at DD Level, including typical exterior wall support details	Comment addressed in 60%CD drawings	Ongoing: Limited detailing has been provided in 60% set. Coordination with Arch. Details is required throughout.			
202.	Structural	S-102A, S-102B, S102C, S102D	What is the Top of Steel Elevation?	Comment addressed in 60%CD drawings	Closed.			

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			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
203.	Structural	S-102A, S-102B, S102C, S102D	Will there be any expansion joints at this level?	No expansion joints at this level.	Closed.			
204.	Structural	S-103A, S-103B, S103C, S103D	Typical grid and general framing dimensions should be shown at DD level submission.	Framing dimensions will be added and grid geometry will be defined.	Ongoing: There are no grid dimensions shown on any of the framing plans.			
205.	Structural	S-103A, S-103B, S103C, S103D	Typical member sizes for beams and girders should be shown for DD Level submission.	Comment addressed in 60%CD drawings	Closed.			
206.	Structural	S-103A, S-103B, S103C, S103D	Typical member sizes for beams and girders should be shown for DD Level submission.	Comment addressed in 60%CD drawings	Closed.			
207.	Structural	S-103A, S-103B, S103C, S103D	What is the Top of Steel Elevation?	Comment addressed in 60%CD drawings	Closed.			
208.	Structural	S-103A, S-103B, S103C, S103D	Will there be any expansion joints at this level?	No expansion joints at this level.	Closed.			
209.	Structural	S-103A, S-103B, S103C, S103D	Typical braced frame member sizes should be shown.	Comment addressed in 60%CD drawings	Ongoing: Member sizes shown, but required connection forces and typical details not shown. (Per Mass. Code the connections require a 2E multiplier for seismic loading when using R=3.			
210.	Structural	S-103D	Should the roof deck over the Gym be acoustical deck?	This has been updated. And the gym roof is now acoustical deck in 60% CD drawings	Closed.			
211.	Structural	S-104-B, S104C	Typical braced frame member sizes should be shown.	Comment addressed in 60%CD drawings	Ongoing: Member sizes shown, but the required connection forces and typical details are not indicated.			
212.	Structural	S-104B, S-104C	Typical grid and general framing dimensions should	Framing dimensions will be added and grid	Ongoing: There are no grid dimensions shown			

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			be shown at DD level submission.	geometry will be defined.	on any of the framing plans.			
213.	Structural	S-104B, S-104C	Typical member sizes for beams and girders should be shown for DD Level submission.	Comment addressed in 60%CD drawings	Closed.			
214.	Structural	S-104B, S-104C	Typical member sizes for beams and girders should be shown for DD Level submission.	Comment addressed in 60%CD drawings	Closed.			
215.	Structural	S-104B, S-104C	What is the Top of Steel elevation at this level?	Comment addressed in 60%CD drawings	Closed.			
216.	Structural	S-104B, S-104C	Will there be any expansion joints at this level?	No expansion joints at this level.	Closed.			
217.	Structural	S-105B, S-105C	Typical Sections at roof screen and top of steel elevations should be shown.	Comment addressed in 60%CD drawings	Ongoing.			
218.	Structural	S-200, S-201	Is there any special finish required on the exposed steel?	These clerestory trusses have since been eliminated from the project	Closed.			
219.	Structural	S-300	Detail 10: Diamond isolation joints should be avoided as the joints in diamonds will telegraph thru the floor finishes.	Project team will review detail and potentially change to pinwheel isolation joint detail.	Closed.			
220.	Structural	S-300, S-301, S-302, S-303	Typical concrete and steel details should be provided for the DD set.	Comment addressed in 60%CD drawings	Noted. Continued detailing should be Ongoing. For CD set.			
221.	Structural	S-000	Include an allowance for partition loading in the floor Live Loads.	A design load schedule is provided in the 60% CD drawings. Classrooms include 15psf partition loads.	Closed.			
222.	Structural	S-000	Include Design Live Loads for atypical spaces.: Gym, Auditorium, Cafeteria, Media Center/Library, Lecture Halls, etc.	A design load schedule is provided in the 60% CD drawings.	Closed.			
223.	Structural	S101A, S1001B, S101C, S101D			The grade beams between footings appear to be sitting on the footing. Is this the case, or should they stop outside the			



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224.	Structural	S101A, S1001B, S101C, S101D			footing as both the grade beam and footing are indicated to be 12" below slab. Given the need for Preconsolidation/ Surcharge of the soils under the SOG, is a 5" slab with nominal WWF sufficient for the anticipated settlements? All top of interior footings are indicated to be 12" below slab. Some may need to be dropped at roof drain leaders and at underground piping runs. Coordinate top of interior and exterior footings with the Below-Slab Plumbing drawings, P-100A, B, C, and D.			
225.	Structural	S101A, S1001B, S101C, S101D						
226.	Structural	S101A			How are the lateral earth forces being resolved into the Floor 2 framing? Shouldn't this wall be designed as a cantilevered retaining wall and not a typical foundation wall. Review Sections 1-S300 and 3-S400.			
227.	Structural	S101A, B, C, and D.			Are there any special floor Ff and Fi requirements for wood flooring or Floor tiles, etc. Review requirements with flooring specs. (typ). Where are the edge of slab dimensions indicated? Not shown on EOS Architectural Plans or Structural Drawings. Will the edge of slab be on a radius			
228.	Structural	All framing plans.						

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229.	Structural	S102A, S103A				Line S5.7. Check beams supporting posts. They appear to be undersized. See also item 40 below. At Floor 3 the HSS post should be tied back to the concrete deck and not just to underside of beam.		
230.	Structural	S502				Review design of canopy roof, especially cantilevered members south of Line M at the connection to column Line M.		
231.	Structural	S102B				Check design and deflections of W12x19 and W12x16 spandrel beam on Line R3.8 and just off Line R3.		
232.	Structural	S102B				Check sizes of all HSS columns with HSS beams framing into them. Ex, Cols.B/ N7 and B/N8 where there is an HSS 5x5 column supporting a HSS 20x 8" girt.		
233.	Structural	All framing plans.				There are many HSS beam to Column moment Connections. These need to be detailed in order to show how these connections are to be fabricated. And if any special stiffeners are required.		
234.	Structural	S102C				Check design of girders supporting coped W21x111 beams between S1 and S3 lines.		
235.	Structural	All framing plans,				Check allowable spans for 3'x18ga composite deck accounting for		

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236.	Structural	S103B			skewed sections that may dictate single span vs multiple span layout.			
237.	Structural	S103B			Check design of girders supporting coped W21x111 beams between S8 and S10 lines.			
238.	Structural	S103B			Review hanger details at Breakout Bridge and Space. May want to Beef up W12x16's at Hangers. See ASCE-7 for hanger connection multiplier requirements. Is any sway bracing required at the Breakout Bridge or Space?			
239.	Structural	S104B, and S104C.			Coordinate proposed size and location of mechanical rooftop units. Frame out openings as required.			
240.	Structural	All framing plans all levels.			Coordination with MEP drawings for all floor penetrations, duct shafts and openings etc. is required.			
241.	Structural	S103D			Review stage rigging supports with theatrical drawings. Are there any lateral loads from the thrust and head blocks etc.			
242.	Structural	S102A			How are the wall fins attached to the building on Line M, and other similar areas.			
243.	Structural	S102A, S102B and S102C			Has the weight of the Brick and snow drifting been account for on the low roofs?			
244.	Structural	S103D			The masonry bearing wall on the west side of the gym is not continuous to roof.			

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245.	Structural	All framing plans			Please review. See A213.			
246.	Structural	S103D			Coordinate all loose and hung lintel requirements with Architectural drawings.			
247.	Fire Protection	General	Are intermediate fire department connections required?	Will review with AHJ. Standpipe connections are currently 360' +/- apart. Intermediate standpipe may be requested.	Open			
248.	Fire Protection	FP1.01	Coordinate exact scope of Division 21 work with Civil. Exact scope of work is missing. Suggest site utility dwg as part of FP set, including details.	Agree. FP will reference site utility spec. Fire service from water main into building will be installed by Division 21.	Open. Suggest this scope be located on the FP drawings and not just reference to Civil documents to avoid public bid issues.			
249.	Fire Protection	General – floor plans	Typical room sprinkler layouts missing	Will provide sprinkler head layouts.	Open. MSBA requires sizes and branch piping as well at this submission.			
250.	Fire Protection	General – floor plans	Verify height of floor control assemblies is in accord with Fire Dept requirements. Height may not be allowed over 7 ft.	Will review with AHJ	Open			
251.	Fire Protection	FP1.03	Fire Dept Valves may not be allowed to be installed in dressing rooms behind stage; especially if rooms are lockable.	Fire department valves would be accessed from the corridor, not located in dressing rooms. Will coordinate with	Open			

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252.	Fire Protection	General - roof	Are roof manifolds required or desired by Fire Dept?	AHJ on preferred location of valve cabinets. Roof manifolds are required. Will review with AHJ on preferred location.	Open			
253.	Fire Protection	FP101A			Loading dock area (outside) will require dry sprinkler protection/dry sidewall protection.			
254.	Fire Protection	FP101A			Exterior fire protection to include fire mains, hydrants, tapping sleeves, curb stops, etc. No documentation seen.			
255.	Fire Protection	FP101A			Why is water tight sleeve provided for fire main through foundation wall?			
256.	Fire Protection	General			Sprinkler system branches missing. Sprinkler protection missing from scattered areas/rooms throughout. Sprinklers missing below stairs.			
257.	Fire Protection	FP101A			Sprinklers missing in areas such as Breakout room 1054 and low ceiling space at left of it.			
258.	Fire Protection	FP102A			Is only one Storz FDC required or additional locations required by local Fire Dept?			
259.	Plumbing	P0.01	Water heater and pump schedules missing	Schedules are not provided on drawings. Equipment will be indicated in specifications.	Closed			
260.	Plumbing	P0.01	Backflow preventer detail - dimension to floor is to be from bottom of device to floor per Code.	Agree	Open			

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261.	Plumbing	P0.02	Detail 1 – Is redundancy required for water heater?	Will review with Owner	Open			
262.	Plumbing	P0.02	Detail 1 – Valve and pump not allowed between heater and expansion tank. Also, check valve upstream of heater on CW supply not allowed without inspector permission. Mixing valve should be installed below top of heater.	Detail to be corrected.	Open			
263.	Plumbing	P0.02	Detail 3 – No valve allowed between heater and expansion tank. Also, check valve upstream of heater on CW supply not allowed without inspector permission. Swing check valve installed in vertical position may not function.	Detail will be corrected.	Open			
264.	Plumbing	P0.02	Detail 4 – Verify chip tank is sufficient for chemicals used. pH adjustment system required? Depth of vault structure may not be deep enough.	Will review once chemical list is provided.	Open			
265.	Plumbing	General – below slab plans	Verify no footings bearing on piping below slab. Also, wall footings to be dropped at pipe exits and entrances to building.	Will coordinate with structural engineer.	Open			
266.	Plumbing	General – sanitary venting	Some venting indicated appears to not meet Code.	Please specify location.	Water service room, for instance. Open			
267.	Plumbing	General – Plumbing chases	Plumbing chases should be verified for adequate depth to accommodate fixture carriers/piping. Some look shallow.	Will be coordinated with Architect.	Open			
268.	Plumbing	General – structural/architectural/plumbing coordination	There appear to be many instances of plumbing chases and walls with plumbing risers being located directly over beams. Requires coordination.	Will coordinate with Architect.	Open			
269.	Plumbing	General	Recommend hot water be recirculated directly behind	Will review.	Open			

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			all lavatories to ensure timely hot water with low flow faucets.					
270.	Plumbing	General	No natural gas indicated on plans	Natural gas will be shown for boiler, water heater, kitchen science classrooms on first level, and generator	Open			
271.	Plumbing	General	Exterior wall hydrants missing throughout	Will provide	Open			
272.	Plumbing	P2.01	Emergency shower/eyewash required in boiler room at water treatment – corrosives used	Will be provided in mech room.	Open			
273.	Plumbing	P2.02	Hot water expansion loops missing	Expansion fittings are required by specifications. Will review drawings for required locations.	Open			
274.	Plumbing	P2.02	Suggest hot water recirc. loop with small elec heater for non-potable hot water system to Science classroom sinks.	Agree.	Open			
275.	Plumbing	General – Science rooms	No emergency shower-eyewash stations seen in Science Classrooms.	Emergency fixture will be provided in Science rooms.	Closed			
276.	Plumbing	P2.03	Toilet/Shower room 1310 - Recommend floor drain outside shower.	Agree. Will provide	Closed			
277.	Plumbing	General	Roof drainage seems to be missing from most of the set. Is secondary roof drainage required?	Primary roof drains now shown. Secondary system not required.	Closed			
278.	Plumbing	P3.03	Floor drain required for water heater and backflow preventer.	Agree. Will add.	Closed			
279.	Plumbing	P3.03 & P3.04	Emergency showers/eyewashes missing in Science classrooms	Emergency fixture will be provided in Science rooms	Closed			
280.	Plumbing	General – Acid waste/vent				Polypropylene piping is not plenum rated. Need to specify PVDF or plenum rated wrap for piping in return air plenums		

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281.	Plumbing	P001			RP-1 indicated on water heater diagram is not piped			
282.	Plumbing	P002			Detail 7 – water meter to be specified & sized, state pressure settings on PRV's. Pipe sizes missing.			
283.	Plumbing	P002			Detail 11 – Verify if this a seismic category B or C building. If B, no seismic bracing required.			
284.	Plumbing	P002			Detail 14 – Sizes missing.			
285.	Plumbing	P003			Detail 2 – Verify clearance for plaster trap cartridge for maintenance			
286.	Plumbing	P003			Detail 8 – If this is for storm drainage tie-in, suggest a backwater valve be added.			
287.	Plumbing	P004			Detail 1 – Specify frame/cover and "box" if any, for grease trap.			
288.	Plumbing	P004			Detail 5 – locate CO detectors on plans.			
289.	Plumbing	P004			Detail 1 – verify whether heat is required in vault.			
290.	Plumbing	P004			Detail 2 – Locate mixing valves on plans/ coordination with architecture.			
291.	Plumbing	P005			Detail 4 – Dual check valve/VB shown. Verify reduced pressure backflow preventer is provided. Only a dual check valve/VB does not meet Code.			
292.	HVAC	GENERAL	Add key plan to all drawings	Key plan has been added to the drawings.	Closed			
293.	HVAC	M104	Suggest heat to be added in the mechanical pump house	Agreed. A unit heater has been added to the pump house.	Closed			



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294.	HVAC	M104	Consider double doors into the pump house	Agree, double doors can be provided in lieu of (2) single doors, plans updated. We will review with manufacturer and plumbing to provide floor drains in the pump house.	Open			
295.	HVAC	M104	Add floor drains to pump house	Make up air for the smoke exhaust system will be provided by the architect via mostly louvers and potential for south entrance doors.	Open			
296.	HVAC	M104	What is the makeup air for SEF-1 through SEF-4. Where is it shown?	The motorized dampers are provided to isolate RTU-1 & 2 from RTU-3 & 4 in the ring duct system, but maintain redundancy. This has since been eliminated via VM.	Can you please explain redundancy of this? It is not identified in the OPR or HVAC system description. Closed.			
297.	HVAC	M103C M102B	Please indicate why two dampers are shown normally closed and one shown normally opened?	Half of the motorized are indicated as normally open, and half are normally closed. Thru VM, these dampers have been eliminated, see item 145 response.	Can you please explain redundancy of this? It is not identified in the OPR or HVAC system description. Closed.			
298.	HVAC	M305	All motorized dampers shown on the rooftop unit airflow diagram are tagged normally opened. See note above.	Thru VM, the quantity of chillers has been reduced to 1. The flow diagrams will be updated to reflect this.	Closed.			
299.	HVAC	M305 M306	Chilled water flow diagram needs to be shown with air cooled chillers (2), and pump house on the roof. Coordinate these two diagrams please.	This will be indicated within the controls series drawings in future submissions.	Open.			
300.	HVAC	Fire Protection Chapter 9 Smoke Control (909)	Provide document that shows the firefighters smoke control panel.	BMS narrative and specification updated to be non-proprietary BACnet controls with Tridium JACE.	Closed.			
301.	HVAC	Schematic Design HVAC Narrative Part O	The new BMS is indicated as proprietary by Advanced Energy Management Systems. Please confirm if correct.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
302.	HVAC	Narrative / M101A	Narrative outlines Boiler Plant in the Pump House. Drawings show Boilers in Boiler Room 101B.	The narrative will be updated to reflect floor plans.	Not Closed.			
303.	HVAC	GENERAL	Are fire smoke dampers required in the duct leaving the shafts?	Fire smoke dampers are required only where shafts that serve more than 2 stories are penetrated by ductwork. The only location so far that this applies to is the gang bathroom exhaust ducts.	Closed.			
304.	HVAC	M104	Is smoke or fire protection required in the Mechanical Penthouse?	Smoke protection is not required within the pump house. We will review for the fire protection requirements.	What are your findings on FP?			
305.	HVAC	M104	Provide makeup water piping to the Penthouse	Make up water to the penthouse will be provided under the plumbing scope of work. Refer to M306.	Did not locate on plumbing drawings.			
306.	HVAC	M104	Review ventilation requirements for Pump House	We will further review with manufacturer.	Open			
307.	HVAC	M104	How is Pump House installed on Roof? Is it on damage like the chilliers?	Pump house shall be mounted on roof curb. Drawings updated.	Please show a detail.			
308.	HVAC	M104	Review internal and external powered convenience outlets for the Pump House.	We will review with electrical for convenience outlets and add for future drawing submission.	Open			
309.	HVAC	Fire Alarm Fire Protection	Include a fire alarm input/output matrix for the Smoke Control System.	This will be indicated within the controls series drawings in future submissions.	Closed.			
310.	HVAC	GENERAL	What discipline or drawing/specification identifies all the requirements for the fire alarm smoke control panel?	Will review and advise.	Is there a fire protection narrative?			
311.	HVAC	GENERAL	What discipline is covering the scope of the special inspector testing	We will review the special inspector testing requirements	What are your findings?			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
			consultant? Will this be in Division 1? Please refer to Section 909 Smoke Control.	to determine the correct discipline.				
312.	HVAC	E400			Show makeup air on the fire alarm riser.			
313.	HVAC	M404			Show makeup air on controls for smoke evacuation.			
314.	HVAC	GENERAL			Are the two VFDs for the smoke fans being installed in 2-hr rooms? Which rooms?			
315.	HVAC	GENERAL			Recommend UPS Power for all makeup air provisions. Reference 909.11.1			
316.	HVAC	GENERAL			Add to ATC notes on control drawings that the system must comply with UL864.			
317.	HVAC	GENERAL			Specify that all ducts part of the smoke system are leak tested to 1.5 times the max design pressure			
318.	HVAC	GENERAL			SEF-1, SEF-2, SEF-3 and SEF-4: Confirm 1.5 times number of belts shall be specified. Confirm minimum service factor of 1.15.			
319.	HVAC	GENERAL			SEF: Provide fan installation details on HVAC Detail Sheets. None shown.			
320.	HVAC	GENERAL			RTU=112 has an install issue with a 6" RO on P104C.			
321.	HVAC	GENERAL			Show EPO (Emergency Power Off) switch on M201A Boiler Room Plan.			
322.	HVAC	M201A			Do not recommend running hot water pipes over VFD devices. Please review.			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
323.	HVAC	Piping Plans			Indicate anchors and guides on the thermal expansion HW loops			
324.	HVAC	RTU Unit Penthouses			Are there piping vestibules in the RTU penthouses?			
325.	HVAC	HVAC Details			Recommend a RTU penthouse detail to indicate devices, sensor, clearances.			
326.	HVAC	M202D			Pipe runouts to units are not labeled. Not clear where the HWS&R piping is routed on this plan leaving the Auditorium.			
327.	HVAC	M403/M201A			Show the low flow bypass valve location on the piping plans. Size the valve and pipe.			
328.	HVAC	M201A			Piping not sized. Only in Boiler Room.			
329.	HVAC	M201B			Have you considered exhausting the electric rooms rather than provide ductless splits? Review Room 1127.			
330.	HVAC	M101C			Electric Room 1165: What is design approach?			
331.	HVAC	Details			Need/recommend cooling and heating coil hookup details. Identify popping connections, gauges, and hydronic specialties to the one or two high coils for each RTU.			
332.	HVAC	M104			Suggest a piping vestibule for RTU-7.			
333.	HVAC	M104			Suggest a piping vestibule for MAU-1.			
334.	HVAC	M102C			Electric Room 2167: What is design approach?			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
335.	Electrical	C-2.1, E-PH-1	Locations of the site lights don't match electrical site plan. Coordinate	Civil notes state to see MEP plans for locations.	Dwg. E-PH-1 is not included in the package. Review can't be done.			
336.	Electrical	C-2.3, E003-1	Electrical manhole is not shown on the civil plan. Location of the power, communication and FA services are not coordinated.	Locations of power, communication and FA services are shown and coordinated.	No coordination has been done. Also, show location of the generator and an emergency power duct bank on the civil plan.			
337.	Electrical	C-2.1, E003-1	Location of the electric car charging stations is not shown on the civil plan.	This item is still being discussed with owner.	Open			
338.	Electrical	C-2.1, E003-1	Locations of the site lights, security camera poles are not shown on the civil plan.	Civil notes state to see MEP plans for locations.	Electrical plans are diagrammatic. Note 10 on the civil plan doesn't allow to coordinate location of the all utilities			
339.	Electrical	C-2.1, E003-1	Generator set location is not shown on the civil plan. Coordinate. Show natural gas line to the generator.	Generator continues to be coordinated.	No coordination has been done yet.			
340.	Electrical	C-4.2, E003-2	Show location of the site lights, refer to electrical plan.	Civil notes state to see MEP plans for locations.	Electrical plans are diagrammatic. Note 10 on the civil plan doesn't allow to coordinate location of the all utilities			
341.	Electrical	E003-1, P0.02/4, C2.1	Wiring of the (2) acid neutralization tanks is not shown on the electrical plan	This will be picked up on next submission.	Not included. Plumbing details have been moved to P005			
342.	Electrical	C-7.4	Add a base detail for a site lighting pole. Coordinate with detail on dwg. E004	Detail will be shown on electrical sheet.	Not coordinated. Details on dwg.E004 indicate the bases be provided by site contractor.			
343.	Electrical	A001	No info shown on the dwg.	Will continue to develop	Symbols drawing is not in the package			
344.	Electrical	A101, A102	Location of a toilet room (at principle office) above main electrical room is not recommended	Appropriate protection is required by architect where plumbing is installed over electrical panels.	Plumbing shaft with hot and cold water and sewer piping above main electrical room is not recommended.			
345.	Electrical	E300, E301	Confirm the transformers (located remote from the primary side panels) will be with the primary side disconnect switches or	All remote transformers will conform to NEC 450.14	Closed			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
			lockable devices will be used per MEC 450.14					
346.	Electrical	E301, E302	Panel PP2B is power fed from panel MP1B. Panel MP1B shall be 400A bus/250A main breaker.	This will be revised	PP2B is fed from new panel 2DP1B. Revise panel schedule 2DP1A and add schedule for 2DP1B per one-line diagram E-301			
347.	Electrical	E301, E302	Panel MP1B shall be 400A bus/250A main breaker. Is it single or double tub panel?	This will be revised.	Revised diagram for panel MP1B is acceptable.			
348.	Electrical	260000.2.23A, E301	Per spec- 200kW diesel generator set, but per dwg. - 250kW natural gas generator set.	A calculation was Closed since the previous set and the generator will be 300KW and edited so that drawings match the specifications.	Closed			
349.	Electrical	E301	Is a generator set with a natural gas engine approved by local AHJ to support life safety loads?	A request has been issued to the AHJ. The facility directors have stated that existing emergency stand-by generators in the city are currently natural gas so the design team has followed that precedence.	Closed			
350.	Electrical	260000.2.23K	Per spec- "load bank for indoor mounting adjacent to a generator in series with engine radiator"? Clarify and revise type of housing if required.	There will be no load bank if the generator remains natural gas fired.	Closed			
351.	Electrical	260000.2.23M, E201A, E301	Show a manual transfer switch location and wiring for connection of roll-up generator set	Will show on next submission.	Wiring for life safety loads transfer to temporary generator is not shown			
352.	Electrical	E302	Panel MP3C is fed from 75kVA transformer, it shall be 400A bus/250A main breaker	Will correct.	Closed			
353.	Electrical	E301, E302	Is panel 2DP1C power fed from T-6 or T-7 size transformer? Coordinate a	Will revise in next submission.	Closed			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
			schedule and one-line diagram.					
354.	Electrical	E301, TL111	TL dwg. requires 200A power feed to a dimmer rack and also an emergency power feed. Dwg. E301 shall be revised accordingly.	Will add emergency power feed as required.	Closed			
355.	Electrical	260000.2.14D	Main switchboard short circuit rating of 100kA is too high (add'l cost). Rating should not exceed 65kA.	Will reduce to 65KAIC	Closed			
356.	Electrical	260000.2.14H and 2.17E, E301	Coordinate location of the utility metering CTs and PTs between the spec pars, revise a diagram accordingly.	Will coordinate with utility.	Spec and drawing are not coordinated.			
357.	Electrical	All plans	Add a key plan on each dwg.	Will do	Closed			
358.	Electrical	A102, E300	Rm. 2254 is not emergency electrical closet. Change a room name.	Will coordinate with architect.	Not coordinated yet.			
359.	Electrical	FP1.01	FP service piping is shown in the main electrical room, it should be relocated.	Will be coordinated.	Closed			
360.	Electrical	E401A	Show FP tamper and water flow switches in Rm. 1023	Will be coordinated as drawings develop.	Open Room has been re-numbered to 1022.			
361.	Electrical	E401B, FP1.02	Show FP tamper and water flow switches, refer to FP plan.	Will be coordinated as drawings develop.	Open			
362.	Electrical	E401C, FP1.03	Show FP tamper and water flow switches, refer to FP plan.	Will be coordinated as drawings develop.	Open The FP plan has been re-numbered to FP1.01C			
363.	Electrical	FP plans	Add building key plan on each dwg.	Will add.	Closed			
364.	Electrical	E401D	Quantity of the FA speaker/strobes in Gym is not sufficient for 15dB above ambient noise. Consider high output and overhead mounted devices.	Will be corrected.	Open			
365.	Electrical	260000 par.2.18Z	FA 1 watt output speakers are not sufficient for public areas such as Gym, atrium, etc.	Will be corrected.	Open			

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			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
366.	Electrical	E402B E402C E403B E403C	Show FP tamper and water flow switches, refer to FP plans	Will be coordinated as drawings develop.	Open			
367.	Electrical	E202.A, FP2.01	Show location of the FP electric bell on electrical plan	Will be coordinated as drawings develop.	Open. Coordinate location with FP102A			
368.	Electrical	P2.01	Multiple piping runs in the main electrical room. Coordinate with electrical/relocate	Will be coordinated as drawings develop.	Closed.			
369.	Electrical	E201A, M101A, A101A	Pumps P-1 and P-2 are located in custodian toilet rm. 1016. Coordinate.	Will be coordinated as drawings develop.	Closed			
370.	Electrical	E303, M301	Circuit breakers for the all RTUs 1 to 8 are oversized. Refer to mechanical schedule.	Will be coordinated as drawings develop.	Closed			
371.	Electrical	E302, E303	Equipment schedule indicates all RTUs are wired from main switchboard MSB. MSB schedule does not reflect the same.	The schedule will be corrected as the drawings develop.	Open. RTUs are wired from 4DPXX panels.			
372.	Electrical	E303, M301	Circuit breakers for the both chillers are oversized, 600Amp vs. 400Amp in M301 schedule.	Will be coordinated as drawings develop.	Closed			
373.	Electrical	E302, E303	Equipment schedule indicates two chillers are wired from main switchboard MSB. MSB schedule does not reflect the same.	Will be coordinated as drawings develop.	Open. Add 800Amp chiller breaker in MSB1A schedule.			
374.	Electrical	E303, M301	Pumps P1 to P4 are 25HP on electrical plans, but they are not sized yet in schedule on M301. Coordinate.	Will be coordinated as drawings develop.	No pumps size selection has been made by mechanical. Wiring to be completed.			
375.	Electrical	E204ABCD	Change roof plan number to E204, to be consistent with all other disciplines	Ok will revise.	Closed			
376.	Electrical	E204, M104, A104	Architectural roof plan does not match the engineering plans. Pump house is missing, the chillers location to be changed.	Will update model and coordinate mechanical equipment locations.	Pump house plan is missing on E204.			
377.	Electrical	E303, M301	There are (1) ductless cooling units in electrical schedule, and (7)- in mechanical schedule. No	Will be coordinated as drawings develop.	Quantity has been coordinated. Electrical data is still not shown in the mechanical			



Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
			electrical data is shown in the mechanical schedule		schedule. Electrical schedule update is pending.			
378.	Electrical	E303, M301	Exhaust and supply fans data is missing in the mechanical schedule, but electrical schedule on E303 includes the fans HP, voltage and wiring. Quantity is also different. Coordinate.	Will be coordinated as drawings develop.	Electrical data is still not shown in the mechanical schedule. Electrical schedule update is pending.			
379.	Electrical	260000.2.24, E204, E205	Drawings and spec show a different type of a lightning protection system. Coordinate	A lightning preventor system will be provided. Drawings will be edited to match	Details on E205 needs to be revised.			
380.	Electrical	E302, 260000.2.14 and 2.15	Note 1 for MSB and 4DP1B schedules allows the breakers be series rated. Spec does not state anything. Confirm design intent and coordinate.	Will be coordinated as drawings develop.	MSB note 1 and spec should be coordinated			
381.	Electrical	Electrical power plans, spec 12 24 14	Spec for motorized shades is included. No wiring is shown on electrical plans. Coordinate.	Will be coordinated as drawings develop.	Open			
382.	Electrical	E303, P0.01	Plumbing equipment schedule is missing on P0.01, although it is shown on E303 with HP, voltage and wiring data. Coordinate.	Will be coordinated as drawings develop.	Open			
383.	Electrical	E102B, A182B	Typical for all classrooms. Ceiling soffits on architectural and electrical plans are not matching. Verify length and installation of the LC3 fixtures	Will be coordinated as drawings develop.	Closed.			
384.	Electrical	E102B (typical for lighting plans)	Typical for all classrooms. Are (2) LC3 fixtures sufficient for classroom seating area illumination? Verify lighting calculations.	Lighting caics will be Closed to ensure IESS illumination levels are met.	Open. Include opposite walls vertical illumination levels.			
385.	Electrical	E102D, GA005	Is auditorium lighting layout coordinated with the performance lighting pipes?	Needs further coordination.	Coordinate location of stage PC1 lights with stage pipe 4			

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			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
386.	Electrical	A101D, GA001	Theatrical electrical room 1347 size and layout are not matching on these plans.	Will continue to coordinate.	Open. Room has been re-numbered 1348 on A101D			
387.	Electrical	E300/6, GA111/1	Conflict in Room 1347 size and layout of the electrical and theatrical lighting control equipment	Will continue to coordinate.	Open. Room has been re-numbered 1348.			
388.	Electrical	260000.1.30, 230000.1.32	Electrical spec requires VFDs for fans/pumps be furnished and installed by Div.23. Mechanical spec requires the same be done by Div.26. VFD spec is not included in either Div.23 or Div.26 specs.	Will coordinate responsibilities matrix.	Open.			
389.	Electrical	260000.1.31	Par. refers to spec 012300 for Gym Walking Track alternate 3. Section 012300 is missing.	This alternate is incorrect. Will coordinate alternates with architect.	Coordination is required.			
390.	Electrical	E-301			Is transformer feeding panel 2DP1B K-rated?			
391.	Electrical	E-302			Panels 2DP1A, 2DP1B and 2DP1C shall be with 200% neutral			
392.	Electrical	E-302			Add panel 2DP1B (via a transformer) in the main switchboard schedule			
393.	Electrical	260000.2.14D E302			Change MSB short circuit rating in spec to 65kA to match the schedule			
394.	Electrical	260000.2.14			Add an energy reduction maintenance switch (ARMS) for MSB main circuit breaker			
395.	Electrical	260000.2.14			It is recommended the MSB feeder breakers 400Amp and larger be with electronic trip for coordination purpose			
396.	Electrical	M301; E303			RTU1/2 and RTU3/4 schedule on M301 shall state that a separate power ckt is required for each of 4 units			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
397.	Electrical	E204; M104			Split system condensing units #s 2,3,4,6 and 7 are not shown on the electrical plan. Also, M104 shows a unit#8 that is not scheduled. Coordinate.			
398.	Electrical	E201D			Should the aisle lights be provided in the auditorium seating area?			
399.	Electrical	E201D; GA111/1			Coordinate quantity of the devices and circuits in auditorium/stage area			
400.	Electrical	E102D			Identify emergency lights in Gym and Auditorium			
401.	Electrical	E301; E300/1; E005/3			Why MI cable is shown on E301 from ATS-LS to a generator? The feeder is installed underground in a duct bank.			
402.	Electrical	E301			Utility metering CTs are in the switchboard and a meter is on the transformer enclosure. Distance between CTs and meter is a limiting factor. Coordinate w/utility metering department.			
403.	Electrical	E305; E200 power plans			Identify plug load controlled receptacles on the plans. There are no controlled receptacles shown in the office areas.			
404.	Electrical	E301; E302			Kitchen transformer – 45kVA, panel KPP1A – 400Amp. Revise. Provide panel schedule and load data. Kitchen panel should not be w/200% neutral.			
405.	Electrical	E306			Note 19: Provide GF breakers in panel			

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			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
					KPP1A or show GFI type receptacles per the kitchen equipment schedule			
406.	Security	E500	TS not called out under security system.	This is an electrical component and shown on the electrical plans we will add this symbol to the security symbol list for clarity.	Closed			
407.	Security	General	Missing key plan for all sheets.	Will add	Closed			
408.	Security	501A	Floating door contacts.	Will fix	Closed			
409.	Security	E501A	IC not called out on E500. Is AI meant to be IC?	corrected	Closed			
410.	Security	E501C	Door contact in wall in chair storage room 1164.	Will fix	Closed			
411.	Security	E501D	Missing door hardware and card reader for AV room 1347.	Will add	Closed			
412.	Security	E502A	Motion detector should be moved out of closet 2017 into conference-1g 2016.	Will fix	Closed			
413.	Security	E502B	Missing motion detector, door hardware and card reader at stair 2005.	Will add	Closed			
414.	Security	E502C	Missing card reader and door hardware at stair 2065.	Will add	Closed			
415.	Security	E503B	Missing motion detector at stair-2 3005.	Will add	Closed			
416.	Security	General	Door contacts at roof access hatches?	Will be provided	Closed			
417.	Security	E501A	Missing card reader and door hardware for head end room 1026.	Will add	Closed			
418.	Technology	General	Wall phone outlets in classrooms are not on the wall.	Has been corrected	Closed			
419.	Technology	General	Speakers in classrooms are not in center of room.	Speaker is located at 8'-0" ceiling before it angles up to exposed deck	Open			
420.	Technology	General	Missing key plan for all sheets.	Will add	Closed			
421.	Technology	General	Head End Room is the MDF?	Correct.	Open			

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
422.	Technology	T101A	Missing annotation for tel/data outlet in main electric room 1024.	Will fix	Closed			
423.	Technology	T101B	Consider adding second flush mounted ceiling speaker in media room 1240.	ok	Closed			
424.	Technology	T102B	Missing speaker in stair 2005.	Will add	Closed			
425.	Technology	T102B	Missing speakers in SPED-Classrooms 2260 and 2264.	Will add	Closed			
426.	Technology	T102C	Missing "W" annotation for outlet next to clock in SPED-Reading room 2168B.	Will fix	Closed			
427.	Technology	T102A	Missing hallway speakers.	Will add	Closed			
428.	Technology	T102B	Missing hallway speakers.	Will add	Closed			
429.	Technology	T102C	Missing hallway speakers.	Will add	Closed			
430.	Technology	T102C	Missing speaker in stair 2065.	Will add	Open			
431.	Technology	T103B	Missing speaker in stair-2 3005.	Will add	Open			
432.	Technology	T103C	Missing speaker in stair-1 3065.	Will add	Open			
433.	AV Systems	General	Missing key plan for all sheets.	On bottom of each plan sheet	Closed			
434.	AV Systems	AV000	"BP" not called out under AV Junction Box Symbols.	To be defined on following sets	Closed			
435.	AV Systems	AV101A	AV System in media room 1240?	Added on east wall	Closed			
436.	AV Systems	AV102B	AV system in classroom next to classroom 2224?	From Band Room 1220. On wrong layer	Closed			
437.	Security	E501A			"IMS" floating in middle of custodian office / break room 1207.			
438.	Security	E501B			Far right bottom corner of building, missing camera. Tags are there but missing device.			
439.	Security	E501C			DC in wall in Art room 1234.			
440.	Security	E501C			Camera in locker room 1321?			

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441.	Security	E502B			Door leading to STAIR-1.2005 not shown.			
442.	Security	E503B			Door leading to STAIR-1.3005 not shown.			
443.	Security	E503C			Move CR and Camera out of storage room 3066.			
444.	Security	E503C			Add "E" tag om CR for Elevator 3162.			
445.	Technology	General			Add "WP" tags for all outside speakers			
446.	Technology	T102A			"F" tag for tel/data outlet in copy room 2010A not called out on T001			
447.	Technology	T102B			Review IDF 2255 part plan. Room seems to have shrunk.			
448.	Technology	T102C			Review IDF 2155 part plan. Room seems to have shrunk.			
449.	Technology	General			Consider changing "Head End" to "MDF" on floor plans. Details on T201, T202 & T300 all reference a MDF not a Head End Room.			
450.	Technology	T101A			Consider adding a wireless access node in Makerspace / shop 1134.			
451.	AV Systems	General			Digital Signage?			

# Fuller Middle School Constructability and Drawing Review Log, 60% CDs

As of: 8/5/2019

Revision:



ITEM #	DWG NO/DTL OR SPEC SECTION	DATE OPENED	DESCRIPTION	B/C	DATE RESOLVED	COMMENTS
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## CIVIL DRAWING REVIEW

### ARCHITECTURAL DRAWING REVIEW

1	snapshot	7/27/19	A101B			General note: either rooms should be dashed circled with reference to blow ups or elevation marking should be provided
2	snapshot	7/27/19	A102A			General note: wall to wall dimensions or reference to detail blowups needs to be included
3	snapshot	7/27/19	A114C			need dimensions for slab opening and location off column lines
4	snapshot	7/27/19	A141B			General note: as walls are not perpendicular, ja needs to indicate which wall to run parallel with in every room
5	snapshot	7/27/19	A143B			Will need to confirm detail at thresholds where similar floor carries between two rooms but at different orientations, typical
6	snapshot	7/27/19	A143B			Not at every single transition, but it would help to refer to transition details at one of each transitions (Typ) on each finish page
7	snapshot	7/27/19	A181			As on floor finish dwgs, provide legend to show what materials are what on all RCP plans
8	snapshot	7/27/19	A181			Are rooms such as this multiple layers of ceilings (GWB then ACT underneath) is this for acoustical purposes? May be more affordable to do an acoustic spray.
9	snapshot	7/27/19	A181B			typical, some FP heads shown on edges of tile. need to confirm locations (center of tile short direction (long too?))
10	snapshot	7/27/19	A181B			Typical, is this an axiom at transition, need detail and need a call out to it and shown as typical on at least every page
11	snapshot	7/27/19	A181B			with walls not parallel need to confirm which wall to run parallel with in each room where not obvious
12	snapshot	7/27/19	A181B			Need elevations and more info at sloped ceilings
13	snapshot	7/27/19	A182B			Update red marks with appropriate fixtures
14	snapshot	7/27/19	A183A			Need more info on sloped ceilings, which direction, axiom at transition? elevation at top side? FP heads have to be at an angle? (flex heads?)
15	snapshot	7/27/19	A183			Need more info at GWB ceilings, elevations at all slopes, details where beams intersect, edges at corridors/arch grilles
16	snapshot	7/27/19	A183			need widths of ceilings in corridors
17	snapshot	7/27/19	A183			At all of these corners, is there a way these could be used as storage or chases for the school?
18	snapshot	7/27/19	A183C			Need termination details of grilles around architectural columns
19	snapshot	7/27/19	A183C			Need dimensions and transition details in corridors
20	snapshot	7/27/19	3/A311			General notes, need details at floors, base, roof. include edge of slab firestopping notes, waterproofing details, etc.
21	snapshot	7/27/19	9/A403			Need dimensions for this niche
22	snapshot	7/27/19	11/A403			Need details or call out to detail for Plam monitor screen
23	snapshot	7/27/19	11/A410			These acoustical fabric panels will get damaged in a middle school by students
24	snapshot	7/27/19	5/A411			Need section detail of this elevation
25	snapshot	7/27/19	6/A412			Many of these elevations are not referred to on the floor plans
26	snapshot	7/27/19	8/A413			Add spec codes for clarity typical
27	snapshot	7/27/19	6/A414			Need section details for attachment and reveals between materials to determine constructability
28	snapshot	7/27/19	1/A415			Typical, partition types should be called out throughout
29	snapshot	7/27/19	1/A421			Need more info on custom shadow relief...
30	snapshot	7/27/19	1/A425			Typical, provide angles on walls that are not on gridlines
31	snapshot	7/27/19	1/A425			Provide blocking and attachment details on walls and ceiling for curtain tracks
32	snapshot	7/27/19	A426 Rm 2040			need sill/amb/head details at storefronts typical, referred to on elevations
33	snapshot	7/27/19	9/A427			support brackets should be shown on elevations not just millwork details
34	snapshot	7/27/19	7/A427			flip fringe swing so strike is towards sink & microwave
35	snapshot	7/27/19	3/A428			need elevations & transition details, coordinate FP heads & ceiling layout
36	snapshot	7/27/19	4/A430			need transition details and elevations
37	snapshot	7/27/19	5/A431			Show all wall types on enlarged plans
38	snapshot	7/27/19	9/A440			Epoxy is thinner than tile, details shown in floors, will schluter cover bottom of tile, or should bottom tile be bullnose?
39	snapshot	7/27/19	A452			is this quarry tile? shows cut at base, assume a cut is wanted at top, or stop at top full tile
40	snapshot	7/27/19	2/A452			Need dimensions and reveal details at scoreboard
41	snapshot	7/27/19	2/A452			Provide elevations where materials change, clarify what material is above and below wall panels
42	snapshot	7/27/19	1/A453			Need section details for the board insets on S elevation
43	snapshot	7/27/19	1/A460			Provide CMU wall types
44	snapshot	7/27/19	1/A460			Not sure how people get to these seats (step onto ramp?)
45	snapshot	7/27/19	1/A460			Provide cap and attachment (bot) detail for these partial walls
46	snapshot	7/27/19	2/A463			Need details and attachment details for projector housing
47	snapshot	7/27/19	A462			Need to depict FP, FA & lighting (suggest BIM model)
48	snapshot	7/27/19	3/A600			Are there any glass details like this at rated walls? This detail would exceed allowable SF
49	snapshot	7/27/19	1/A600			Need elevation of reveals
50	snapshot	7/27/19	1/A602			Should show piping and hanger details for radiant panels for clarity (will need to be hung from above)
51	snapshot	7/27/19	8/602			Need size of h/dwd edge and plam thickness at edge of stage
52	snapshot	7/27/19	3/A603			Need more detail for front corner of bond beam detail
53	snapshot	7/27/19	2/A604			Provide reveal size
54	snapshot	7/27/19	4/A604			Provide size of bottom leg back to wall at a coustical panel (later found but detail enlargement should be called out)
55	snapshot	7/27/19	13/A620			What is the difference between details 8 & 13
56	snapshot	7/27/19	16/A621			How to attach MDO (glue, fasteners, z clips)
57	snapshot	7/27/19	14/A621			Track surface will be thicker than shown, need to clarify detail at top of counter
58	snapshot	7/27/19	7/A650			Will debris get caught in this gap (papers etc)
59	snapshot	7/27/19	4/A650			Need more details at doors to lockers
60	snapshot	7/27/19	9/A650			Specify which lockers will be HC accessible
61	snapshot	7/27/19	1/A651			Advise making these drywall surrounds out of origami (time, quality)

# Fuller Middle School

## Constructability and Drawing Review Log, 60% CDs

As of: 8/5/2019

Revision:



ITEM #	DATE OPENED	DWG NO/DTL OR SPEC SECTION	DESCRIPTION	BIC	DATE RESOLVED	COMMENTS
62	<a href="#">snapshot</a>	1/A690	Advise building these out of origami (durable, time)			
63	<a href="#">snapshot</a>	7/A690	Going to be difficult to change these bulbs; recommend review with Maintenance Project team should settle on one uniform acoustic detail. Sleeves are unnecessary unless for FS purposes (keep annular space around pipe, stuff w/min wool and acoustic sealant)			
64	<a href="#">snapshot</a>	1/A700	Structural steel angle or metal stud framing member?			
65	<a href="#">snapshot</a>	6/A650	PLAM cloud ceiling - potential VM opportunity			
66	<a href="#">snapshot</a>	7/30/19	Elevator shaft CMU in lieu of shaftwall? Consider changing due to concerns with weathertight schedule requirements			
67	<a href="#">snapshot</a>	7/30/19	Consigli and Design Team to further review geometry and resolve constructability / bidding of breakout spaces, typ.			
68	<a href="#">snapshot</a>	A480	Skylight gable ends to be further detailed - please provide design intent (e.g. LGMF end walls with insulation and metal panel?)			
69	<a href="#">snapshot</a>	A540/β	Confirm max. aspect ratio of glass lites - 11" wide IGUs may not be available from many glass manufacturers, typ.			
70	<a href="#">snapshot</a>	A221/Type E2	SKA/Section thru Bay Window Storefront at Roof - Exterior transition detail at roof: tie in this membrane on the flashing to the flashing above			
71	<a href="#">snapshot</a>	SKA	SKA/Section thru Bay Window Storefront at Roof - Ext transition details: PT Block or insulation under slope of flashing			
72	<a href="#">snapshot</a>	SKA	SKA/Section thru Floor Line at Bay Window Storefront (Head/Sill) - Is firestopping required at the edge of slab? Tie in membrane on angled flashing. Add tearaway bead at GWB against storefront			
73	<a href="#">snapshot</a>	SKA	SKA/Section Detail thru Brick Base - Need more detail at base of storefront to show flashing			
74	<a href="#">snapshot</a>	SKA	SKA/Section Detail thru Brick Base - Is this flashing moving down or is two layers?			
75	<a href="#">snapshot</a>	SKA	SKA/Jamb Detail at Bay Window Storefront - Will need dimensions? Is that a metal fin outside the window? Attachment?			
76	<a href="#">snapshot</a>	SKA	SKA/Jamb Detail at Bay Window Storefront - How is the alum composite panel trim attached? Snap on?			
77	<a href="#">snapshot</a>	SKA	SKA/Section Detail thru Bay Window Storefront / Brick Base - Both Oldcastle 6000XT & Kawneer Trifab 601UT storefront systems typically recommend that the sill receptor be anchored forward of the thermal break; galv. sill angle support would likely need to be anchored forward of the thermal break			
78	<a href="#">snapshot</a>	SKA	SKA/Section Detail thru Bay Window Storefront / Brick Base - Thermal break in storefront system is located beyond the outside plane of adjacent insulation - condensation risk due to invalid CRF			
79	<a href="#">snapshot</a>	SKA	SKA/Section thru Floor Line at Bay Window Storefront (Head/Sill) - Recommend AVB transition flashing strip in lieu of sealing alum. perimeter angle, as it creates the primary weather seal at the head of the storefront system, typ.			
80	<a href="#">snapshot</a>	SKA	SKA/Section thru Floor Line at Bay Window Storefront (Head/Sill) - Lateral strap anchor will likely be needed at storefront head condition, given alignment with blocking - primary air seal may be difficult to install around anchors, typ.			
81	<a href="#">snapshot</a>	SKA	SKA/Section thru Floor Line at Bay Window Storefront (Head/Sill) - Agree that high-temp underlayment is appropriate; confirm with roofing manufacturer if PVC membrane termination under metal roof edge needs to be directly to cantilevered blocking, typ.			
82	<a href="#">snapshot</a>	SKA	SKA/Section thru Floor Line at Bay Window Storefront (Head/Sill) - Thermal break in storefront system is located beyond the outside plane of adjacent insulation - condensation risk due to invalid CRF			
83	<a href="#">snapshot</a>	SKA	SKA/Section thru Floor Line at Bay Window Storefront (Head/Sill) - Both Oldcastle 6000XT & Kawneer Trifab 601UT storefront systems typically recommend that the sill receptor be anchored forward of the thermal break; is the intent for the alum. angle to a condition, given alignment with blocking - primary air seal may be difficult to install around anchors, typ.			
84	<a href="#">snapshot</a>	SKA	SKA/Section thru Floor Line at Bay Window Storefront (Head/Sill) - Lateral strap anchor will likely be needed at storefront head condition, given alignment with blocking - primary air seal may be difficult to install around anchors, typ.			
85	<a href="#">snapshot</a>	SKA	SKA/Section thru Floor Line at Bay Window Storefront (Head/Sill) - Recommend AVB transition strip in addition to sealing alum. perimeter angle, as it creates the primary weather seal at the sill of the storefront system, typ.			
86	<a href="#">snapshot</a>	SKA	SKA/Section Detail thru Bay Window Storefront / Brick Base - Review and confirm AVB to dampening transition detail around building perimeter, typ.			
87	<a href="#">snapshot</a>	SKA	SKA/Jamb Detail at Punched Window Storefront/Brick - Recommend AVB transition strip in addition to sealing alum. perimeter angle, as it creates the primary weather seal at the jamb(s) of the storefront system, typ.			
88	<a href="#">snapshot</a>	SKA	SKA/Jamb Detail at Punched Window Storefront/Brick - Lateral strap anchor will likely be needed at storefront jamb condition, given alignment with blocking - primary air seal may be difficult to install around anchors, typ.			
89	<a href="#">snapshot</a>	SKA	SKA/Jamb Detail at Punched Window Storefront/Brick - Thermal break in storefront system is located beyond the outside plane of adjacent insulation - condensation risk due to invalid CRF			
90	<a href="#">snapshot</a>	SKA	SKA/Plan Detail at Panel/Brick Transition - Further isolate brick wall cavity from adjacent open rainscreen system to minimize wind-driven rain migration from open joints, typ.			
91	<a href="#">snapshot</a>	SKA	SKA/Plan Detail at Bay Window Storefront - Review LGMF engineering intent for angled corner support, typ.			
92	<a href="#">snapshot</a>	SKA	SKA/Plan Detail at Intermediate Storefront Mullion - Confirm extruded alum. trim attachment detail with all specified storefront manufacturers prior to bidding			
93	<a href="#">snapshot</a>	SKA	SKA/Jamb Detail at Bay Window Storefront - Recommend AVB transition strip in addition to sealing alum. perimeter angle, as it creates the primary weather seal at the jamb(s) of the storefront system, typ.			
94	<a href="#">snapshot</a>	SKA	Review flush receptacles vs. floor boxes for Electrical Trade bid			
95	<a href="#">snapshot</a>	FS101/E306	Food Service schedule does not call out fire extinguishers in Kitchen; Any required?			
96	<a href="#">snapshot</a>	FS100	Review how much space over cooler, if fire protection required			
97	<a href="#">snapshot</a>	FS101				
<b>STRUCTURAL DRAWING REVIEW</b>						
1	<a href="#">snapshot</a>	5000	Note 13G Calif detail/engineering responsibilities at locker guardrails			
2	<a href="#">snapshot</a>	5101D	Review duct penetrations from Auditorium to Storage due to structural notes regarding limitations for penetrations through CMU bearing walls			



# Fuller Middle School

## Constructability and Drawing Review Log, 60% CDs

8/5/2019

As of:

Revision:



ITEM #	DATE OPENED	DWG NO./DTL OR SPEC SECTION	DESCRIPTION	BIC	DATE RESOLVED	COMMENTS	
3	<a href="#">snapshot</a>	7/30/19	S103C	Review detail of PSP adjacent to elevator shaft for required fire-rating			
4	<a href="#">snapshot</a>	7/30/19	TE112 / S102D	Review misc metal steel vs. structural due to roof truss configuration			
5	<a href="#">snapshot</a>	7/30/19	TE121	Potential conflicts between theatre rigging and cloud ceilings			
6	<a href="#">snapshot</a>	7/30/19	TE131	Review layout of storage closet, confirm orchestra enclosure sections fit without conflict			
<b>FIRE PROTECTION DRAWING REVIEW</b>							
<b>PLUMBING DRAWING REVIEW</b>							
1	<a href="#">snapshot</a>	7/30/19	P104C	Overflow drains required (typical)? Review if architectural scupper locations adequate			
<b>HVAC DRAWING REVIEW</b>							
<b>ELECTRICAL DRAWING REVIEW</b>							
1	<a href="#">snapshot</a>	7/23/19	E301	M.I. Cable - 1. Electrical engineer to clearly indicate on the riser diagram which life-safety feeders powering emergency "E" panels must be routed in M.I. Cable.			
2	<a href="#">snapshot</a>	7/23/19	E303	Duct Smoke detectors - clarify total number of duct smoke detectors the electrician should carry in his bid (furnish and wire only, installation by HVAC sub).			
3	<a href="#">snapshot</a>	7/23/19	E303	Fire/smoke dampers and motorized dampers - Clarify total number of combination fire/smoke dampers and motorized dampers requiring 120V power and fire alarm connections to carry in bid.			
4	<a href="#">snapshot</a>	7/23/19	E102D	Lighting and power circuiting needs to be illustrated on floor plans			
5		8/5/19	Division 26	Please confirm if the Division 26 contractor will be required to furnish & install the Fairplay Electronic scoreboards & shot clocks (and establish an allowance value - previously we have \$40,000 included).			
6	<a href="#">snapshot</a>	7/23/19	E202A	Indicate locations of two-way communication call box locations and master station location			
7	<a href="#">snapshot</a>	7/30/19	E101B	Typical Bathroom Light fixture LRDS - how does light interact with partition?			
8	<a href="#">snapshot</a>	7/30/19	E102D	Review power/lighting requirements at Auditorium seating aisles; None shown this plan			
9	<a href="#">snapshot</a>	7/30/19	E400	Confirm number of modules required for audio dropout at theatre/gym/cafe, etc			
<b>LANDSCAPE DRAWING REVIEW</b>							
1	<a href="#">snapshot</a>	7/26/19	L1.1	Basketball Court - Need detail for court striping			
2	<a href="#">snapshot</a>	7/26/19	L1.1	Sports fields; provide dimensions and specification for striping.			
3	<a href="#">snapshot</a>	7/26/19	L1.3	Entrance plaza, steps & planter; not found in arch. drawings. Please coordinate.			
4	<a href="#">snapshot</a>	7/26/19	L1.3	Concrete Ramp; not found in arch. drawings. Coordination required.			
5	<a href="#">snapshot</a>	7/26/19	L1.3	Guard Rail - Not found in arch. drawings; further coordination required			
6		8/5/19	General	Provide more dimensions for sidewalks/walkways.			
7	<a href="#">snapshot</a>	7/31/19	L1.1	Add temporary Sod Playarea			
8	<a href="#">snapshot</a>	7/31/19	L1.2	Add temporary Recess Area			
9	<a href="#">snapshot</a>	7/27/19	L2.0	Confirm quantities of American Beech - 22 shown, only 11 listed.			
<b>SPECIFICATIONS</b>							



## 2.1.2 Design Coordination and Recommendations

Please reference 2.1.1 Submission Review



### **2.1.3 Commissioning Agent Review**

The Commissioning Agent, Jacobs, performed a review of the Progress 60% Construction Documents, dated July 8, 2019. The Commissioning Agent's comments are documented in the Commissioning Agent Review, dated July 29, 2019 and appended to the end of this section.

The Commissioning Agent's recommendations will be incorporated into the 90% Construction Documents submission.



Item	Initials	Reference	100% DD Comments	100% DD Response	60% CD Comments	Action	60% CD Response
<b>SPECIFICATIONS</b>							
<b>DIVISION 01</b>							
1	JAH	011000	Section 1.2 - Several spec sentences indicate a value by listing "xxx". Please review and add required values.	Specs will be further refined for 100% DD Set	OPEN	To be verified as design progresses	
2	JAH	011000	Section 1.3.A.c. A reference is made to spec 018113. This spec did not appear to be included with the design package (ref. Vol. 1). Please review and reconcile.	This section will be included in 100% DD Set	OPEN	To be verified as design progresses	
3	JAH	011000	Section 1.3.A. "LEED is indicated," however the level of LEED compliance did not appear to be indicated. Please review and reconcile.	Will be defined in 100% DD Set	OPEN	To be verified as design progresses	
4	JAH	Div 1 specs	It is suggested that several Div. 1 specs, <del>not</del> currently listed in the TOC, should be added to the design package (ref. Vol. 1). As a minimum, suggest adding specs: 013100 Project Management and Coordination; 013300 Submittal Procedures; 017300 Execution; 017700 Closeout Procedures; 017836 Warranties; and 018113 Sustainable Design requirements. If contents of above-noted additions do not adequately cover Operation and Maintenance manuals and Training requirements, it is also suggested that specs for these be provided.	Additional sections will be included in 100% DD Set	OPEN	To be verified as design progresses	
5	JRC	General Comment	Many spec sections reviewed has an incorrect section number for Part 3 - Execution. Many sections reviewed start with either 3.2 or 3.3. Suggest reviewing and correcting as required.	Specs will be further refined for 100% DD Set	OPEN	To be verified as design progresses	
6	JRC	General Comment	Please define where requirements are for submitting shop drawings. These are not provided for in the volume 1 specification sections reviewed.	Will be defined in 100% DD Set	OPEN	To be verified as design progresses	
<b>DIVISION 04</b>							
7	JRC	04 20 00	Confirm if wetting brick based on IRA testing will be allowed	For veneer layout it is not anticipated that wetting brick will be required as the specifications require an IRA of less than 30. Fully grouted brick areas at the base of the building are to be wetted prior to grout installation.	OPEN		
8	JRC	04 20 00-4	Special shapes - confirm number of shapes and confirm that cutting is not allowed.	Special shapes are documented on sheet A501. Additional shapes may be added during CD's if warranted (stair towers). Bricks may be cut where required with approval of architect.	CLOSED		
9	JRC	04 20 00-18	Consider using the proper term for masonry joints - Masonry Institute states that Brick Expansion Joints (BEJ) is the proper term for clay masonry products.	JJA to review.	OPEN		
<b>DIVISION 07</b>							
10	JRC	072100-2	Specification notes that the thickness of the insulation is as noted on the drawings. Please confirm that the designed system will provide minimum continuous R value as required by the energy code.	The DD energy model is based on the R values indicated in the drawings. Glazed areas have been reduced significantly and mid level shading has been removed to satisfy value engineering requirements. The energy model will be re-run at 60% CD to confirm compliance with the energy code.	OPEN		
11	JRC	074254	Suggest that coordination guidelines for phenolic wall panels and intersection with other materials such as the aluminum curtainwall and the face brick construction be included in Part 3 Execution, as they apply.	This will be reviewed and provided in the 60% DD set. The design elevations are being finalized for DD based on value management requirements (the phenolic panels have been reduced significantly).	OPEN		
<b>DIVISION 08</b>							
12	JRC	084313	Basis of design is the Kawneer Tiffab 451UT system. Center glazed. Note that this does not match the system description of flush or outside glazed system. Please confirm intent. Please review drawing comments regarding integration of framing system with exterior wall materials.	Storefront is intended for use in the interior vestibules only. The exterior wall line will be curtain wall.	OPEN		
<b>DIVISION 22</b>							
13	WGH	22 00 00	Section 2.26 Elevator Sump Pump: Consider specifying the required oil minder control panel's ancillary components	Will comply.	OPEN	Sump Pump specification section appears removed. Is this still in scope?	

Item	Initials	Reference	100% DD Comments	100% DD Response	Action	60% CD Comments	60% CD Response
14	WGH	22 00 00	Section 2.28 Elevator Sump Pump: Consider specifying the required oil minder control panel's ancillary components	Will comply.	CLOSED	Redundant Comment.	
15	WGH	22 00 00	Section 2.28 Elevator Sump Pump: Consider integrating the control panel alarms with the building management system.	Agree. Panel will be integrated in BMS.	OPEN	Sump Pump specification section appears removed. Is this still in scope?	
16	WGH	22 00 00	2.31 Acid Neutralization System: Consider integrating the control panel alarms with the building management system.	Control panel alarm will be connected to BMS.	OPEN	Control panel interface is not included in specifications. Comment is still OPEN.	
<b>DIVISION 23</b>							
17	KML	23 00 00 TOC	Table of Contents does not indicate various spec sections (listed as single section "23 00 00 - HVAC"). Suggest updating TOC with specific sections.	Will review and revise table of contents.	CLOSED	Division 23 TOC included at the beginning of section.	
18	KML	23 00 00 Part 2.12.J.7.gg	Chiller controls section indicates "Optional" features. Included in this section is line item 1, which is BMS interface with BACnet or LonTalk. Please verify if this is an optional feature from the chiller manufacturer that is required for the project, or optional for the project. If optional for the project, consider making this a requirement for consolidate system monitoring and operation.	This feature is an optional feature from the manufacturer. Will clarify specifications.	CLOSED		
19	KML	23 00 00 Part 2.12	Chiller startup requirements call for two working days to ensure proper operation of equipment and owner training. Suggest including coordination with control contractor for integration with BMS during manufacturer's startup.	Will review and revise start-up requirements to coordinate with controls contractor.	OPEN	Comment still OPEN.	
20	KML	23 00 00 Part 2.13.B.2	Roof Top Air Handling Unit General Description calls for the units to be provided with "e. Modulating direct expansion cooling coil section" and "h. Chilled water cooling coil." Please confirm number of chilled water coils required and remove redundant items.	Will review and remove redundant items.	OPEN	Comment still OPEN.	
21	KML	23 00 00 Part 2.13.Q	Roof Top Air Handling Unit controls sections calls for "All sensors, actuators, controls shall be provided by the ATC/DDC controls subcontractor. AHU General Description section calls for units to be factory assembled and tested. Please verify if controls will be packaged with unit or field-installed custom controls and associated scope of the controls subcontractor.	Will review and revise provisions of controls.	OPEN	Comment still OPEN.	
21a	WGH	23 00 00 Part 2.13P			OPEN	This specification section refers to 23 00 00 Part 2.3 for Roof Curb requirements. Part 2.3 specifies Meters and Gages. CxA suggests rooftop unit roof curb requirements be included with the specifications and coordinated with the drawing notes and details. Refer to comments #89a and #93.	
22	KML	23 00 00 Part 2.14	Hydronic Terminal Heating Units controls not specified for all types of equipment (devices, setpoints, integration with BMS, etc.). Suggesting noting if equipment is to be provided with packaged controls and no BMS interface.	Will review to see if this is needed.	OPEN	Comment still OPEN.	
23	KML	23 00 00 Part 2.16	Power and Gravity Ventilators section does not indicate motor/drive integration with BMS. Consider including integration requirement for fans equipped with variable frequency drives (status, speed, alarms, etc.).	Will review to see if this is needed.	OPEN	Comment still OPEN.	
24	KML	23 00 00 Part 2.24	Please confirm if Ductless Cooling Units will have any interface with the BMS (space temperature, unit status, alarms, etc.)	Ductless cooling units will interface with BMS. We will review the specifications to ensure this is indicated.	OPEN	Updated ductless split specifications does not include BMS interface. This is a common gap in coordination. CxA suggest this is clarified.	
25	KML	23 00 00 Part 3.14 & 3.15	Sections appear to be redundant ("Installation of HVAC Rooftop Units" vs. "Installation of Rooftop Air Handling Units")	Will review and revise/remove redundant information.	OPEN	Comment still OPEN.	
26	KML	23 00 00	Sequence of operation not provided for all equipment and systems. To be reviewed once complete.	Sequence of operations are underway.	CLOSED		
26a	WGH	28 00 00 Part 1.3D			OPEN	Related sections include Division 23 "HVAC Instrumentation and Controls. Section 23 00 00 Part 2.29 includes Automatic Temperature Controls. CxA suggests these sections be coordinated for clarity.	
<b>DIVISION 26</b>							
27	JAH	260000	Section 1.2 C: A reference is made to spec 012300. This spec did not appear to be included with the design package. Please review and reconcile	Division 012300 is typically for alternates. We will review and edit as required.	OPEN	To be verified as design progresses	



Item	Initials	Reference	100% DD Comments	100% DD Response	Action	60% CD Comments	60% CD Response
28	JAH	260000	Section 1.3.B: Suggest adding text....."Provide all necessary coordination with other trades and the architect."	Done	CLOSED		
29	JAH	260000	Section 1.3.B.10: Suggest adding text...."Provide and coordinate required electrical manufacturer's site testing and installation verifications. Identify and coordinate any Factory testing and make provisions for necessary site personnel (e.g., maintenance personnel, client, CX agent, and engineer of record) to attend FAT execution."	Done	CLOSED		
30	JAH	260000	Section 1.3.B.26: Suggest adding text...."Provide all necessary technical and material support for the commissioning of the project's electrical components and systems."	Done	CLOSED		
31	JAH	260000	Sections 1.3.B.25 & 1.7: A reference is made to spec 018113. This spec did not appear to be included with the design package. Please review and reconcile.	We will review this reference and correct as required.	OPEN	To be verified as design progresses	
32	JAH	260000	Section 1.3.B.14: A reference is made to specs 116133, 116191, and 266111. These specs did not appear to be included with the design package. Please review and reconcile.	We will review these references and correct as required.	OPEN	To be verified as design progresses	
33	JAH	260000	Section 1.8: A reference is made to spec 018111. This spec did not appear to be included with the design package. Please review and reconcile.	We will review this reference and correct as required.	OPEN	To be verified as design progresses	
34	JAH	260000	Section 1.3. B. 30: Add line item indicating "...Work required for Lightning protection and building grounding, including grounding tests and lightning protection certification."	Lightning preventor system has been added. The project will not have a lightning protection system.	OPEN	Please clarify what is provided for a Lightning Preventor System - UL master label only refers to Ling Protection sys.	
35	JAH	260000	Section 1.3. B. 20: A reference is made to spec 0150003. This spec did not appear to be included with the design package. Please review and reconcile.	We will review this reference and correct as required.	CLOSED		
36	JAH	260000	Section 1.8: A reference is made to spec 013100. This spec did not appear to be included with the design package. Please review and reconcile.	We will review this reference and correct as required.	OPEN	To be verified as design progresses	
37	JAH	260000	Section 1.13: It is suggested "NETA, National Electrical Testing Association" be added to the list of Codes, Ordinances, and Permits	Done	CLOSED		
38	JAH	260000	Section 1.16. D. It is suggested to add a new item: "...Electrical Contractor is responsible to provide and/or install the correct designated equipment, components, and materials. Submittal approval by the engineer does not relieve the contractor from any contractual requirement to provide a complete and fully working system."	Done	CLOSED		
39	JAH	260000	Section 1.15: A reference is made to spec 013300. This spec did not appear to be included with the design package. Please review and reconcile.	We will review this reference and correct as required.	OPEN	To be verified as design progresses	
40	JAH	260000	Section 1.3 B: It is suggested to add a line item...."Electrical Subcontractor shall conduct a light level review in the field to ensure luminaires and their footcandle readings are in accordance with project criteria and the IESNA."	Done	CLOSED		
41	JAH	260000	Section 1.19. A.: Division number to be provided.	Division number will be coordinated and edited.	OPEN	To be verified as design progresses	
42	JAH	260000	Section 1.20 C: Add text...."Provide and coordinate required electrical manufacturer's site testing and installation verifications. Site testing protocols shall be submitted by the applicable vendor PRIOR to commencement of site tests. All completed site testing is to be properly documented with test reports submitted as a CX pre-requisite. Identify any Factory testing and make provisions for necessary site personnel (e.g., maintenance personnel, client, CX agent, and engineer of record) to attend FAT execution."	Done	CLOSED		
43	JAH	260000	Section 1.20. D: At add item...."Provide all necessary technical and material support for the commissioning of the project's electrical components and systems. After establishing a general project schedule, add pertinent details of the commissioning workplan, incorporating necessary CX predecessors, successors, and durations. Obtain/secure/submit all required documentation necessary for CX to commence."	Done	CLOSED		

Item	Initials	Reference	100% DD Comments	100% DD Response	Action	60% CD Comments	60% CD Response
44	JAH	260000	Section 1.23: A reference is made to spec 017700. This spec did not appear to be included with the design package. Please review and reconcile.	We will review this reference and correct as required.	OPEN	To be verified as design progresses	
45	JAH	260000	Section 2.24: Suggest label indicate "Lightning Protection System", not "Lightning Preventer System"	A lightning protection system will not be provided. The project will include a lightning preventor system. No change necessary.	OPEN	Please clarify what is provided for a Lightning Preventor System - UL master label only refers to Lng Protection sys.	
46	JAH	260000	Section 3.4: Add text or additional item: "Ensure that equipment nameplate include date of manufacture."	Done	CLOSED		
47	JAH	260000	Section 3.16.H: Clarify/describe NFPA 110 testing requirements for the generator	This is described in Part 2 of the specifications.	OPEN	To be verified as design progresses	
48	JAH	260000	Suggest that all control points/alarms that are to be indicated at the BMS system, which are derived from the generator, generator annunciator, and ATS switches be identified.	Done	CLOSED		
49	JAH	260000	Section 3.16.H: Add requirement and references for NFPA 3 & 4 testing (Integrated Life Safety tests)	We will review these standards further before editing the specifications.	OPEN	To be verified as design progresses	
50	JAH	260000	Suggest that all control points/alarms that are to be indicated at the BMS system which are derived from the FACP be identified, required.	This will be identified in the ATC control drawings point list if required.	OPEN	To be verified as design progresses	
51	JAH	260000	Add requirement for electrical subcontractor to provide "in process" panel schedule sheet while loads are being connected. Electrical subcontractor to review phase loading at panelboards at the end of work and prior to closeout to ensure balanced loading. Provide a final typed panel schedule at completion of work.	Done	CLOSED		
52	JAH	260000	Add requirement for Arc Flash study to provide required PPE/Arc Flash equipment ID labels.	Already included in 3.17, we will add to this section to provide more detail.	CLOSED		
53	JAH	260000	Add requirement for "ring out" of all starters, controllers, circuits and sensors in coordination with BMS checkout to ensure all components properly connected and operable.	Requirement will be added.	OPEN	To be verified as design progresses	
54	JAH	260000	It is suggested to add text to distribution gear nameplates (panels, switchboards, ATS units, etc.) to provide info of the gear/branch circuit that supplies it and/or which it powers. In addition, the distribution gear nameplates shall identify the year of their manufacture (required for future life cycle reviews)	Done	CLOSED		
55	JAH	260000	It is suggested to add text to the wiring device nameplates to include info of the panel/branch circuit that supplies it.	Done	CLOSED		

**Drawings**  
Architectural

56	JRC	A-104	As the documents continue through the CD phase please consider the layout of the roof drains, high and low points of the roof, as they relate to the roof skylights. The high points and framing for the skylights will have an impact on the roof sill condition and the method of waterproofing / flashing, as well as the unusual connection at the ends of the skylights	The major roof drainage strategy will be shown in the 100% DD set	OPEN		
57	JRC	General Exterior Comment	As the documents continue through the CD phase please consider the number of differing plan and vertical details that there are a number of air barrier details required for the maintenance of air, thermal and water separation, and proper detailing must support what appears to be a Rain Screen application with the phenolic panels. (Sheet A-501)	JLA agrees with comment. The brick and phenolic panel systems are open joint systems.	OPEN		
58	JRC	General Exterior Comment	It is recognized that the Design Development sections noted are raw out from the building model. As the documents continue through the CD phase please consider the need for integration and coordination of exterior elements and structural framing. In these cases tolerances of material and construction are often overlooked.	JLA agrees with the comment.	OPEN		
59	JRC	A-211/A213	A number of elevations indicate phenolic panels with aluminum curtainwall on either or both sides. Consider how the connection is designed for maintaining the air barrier and how the glass panel may be removed in the event of breakage.	The curtain wall utilizes a pressure plate which will facilitate any necessary glass replacement. The phenolic panels will not be set into the glazing pocket.	OPEN		
60	JRC	A-211/A212	A number of elevations indicate phenolic panels with face brick panels on either or both sides. Consider how the connection is designed for maintaining the air barrier.	The AVB will always run continuous behind the systems. There will be no break or transition in the AVB where the veneer material changes from brick to panel.	OPEN		

Item	Initials	Reference	100% DD Comments	100% DD Response	Action	60% CD Comments	60% CD Response
61	JRC	A-211/A212	Brick panels, suggest study on BEJ (Brick Expansion Joint) and position of random pattern brick joints as well as masonry openings and their associated lintel design. As the design continues - please consider the offset configuration of the sun shade framing indicated on several of the elevations. The curtainwall specified may not be able to achieve the offset positioning as have been indicated. Primary issue will be structural loading on the horizontal mullions as well as the potential interference with the specified weep designation for each glass panel.	Generally where the brick rises more than one story there will be a continuous relieving angle bracketed from the floor edge. Localized loose lintels will be employed as necessary.	OPEN		
62	JRC	A-213	As the design continues - please consider the offset configuration of the sun shade framing indicated on several of the elevations. The curtainwall specified may not be able to achieve the offset positioning as have been indicated. Primary issue will be structural loading on the horizontal mullions as well as the potential interference with the specified weep designation for each glass panel.	It is anticipated that the horizontal will be structural in this configuration. Openings are being adjusted accordingly. This will maintain the integrity of the separate panels to allow for zone drainage. The current design is under review by manufacturers.	OPEN		
63	JRC	A-214	As the design continues - please consider the location of the horizontal masonry joint and its final location. Confirm that the expansion or contraction limits are maintained.	Refer to item 61. The only locations where veneer will bear directly from foundation to roof are at the auditorium and gymnasium.	OPEN		
64	JRC	A-215 - A.217	Please see comments noted above as similar.	Refer to responses above.	OPEN		
65	JRC	A-311-A-320	The following comments apply generally to all wall sections. Please consider these as suggestions as the construction document phase continues.	Refer to responses above.	OPEN		
66	JRC	A Series	Typical head and sill details at curtainwall - consider minimizing potential thermal bridging with structural slab.	Thermal bridging will be considered.	OPEN		
67	JRC	A Series	Typical head and sill details at curtainwall - consider the method of flashing and how potential movement may impact it.	Flashing and movement will be considered. As details develop J.A. would be pleased to do a sit down review of BEX comments.	OPEN		
68	JRC	A Series	Typical brick details - the specifications call for special shapes. As the design continues note that the potential cost and detail consideration increases with the number of special shapes intended for the project.	Specials will be detailed as required to meet the design intent.	CLOSED		
69	JRC	A Series	Roof/ parapet details - provide the masonry walls to expand, minimizing potential water infiltration.	Details will be provided for review.	CLOSED		
70	JRC	A Series	Typical air barrier details - primarily at the intersection of differing materials. Allow for thermal expansion and movement.	Details will be provided for review.	OPEN		
71	JRC	A Series	Glazing at offset panels - Standard frames as specified may not achieve the required thermal barrier and subject the framing to condensation, sections 2 and 3 on sheet A318	J.A. to review. The intent here is not clear to the reviewer due to incomplete drafting.	OPEN		
72	JRC	A Series	Exterior sun shade details - as they develop please consider the limitations on weight and wind loading that could contribute to the limits of the aluminum curtainwall system. In addition, the connections for the sun shades could impact thermal separation, (bridging), and failure of the air barrier cavity seals at the line of insulation.	J.A. understands comment.	OPEN		
73	JRC	A Series	Details for skylight will be reviewed with next package. Several items to consider are the thermal barrier between the framing and roof deck as well as the height of the skylight curb, primarily for winter snow depth and potential water infiltration.	Skylight details are under development. A section at the curb will be provided for review by the commissioning agent.	CLOSED		
73a	PW	A104				As the design process continues, be sure proper drainage of all roof areas is provided including bays, projections, stairwells, etc. (ie. no drainage shown at the bay along the south elevation between S2 and S3.)	
73b	PW	dwg 1/A314				At the interface of the roof assembly and the exterior wall, be sure to provide continuity of the air barrier from the wall to the roof. Discontinuities of the air barrier provide pathways for air exfiltration and air infiltration and the large volumes of moisture vapor that travel in them. This moisture vapor can condense on cold surfaces creating moisture problems.	
73c	PW					As brick and concrete masonry units are porous and absorb water, be sure to provide expansion joints vertically and horizontally to accommodate expansion/contraction due to moisture absorption. Frequency of expansion joints can be found in The Brick Industry Association and The International Masonry Institute.	
73d	PW	dwg 4/A322				As the design proceeds, be sure to include proper drainage of the wall cavity at the cavity's bottom.	

Item	Initials	Reference	100% DD Comments	100% DD Response	Action	60% CD Comments	60% CD Response
73e	PW	dwg 4/A322				Consider including ventilation openings in the mortar joints at the top of the typical wall cavity (for brick and concrete masonry unit walls) for enhanced ventilation and drying out of the wall cavity and exterior masonry cladding. This will also reduce the risk of inward driven moisture vapor drive.	
73f	PW	dwg 1.2/A316				As the design progresses, be sure to seal the air barrier when penetrated by the canopy/sunshade structures.	
73g	PW	A501				Confirm R-value project requirements can be met with continuous insulation within the wall cavity. (Confirm insulation is not needed within the typical stud cavity)	
73h	PW	dwg 10/A501				Due to the open joint configuration of the composite metal panel cladding, drainage of the wall cavity should be carefully considered. The horizontal configuration of the Z-furring supporting the composite metal panels will impede good drainage of the cavity. Consider orienting the Z-furring vertically if possible.	
73i	PW	dwg 9/A501				Similar to comment on 10/A501	
73j	PW	dwg 2/A501				We recommend a soft joint between the underside of the relieving angle and the brick/CMU below to allow for expansion due to moisture absorption.	
73k	PW	dwg 5/A540				Consider including an enlarged detail describing the flashing, counterflashing and roof flashing termination in greater detail.	
73l	PW	dwg 5/A540				Will the skylights have gutters to capture condensations?	
<b>Plumbing</b>							
74	WGH	P.02	Schematic H.W. Heater / Storage Tank Piping Detail 1 includes a hot water return recirculation pump connected to the BMS for the potable domestic hot water system. Non-Potable Water Heater Piping Detail includes a hot water return recirculation pump controlled by a (7) programmable time clock. Is this recirc pump and time clock connected to the BMS?	Detail to be revised with circ pump connected to BMS.	OPEN	This schematic has been relocated to sheet P001. The control notes call for the water heater controller to interface with the BMS. DD response notes circ pump to connect to BMS. Please clarify.	
75	WGH	P.02	Detail 7 calls for an oil minder control panel. Does this control panel integrate with the BMS? The specified unit includes this option.	Yes. Will connect panel to BMS.	OPEN	Sump detail appears removed from detail sheets. Is this still in scope?	
76	WGH	P.02	Detail 7 shows a single float switch. The specifications indicates a stainless steel probe. The specified unit includes additional floats and sensors. Cx suggest coordinating the detail and specifications.	Agree Will coordinate and update detail.	OPEN	Sump detail appears removed from detail sheets. Is this still in scope?	
<b>Mechanical</b>							
77	KML	General	Drawing set does not include a symbol/abbreviation legend.	Symbol/abbreviation legend is included on drawing M302.	OPEN	CXA suggest alphabetizing the abbreviations list.	
78	KML	M Series	All terminal heating/cooling equipment locations not yet indicated. Several occupied spaces are not outfitted with ventilation or tempering.	Terminal equipment locations will be indicated.	OPEN	Comment still OPEN.	
79	KML	M Series	Mechanical equipment nomenclature/tags not yet indicated.	Equipment tags/nomenclature will be indicated.	CLOSED		
80	KML	M101A	No exhaust indicated for Recycling/Trash Room 1014.	Exhaust will be indicated	CLOSED		
81	KML	M101A	Kitchen makeup and exhaust air equipment and ductwork not indicated on mechanical floor plans.	Kitchen make up and exhaust equipment and ductwork will be indicated.	OPEN	Comment still OPEN.	
82	KML	M101A	Enlarged Boiler Room Plan appears to indicate the boiler plant is not confined to the designated space (pumps and expansion tank shown in Custodian Toilet 1016).	Boiler room plan has been updated.	CLOSED		
83	KML	M101A-103D	Ductwork plans do not indicate supply/return designations.	Ductwork plans will indicate supply/return designations.	OPEN	Comment still OPEN.	
84	KML	M101A-103D	Ductwork plans do not yet show duct routes and connections to all terminal units.	Duct routes and connections to all terminal units will be indicated.	OPEN	Comment still OPEN.	
85	KML	M101A-103D	Ductwork plans do not indicate min/max airflow values utilized for basis of design and energy modeling.	Ductwork plans will indicate max design airflow values for equipment. The VAV schedule will indicate minimum airflow values.	CLOSED		
86	KML	M201A-203D	Mechanical piping plans do not indicate system or supply/return designations (CHW/SR, HHWS/R).	Piping plans will be updated to indicate supply/return designations.	OPEN	Heating Hot Water piping labels added in places. CXA suggest piping identification be clearly provided with flow arrows.	

Item	Initials	Reference	100% DD Comments	100% DD Response	Action	60% CD Comments	60% CD Response
87	KML	M201A-203D	Mechanical piping plans do not yet show supply and return CHW/HW piping and connections to all terminal units.	Piping plans will be updated to indicate connections to terminal units.	OPEN	Comment still OPEN.	
88	KML	M201A-203D	Mechanical piping plans do not indicate min/max flow rates or differential pressures utilized for basis of design and energy modeling.	Hydronic flow rates of equipment will be indicated in future submissions on the piping plans and schedules.	OPEN	Comment still OPEN.	
89	KML	M201A-203D	Mechanical piping plans do not include roof level and connections to Rooftop Air Handling Units equipped with chilled water and heating hot water coils.	Drawing M104 indicates both ductwork and piping layout at the roof level.	CLOSED		
89a	KML	M104			OPEN	Sheet M104 includes the note "Factory fabricated rooftop plenum curbs to be provided by RTU manufacturer. Typical". This note is at variance with the Rooftop unit / Makeup air unit detail on sheet M304. Refer to comment #93. Please coordinate these sheets.	
					OPEN	Rooftop unit RTU-516 includes supply and return mains dropping into the building within a roof level duct enclosure. CxA suggest roof level duct enclosures be detailed for construction, duct access (if necessary), etc.	
					OPEN	Enlarged Pump House Plan is shown at 1/4" scale. CxA suggest this enlarged plan be increased for better clarity.	
90	KML	M301	RTU schedule notes call for variable frequency drives for energy recovery wheels. Specifications call for fixed plate heat exchangers or enthalpy plate heat exchangers for energy recovery. Please verify what type of energy recovery, if any, is required.	The basis of design rooftop units will be equipped with fixed plate heat exchangers. We will review and revise the RTU schedule notes.	OPEN	Comment still OPEN.	
91	KML	M301	Air-Cooled Liquid Chiller schedule notes call for 30% propylene glycol solution for heating hot water system freeze protection. Please verify if this note is applicable for the chilled water system or should be relocated.	Schedule note has been updated to indicate chilled water.	CLOSED		
92	KML	M301	Equipment schedules in development. To be further reviewed once complete.	Equipment schedules will continue to develop.	OPEN	Comment still OPEN.	
93	KML	M Series	Rooftop Unit Detail/Layout not included. To be reviewed once complete.	Make up air unit detail on drawing M304 will be updated to apply to all rooftop units.	OPEN	This Rooftop unit / Makeup air unit details at variance with the drawing notes on sheet M104. Refer to comment #89a.	
94	KML	M Series	Control diagrams not provided for all equipment and systems. To be reviewed once complete.	Control diagrams will be provided in future submissions.	CLOSED		
95	KML	M Series	Because of the size of the building and the numerous systems, CxA suggest including single line flow diagrams for the mechanical systems including: heating hot water piping systems, chilled water piping systems, condensate piping, and air distribution systems.	Drawing M305 includes flow diagrams for ductwork, heating hot water and chilled water piping systems.	CLOSED		
<b>Electrical</b>							
96	JAH	E001	Suggest modifying "Electrical Symbols" with respect to raceways and panels data - a similar symbol is used for both.	Ok	OPEN	Comment still OPEN.	
97	JAH	E-PH-1	Drawing is not listed on drawing table of contents. In addition, if drawing is to be utilized with or is to complement drawing E003-1, there should be a note or reference between the two.	This is an early bid package not to be issued with final set.	OPEN	Please clarify how dwg will be issued	
98	JAH	E-PH-1 & E002	Drawing E-PH-1 lists two fixtures that do not appear on the lighting fixture drawing (E002) - namely, SL1A & SL2. If these fixture types are correct, and all lighting fixture info is to be found on E002, these fixtures should be added to drawing E002. If incorrect, remove/correct the fixtures on drawing E-PH-1.	E-PH-1 is an early bid package not to be issued with the final set.	OPEN	Please clarify how dwg will be issued	
99	JAH	E-PH-1	Add circuit info for the lights as design is finalized	This has been completed.	CLOSE		
100	JAH	E002	Complete lighting fixture table. Of the dozen or so fixtures utilized on the lighting drawings, the "mgr. column" (2nd from right) and the "schedule column" (farthest right column) do not contain all required references. Also, for many fixtures, a single alpha character is designated for a manufacturer, however, this is at variance with the fixture manufacturer chart.	This will be completed as the drawings develop.	OPEN	To be verified as design progresses	

Item	Initials	Reference	100% DD Comments	100% DD Response	60% CD Comments	60% CD Response
101	JAH	E002	The drawing indicates lighting fixture schedule notes. However, they appear to be a mixed set - some notes are applicable for ALL fixtures yet some are only applicable to just a few fixtures. Please clarify general from specific notes or ADD notes that apply to all utilized fixtures in the appropriate fixture schedule plumbing.	This will be completed as the drawings develop.	OPEN	To be verified as design progresses
102	JAH	E002	Drawing title & contents focus on lighting and lighting fixtures. It is recommended that the ELECTRICAL GENERAL NOTES be moved to a separate drawing.	Ok	OPEN	Comment still OPEN.
103	JAH	E003-1	Add circuit info for the lights as design is finalized	Ok	OPEN	To be verified as design progresses
104	JAH	E003-2	Add circuit info for the lights as design is finalized	Ok	OPEN	To be verified as design progresses
105	JAH	E002-E005 (VP)	Suggest removing north arrow from non-plan drawings	Will remove.	CLOSED	
106	JAH	E101A (typical for all power and lighting plan drawings)	Instead of just showing a north arrow, it is suggested to show a keyplan for these drawings (would apply to mechanical and plumbing drawings, as well).	Ok	CLOSED	
107	JAH	E101A (typical for all power and lighting plan drawings)	Add circuit info for all equipment/lights as design progresses.	Ok	OPEN	To be verified as design progresses
108	JAH	E201A (typical for all power plan drawings)	Identify all components	Ok	CLOSED	
109	JAH	E204ABCD	Note 1 indicates a lightning protection system is shown but drawing does not provide this. Review and reconcile.	We will revise to what will be a lightning preventor system.	OPEN	Please clarify what is provided for a Lightning Preventor System - UL master label only refers to Lrng Protection sys.
110	JAH	E300	Suggest indicating code/manufacturer clearance for electrical equipment on drawing.	Will add to the drawings.	OPEN	To be verified as design progresses
111	JAH	E301	ATS-OC connection to panel EHP3C is not indicated at ATS end. Please add info.	Will correct.	OPEN	Comment still OPEN.
112	JAH	E301	Load Bank not indicated at generator. Please add info.	Ok	OPEN	Comment still OPEN.
113	JAH	E301	MSB connections to panels LP3C, MHP3C, LP3B and at transformers for panels MP3B and MP3C are not indicated at MSB end. Please add info.	Ok	OPEN	Comment still OPEN.
114	JAH	E301	There is an emergency LS panel installed on floors 1 and 2 - suggest adding a similar panel at floor 2	Will review to see if this is needed.	OPEN	To be verified as design progresses
115	JAH	E301 and E302	Panel schedule lists panel 4DP1B - Riser does not. Add panel to riser or remove from schedule? Please reconcile.	Will correct.	CLOSED	
116	JAH	E301 and E302	Verify Main switchboard ID - MSB or MSB-1 ?	MSB, this will be corrected.	OPEN	Comment still OPEN.
117	JAH	E302 +	Need to add several more panel schedules to detail all the panels shown on riser (add add drawings, as required).	Will be added as the drawings progress.	OPEN	To be verified as design progresses
118	JAH	E302 +	Complete panel schedules with circuit numbers, AIC rating, and MLOM/CB indication (add add drawings, as required).	Will be completed as the drawings progress.	OPEN	To be verified as design progresses
119	JAH	E304	Det. 12: Please verify if AHU requires generator to have local EPO	This is a code requirement, we will review with AHJ.	OPEN	To be verified as design progresses
120	JAH	E304	Det. 12: Provide connection detail to load bank at generator.	Will add to the drawings.	OPEN	No change for 60% CD set.
121	JAH	E305	Suggest Automated Lighting Control one-line be presented on a separate drawing for clarity and ease of review	Ok	OPEN	To be verified as design progresses
122	JAH	E400	Suggest Smoke Seq of OPs and fire alarm matrix be moved to a separate drawing for clarity and ease of review	Ok	OPEN	To be verified as design progresses
123	JAH	E401A (typical for all FA plan drawings)	Instead of just showing a north arrow, it is suggested to show a keyplan for these drawings (would apply to mechanical and plumbing drawings, as well).	Ok	CLOSED	

#### **2.1.4 MSBA DD Review and District Response**

The OPM has reviewed the District's response to the MSBA Design Development Comments and confirms that the comments have been addressed with the 60% Construction Documents submission.

Please reference the attached MSBA comments and district response to the Design Development submission.





June 21, 2019

Brian Lynch  
Project Coordinator  
Massachusetts School Building Authority  
40 Broad Street, Fifth Floor  
Boston, Massachusetts 02109

**Re: Fuller Middle School**

**Framingham, Massachusetts**

*District's Response to the Design Development Review Comments*

*SMMA No. 17050*

Dear Brian:

Please find the District's Response to the MSBA's Design Development Review Comments, dated June 7, 2019.

Very truly yours,

**SMMA**



Joel G. Seeley  
Principal

cc: School Building Committee, Jonathan Levi, JLA (MF)

enclosures: District's Response to the Design Development Review Comments

City of Framingham  
Fuller Middle School  
Design Development  
MSBA Review Comment Responses  
6/21/19

**APPENDIX 6A**  
**MODULE 6 – DESIGN DEVELOPMENT REVIEW COMMENTS**

**District:** City of Framingham  
**School:** Fuller Middle School  
**Owner’s Project Manager:** SMMA  
**Designer Firm:** Jonathan Levi Architects  
**Submittal Received Date:** May 17, 2019  
**Review Date:** May 20 – June 7, 2019  
**Reviewed by:** Gienapp Architects, Karl Brown, Kevin Sullivan, Rich Hudson

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**MSBA REVIEW COMMENTS**

**6A.1 Summary Comments**

- *The "Updated Project Budget" provided in the submission uses the PFA estimates rather than the updated reconciled cost estimate; therefore, it does not update the total Project Budget. In response to this review, the OPM should provide an updated Total Project Budget using the current reconciled cost estimate that address the comments in this review. Refer to the comment below in the Scope and Budget section regarding updating the budget.*

Response: The updated Total Project Budget attached.

- *The construction budget is \$77,935,429, and the submission reports the project is currently within the PFA construction budget. . All three estimates: the Designer (Miyakoda), OPM (A.M. Fogarty), and the CMR were originally over budget by at least \$4.7M. The submission indicates that all three parties assembled and reconciled their estimates. All three reconciled estimates are now showing the project on budget. In response to this review, the OPM should describe how the estimates were reconciled and the project was brought within budget, and provide an updated cost estimate reconciliation that address the comments in this review. Also provide an updated MSBA standard Cost Estimate Comparison Form from the MSBA website.*

Response: Three independent Design Development Construction Estimates, prepared by Miyakoda Consulting, A.M. Fogarty, and Consigli Construction Co., Inc., were reconciled with each other through

an intensive series of review meetings with the entire design team, the OPM and the estimators. Each estimate was reviewed against the project scope and Design Development pricing documents. During the process, design elements that were included in the Design Development pricing set that were discretionary and not required to support the educational program or building performance were reviewed and refined. An example of such refinement was to utilize standard HVAC ductwork in lieu of the ring ductwork indicated, which accounted for nearly half the draft estimates overage. The Consigli Final Design Development estimate is the reconciled estimate and the MSBA standard Cost Estimate Comparison Form was included in the Design Development submission.

- *The Project Schedule indicates that Bid Package No. 3 (the main portion of the project) will have the "Notice in the Central Register" (line 146) on November 6, 2019, but the "Trade Contractor Bid Package" (line 147) does not start until November 15, 2019 (10 days later). The "Trade Contractor Bid Package" aligns with the completion of the CDs (both November 15, 2019). It is unclear why the schedule is showing this 10-day difference and what is its purpose. With the response to these comments, indicate if this is intentional, and if so, provide an explanation for why.*

Response: The purpose of advertising the bid in the Central Register prior to the release of the bid documents is to allow the Trade Contractors to anticipate and plan for the bidding period.

**6A.2 OPM Deliverables:** *Unless specifically stated otherwise, the OPM deliverables are included in the submission with no response from MSBA required.*

#### **6A.2.1 Submittal Review & Coordination:**

- Review designer submissions; make recommendations to Owner. Address each of the following items individually, and describe how each was evaluated.
  - *Approve submission; implied, confirm as part of the response to these review comments.*

Response: Section 6A.2.1.1 was inadvertently not included in the Design Development Submission printing. Section 6A.2.1.1 is attached.
- Coordinate design; include written recommendations to the Owner. *The submission does not include a comment regarding coordinating the design and providing written recommendations to the Owner by the OPM for any of the following. With the response to these comments, indicate if the following have been reviewed.*
  - Technical accuracy, coordination & clarity. *Not included.*

- Efficiency & cost effectiveness. *Not included.*
- Operability. *Not included.*
- Constructability. *Not included.*
- Phasing. *Not included.*
- Bid-ability. *Not included.*
- Site access during construction. *Not included.*

Response: Section 6A.2.1.1 was inadvertently not included in the Design Development Submission printing. Section 6A.2.1.1 is attached.

- Coordinate the commissioning consultant's review.
  - Include Cx review & District response. *The commissioning consultant's review is included; however, there are no responses by the District. As part of the response to these review comments, please comment and describe when each of the Cx review comments will be coordinated with the contract documents..*

Response: The response to the Cx comments is attached.

- Incorporate Cx recommendations. *See comment above.*

Response: The Cx recommendations will be incorporated into the 60% Construction Documents submission.

**6A.2.2 Project Schedule:** All schedules should be presented in calendar days.

- Submittal date to MSBA of final reimbursement request. *Included; however, it is set for a date prior to the completion of the commissioning consultant's final evaluation. This should be reviewed and revised in the next submission.*

Response: Will be revised in the next submission.

- Executive Office of Energy and Environmental Affairs / EEA: *The Project Schedule does not comment on these approvals. However, later in the Project Binder, the submission indicates these as not applicable. Clarify as part of the response to these review comments.*
  - MEPA - MA Environmental Policy Act by Energy & Environmental Affairs:
    - ENF - Environmental Notification Form. *See comment above.*  
Response: An ENF is not required.
    - EIR - Environmental Impact Report. *See comment above.*  
Response: An EIR is not required.
  - Article 97 Land Disposition Policy approval by Energy & Environmental Affairs. *See comment above.*

Response: An Article 97 approval is not applicable to this project.

- MA DEP - Massachusetts Department of Environmental Protection. *The Project Schedule does not comment on this approval. However, later in the Project Binder, the submission indicates it as not applicable. Clarify as part of the response to these review comments.*

Response: MA DEP approval is not required.

- MA DOT - Massachusetts Department of Transportation. *The Project Schedule does not comment on this approval. However, later in the Project Binder, the submission indicates it as not applicable. Clarify as part of the response to these review comments.*

Response: MA DOT approval is not required.

- MA DPH - Massachusetts Department of Public Health. *The Project Schedule does not comment on this approval. However, later in the Project Binder, the submission indicates it as not applicable. Clarify as part of the response to these review comments.*

Response: MA DPH approval is not required.

- EPA –NPDES National Pollutant Discharge Elimination System Notice of Intent approval by the US Environmental Protection Agency. *The Project Schedule does not comment on this approval. However, later in the Project Binder, the submission indicates it as not applicable. Clarify as part of the response to these review comments.*

Response: The Construction Manager will be responsible to obtain NPDES approval.

- MAAB - Accessibility variances by MA Architectural Access Board. *The Project Schedule does not comment on this approval. However, later in the Project Binder, the submission indicates it as not applicable. Clarify as part of the response to these review comments.*

Response: There are no MAAB variances required.

### 6A.2.3 Scope and Budget

- Develop project scope and budget:
  - Reconciled construction cost estimate including Designer/OPM comparison chart:
    - Prepare independent construction cost estimates pursuant to Section 8.1.2.2 of the Contract for Project Management Services, with escalation to the mid-point of construction, for comparison with the Designer's cost estimate, based upon design development progress documents. *An estimate for the OPM, by A.M. Fogarty, is included in the submission; however,*

*it appears to have been escalated twice. On the summary sheet, there is a note after "Total Direct Cost" that indicates it has been "estimated to the mid-point of construction". Following this there is another escalation line which is less clear to what point it is escalated. This second line appears to be applied to the direct cost plus contingency but does not include general conditions, general requirements, or any of the other general costs that are incurred by a project. Therefore, it is unclear why there are two escalations and why they are applied in the way they are applied. With the response to these comments, provide an explanation for their purpose. Additionally, the original OPM's estimate is short and may be difficult to compare with the more detailed Designer's estimate. Consider expanding this estimate to make comparison clearer in the next submission.*

Response: Escalation to the mid-point of construction is included in the cost estimate within the rates. Escalation on the summary is to the start of construction.

*Note that the OPM is responsible to reconcile the Designer's and CMR's independent cost estimates, resulting in one reconciled cost estimate amount which is then used for the updated Total Project Budget. Currently, the OPM has only provided the CMR's estimate as the "reconciled" amount. As part of the response to these review comments, confirm this will be done in the 60% and 90% CD submissions.*

Response: The Consigli Final Design Development estimate is the reconciled estimate.

- Updated project budget in the total project budget format, based on the reconciled construction cost estimate. If the reconciled estimate is not used for the updated project budget, provide an explanation. *An updated project budget is included, but it is not on the MSBA Project Budget Template. Provide an updated project budget on the MSBA template form in the response to this review.*

Response: The Consigli Final Design Development estimate is the reconciled estimate and has been included in the updated Project Budget attached.

*Additionally, the updated project budget is based on the PFA construction estimate and not on the reconciled estimate. In the response to this review, the updated project budget should use the reconciled estimate.*

Response: The Consigli Final Design Development estimate is the reconciled estimate and has been included in the updated Project Budget attached.

- Value Engineering recommendations.
  - For any Value Engineering recommendations which have been accepted, provide a copy of the Committee vote. *A copy of the Committee vote on the value engineering recommendations is not included in the submission. This should be provided with the next submission.*

Response: Will be included in the next submission.

**6A.3 Designer Deliverable:** *Unless specifically stated otherwise, the Designer deliverables are included in the submission with no response from MSBA required.*

### 6A.3.1 General Requirements

- Submit updated work plan. *Included; however, it appears it is out of order. 90% and 100% CDs appear before the Design Development Documents. This should be reviewed, corrected, and coordinated in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Provide a list identifying all proposed proprietary items (if any) with an affidavit which shall indicate an elected body of the district (school committee, city or town council, or selectmen, - but not an ad-hoc building committee) has been presented with proposals for proprietary requirements approval action, has had an opportunity to investigate, or to require staff or consultant investigation upon each item so proposed, and has majority voted in an open public session that is in the public interest to do so. Provide MSBA with a certified copy of the vote of the elected body. *The submission lists several items and states "[t]hese will need to be voted on and approved by the SBC", but there is no indication when this might occur. With the responses to these comments, indicate when this vote is anticipated. This anticipated vote date should also be added to the Project Schedule.*

Response: On 6/5/19, the Framingham School Committee voted unanimously to approve the proprietary items noted in the attached 6/3/19 memorandum issued by SMMA.

- Security and visual access requirements:
  - 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. *The submission is very limited when noting alternative entry location information. It appears this was discussed with City Representatives, but there is no information as to whether it includes site and building signage, how responders reach a person in need, or how plans will get to the response agencies. In the next submission, provide additional information.*

Response: Acknowledged and agreed. To be included in the next submission.

- Quality Control documents demonstrating: *The submission comments on the Designer's quality control methodology; however, several of the categories below are not specifically mentioned. With the response to these comments, confirm items noted below as "Not included" have been reviewed for quality control purposes.*
  - Ceiling clearances.
  - Mechanical room and shaft sizes.
  - Coordinate specifications and drawings. *Not included.*
  - Filed sub-bid work. *Not included.*
  - Scheduling. *Not included.*
  - Equipment and power.
  - Existing and new construction. *Not included.*
  - Phasing. *Not included.*

Response: Confirmed. Items noted above as not included, have been reviewed for quality control purposes. With the engagement of Consigli Construction Company as CMR, an additional level of quality control has been initiated through ongoing design and constructability coordination meetings.

### 6A.3.2 Space Summary

*The updated space summary includes yellow highlights and orange highlights. The latter are explained as changes above 5% of the NSF. The former is not explained, and they do not appear to be noting changes. With the response to these comments, indicate what yellow highlighting indicates.*

Response: Yellow highlighting indicates a change from the standard MSBA template. Please see attached updated Space Summary Template.

- Comparison of the current design with the final educational program, and confirmation that there are no variations. If there are variations, the written summary must address the following:
  - Explanation of deviations within the space summary from the Project Funding Agreement. *Explanations of deviations are included and mostly focus on further development of the design. However, some deviations are not explained. For example, the explanation for Art and Music is that it reduced by 35 SF due to "building design effort" then it explains how one room was split in two and two others split into three with no explanation as to why. Prior to MSBA accepting this variation to the project, the Designer must describe in detail the reason for this change.*

Response: At the request of the District, for additional safety, the "Art Workroom w/ storage and kiln" was divided so that the kiln would be isolated in its own room, divided from the workroom by fire rated walls.



The District also requested, for improved flexibility, that the two “Music Practice / Ensemble” rooms at 200 sf each be divided into 3, so that 3 groups of students could practice simultaneously. The existing Fuller School currently has 3 small music practice rooms, and this modification to the space summary would allow the District the freedom to utilize this attribute of their music program. The District also noted that at 200 sf each, the rooms were larger than required for the purpose.

- *Additionally, Dining and Food Service was reduced by 270 SF, bringing the category below guidelines. Prior to accepting this variation to the project, the Designer must describe in detail the reason for this change and also confirm that this change is acceptable to the District.*

Response: This discrepancy was primarily due to an inadvertent misallocation of custodial storage in the “Chair / Table / Equipment Storage” room. This room, as shown in the submitted DD floor plan, has a net floor area of 420 sf, rather than 270 sf. Please see attached updated Space Summary Template.

In addition, based on the conclusions drawn in 2 kitchen meetings during DD, the kitchen reduced in size by 95 sf. The layout as described in drawing FS100 in the DD was reviewed with Framingham’s food service director on April 18, 2019, and it was agreed that the layout, including the size of walk in cooler, freezer, and dry storage work well with District objectives.

- *Also, within the Administration and Guidance category one teacher work room has been eliminated without further explanation. Prior to MSBA accepting this variation to the project, the Designer must describe in detail the reason for this change. This should be addressed with the response to these comments.*

Response: The number of teacher work rooms will remain at 3 as shown in the DD space summary template, with each primarily associated with one of the 3 cohorts. At the request of the District, the 3 workrooms have been reduced in size to allow the addition of a new flexible Office / Conference Room, which can be used for shared collaboration space, which the previous more open design was less suited to.

- *The MSBA will continue to monitor these ineligible square footage amounts through Module 6, and to continue to consider them ineligible at PFA Bid. Please note the following:*

- *The Medical category did not exceed guidelines at the time of PFA (610 nsf); however as outlined above, as part of the DD submission the category has increased by 10 nsf, therefore 10 nsf would now be considered ineligible for reimbursement.*

Response: Understood. The current configuration was developed in coordination with the medical staff at the beginning of DD. JLA will explore the potential to increase efficiency in the next submission.

- *Custodial and Maintenance exceeded guidelines by 35 nsf at PFA, and 35 nsf was considered ineligible. This category has increased by 490 nsf in the DD submission. This additional area will be considered ineligible.*

Response: As noted above, an inadvertent misallocation of custodial storage in the "Chair / Table / Equipment Storage" room reduces this figure by 150 sf, and therefore adds 340 rather than 490 sf of ineligible sf in this category. Please see attached updated Space Summary Template.

- *The Other category exceeded guidelines by 6,700 nsf at PFA, and 6,700 nsf was considered ineligible. This category has increased by 55 nsf in the DD submission. This additional area will be considered ineligible.*

Response: Understood. The current configuration was developed in coordination with the performing arts staff at the beginning of DD. JLA will explore the potential to increase efficiency in the next submission.

- The submittal must clearly call out deviations to location and surrounding adjacencies through the use of redlines or "clouding." *Included on the provided space summary, but not on plans. This should be provided with the response to these comments.*

Response: Please see attached clouded plans.

- The explanation should clearly identify the basis of the change identifying both architectural and/or programmatic reasons. *Not included, see comment above.*

Response: Please see comment responses above.

- If the basis of the change is programmatic, the submittal should include a red-lined version of the educational plan included in the Project Funding Agreement. *Not included, see comment above.*

Response: The basis for changes do not reflect a change to the educational plan.

- Regarding DESE approved SPED spaces; *The submission notes minor changes in classroom and teacher planning size due to further development of the design. As part of the response to these review*

*comments, indicate if all SPED space changes are final. Once finalized, a SPED resubmittal will be required to be submitted to MSBA which will be forwarded to DESE for their review.*

Response: SPED spaces will be adjusted to comply with DESE approved documents in the next submission and shall be final.

- If the District wishes to submit a change to its DESE approved submittal, it must a) confirm that all changes to SPED spaces are final; b) provide a new submittal utilizing the format of the original submittal requirements and clearly noting any changes through use of clouded floor plans and red-lined narratives and tables; and c) indicate how the project schedule can accommodate a potential resubmittal and approval by DESE. Please provide a separate package for changes to DESE approved SPED spaces. *See comment above.*

Response: SPED spaces will be adjusted to comply with DESE approved documents in the next submission. No resubmission to DESE is anticipated to be required.

- If the District chooses not to change from the DESE approved submittal it should confirm that the spaces are the same or explain when and how the spaces will be returned to the approved size, configuration and location. *See comment above.*

Response: The very minor changes in classroom and teacher planning size can be altered by adjusting wall locations by a few inches.

### **6A.3.3 Project Approvals**

- Provide a certification that all applicable utility officials have been contacted by the designer regarding each basic design, and utility connections. *Certification that many of the utility companies have been contacted is included in the submission, but it does not appear to include water or sewer utilities. With the response to these comments, indicate if these utilities have been contacted.*

Response: Water and Sewer utilities (Framingham DPW) have been contacted as part of the successful Planning Board Approval. See attached letter from Framingham DPW dated 4/30/19.

### **6A.3.5 Drawings** (developed to Design Development progress level)

- Cover sheet showing a list of all drawings, symbols, abbreviations, notes, locations map (the project title should be visible when the drawings are rolled). *The list of drawings, the symbols, and abbreviations are not on the cover sheet. Consider adding to the next submission for clarity.*

Response: Acknowledged and agreed. To be included in the next submission.

- Site and utility drawings showing the following:
  - Building locations fixed and referenced from main survey baseline, if available. *The building location is not fixed to the survey. Please include in the next submission.*  
Response: Acknowledged and agreed. To be included in the next submission.
- Architectural drawings showing the following:
  - Demolition drawings and temporary work required. *Demolition drawings are not included. Please include them in the next submission.*  
Response: Acknowledged and agreed. To be included in the next submission.
  - Building perimeter with exterior wall thicknesses and overall dimensions. *Overall dimensions are not included. Provide overall dimensions and angles to ensure accurate layout the building in the next submission.*  
Response: Acknowledged and agreed. To be included in the next submission.
  - Internal partitions; appropriate thicknesses and dimensions to fix basic organizations; indicate fire rated partitions and smoke partitions. *Dimensions are not included to locate basic organizations. Please include dimensions in the next submission.*  
Response: Acknowledged and agreed. To be included in the next submission.
  - Finish floor elevations coordinated with exterior grade elevations at all interior exterior transitions. *The finish floor elevations are not coordinated with the exterior grades at the interior exterior transitions. Please include in the next submission.*  
Response: Acknowledged and agreed. To be included in the next submission.
  - Modular 4", 8", or 1' unit modular dimensions on Masonry. *Since there are no dimensions, it cannot be determined whether the overall dimensions are based on modular dimensions. Please include dimensions in the next submission.*  
Response: Acknowledged and agreed. To be included in the next submission.
- Building elevations showing the following:
  - Floor elevations, floor-to-floor height, and overall height related to benchmarks on site plans. *The overall heights related to grades are not included. Please include them in the next submission.*  
Response: Acknowledged and agreed. To be included in the next submission.
  - Materials indicating major control and expansion joints, and divisions of materials where required. *Expansion joints not included, and should be added in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Louver locations coordinated between building elevations, floor plans, mechanical equipment, project manual etc. *There are no louvers, including in the interior boiler room. Verify that makeup air for boilers and water heaters is provided in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Full height wall sections for main elevations and at special conditions. Show foundation and perimeter treatment, wall construction including insulation and supporting structure, fenestration and mechanical penetrations, and floor construction. *The wall sections are only minimally developed. Please develop the wall sections and detail references for the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Reflected ceiling plans: Show prototypical structural, fire protection, mechanical and electrical information for classrooms and major spaces, including lighting layouts with ceiling height and material changes. *The ceiling heights, fire protection, and mechanical information are not included in the reflected ceiling plans. Please include this information in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Structural Concepts:
  - All columns and beams are identified and listed in the column and beam schedule. *A beam schedule is not included. Consider including one in the next submission for clarity.*

Response: Acknowledged and agreed. To be included in the next submission.

- Details for special and/or incidental structural features; e.g. tunnels, connecting bridges and unique architectural features. *Special details for the canopy and the bridge have not been included. Please include them for the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- All construction joint and expansion joint locations coordinated with structural drawings. *An expansion joint detail has not been included. If applicable, please include one in the next submission.*

Response: Acknowledged and agreed. To be verified and included in the next submission if applicable.

- Fire protection; floor plans indicating wet or dry type systems, hose racks, or cabinets and fire department tie-ins. Indicate a fire pump where required. Show typical sprinkler head layout. *The sprinkler head layouts are not included. Please include them in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Heating, Ventilating and Air Conditioning Systems:
  - Adequate ceiling heights exists at worst-case duct intersection. *Based on the information shown in the submission, verifying adequate space for overlapping ducts could not be performed. There are no ceiling heights on the reflected ceiling plans or the interior elevations. The building sections are cut at locations where the ceilings are tight to the underside of the floor above. The documents should be developed further in the next submission including this information so this can be determined and confirmed.*

Response: Acknowledged and agreed. To be included in the next submission.

- Ceiling diffusers/registers match mechanical drawings, including all soffit and vent locations.
- Electrical Systems:
  - All power equipment has electrical connections. *The boilers, pumps and water heaters are not shown connected on the plans. Please show this in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

#### 6A.3.5.1 Project Coordination

- Structural dimensions match Architectural drawings. *There are no dimensions on either the structural or architectural drawings. Please provide information necessary to confirm coordination of this in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Column locations coordinated with all other disciplines. *The columns do not appear clearly on any of the other disciplines. Please include the column locations in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Seismic detailing coordinates with Architectural drawings. *The seismic detailing does not appear to be coordinated with the Architectural drawings. The following are a few examples; this list is not all inclusive. All locations should be reviewed and corrected in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- *On sheet S201, Elevation 4, there is a conflict with a door on the third floor.*
- *In Elevation 7, the framing cannot be located. Column line BF8 may be missing from the plans.*
- *In Elevations 8, 10, and 11, the bracing shares partitions with folding partition spaces.*

## Appendices

- *On sheet S202, Elevation 3, there is a conflict with a door on the second floor.*
- *On elevation 4, there is a conflict with a door on the third floor.*
- *On elevations 8, 9, and 10, the bracing shares partitions with the spaces for folding partitions.*
- *On Elevation 9, there is a conflict with a door on the first floor.*
- *The finish grade elevations coordinated between all disciplines. The finish grade elevations do not appear to be coordinated. Please coordinate finish grades with structural and architectural drawings.*

Response: Acknowledged and agreed. To be included in the next submission.

- *All room numbers are coordinated between all disciplines. There are no room numbers on the fire protection plans. Please include them in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- *Equipment plan coordinates with architectural plans. The kitchen plans and the architectural plans differ from the equipment plan along column line S6. Please coordinate in the next submission.*

Response: Acknowledged and agreed. To be coordinated in the next submission.

- *All kitchen equipment connected to utility systems. The kitchen equipment is not connected to the plumbing, sanitary or gas lines. Please show them connected in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

### **6A.3.6 Project Manual** (developed to Design Development progress level)

- *Outline Specifications in the current version of CSI Master spec divisions including: The submitted specification is a 3-part CSI specification rather than the required outline specification. Consequently, some of the comments below are related to the full specification, as presented, and may address a level of detail beyond what is normally considered design development topics. Consequently, the presentation of information does not correlate to the outline below.*
- *Sheet metal; gutters, leaders, others uses, except flashing. It is not clear if the project includes gutters and leaders. The Project Manual mentions leaders and gutter supports in Section 05 5000, but only in a very general sense, and may have been a left over from a previous project. The drawings are not developed sufficiently to confirm if they are included in the project. If used, both should be better identified and specified in the next submission. Clarify this in the response to these review comments.*

Response: All typical roof drainage will be handled with internal drain lines, however there are some localized conditions, such as at stair to

the roof, where it may be most appropriate to use leaders and gutters. This will be clarified in the next submission.

- Windows; general types, materials, sub-frames, finish, glazing, screens. *Section 08 44 13 Glazed Aluminum Curtain Walls refers to Section 08 51 13 Aluminum Windows; however, this section is not included in the Project Manual and is also not included in the Table of Contents. This should be reviewed and coordinated in the next submission.*

Response: Acknowledged and agreed. To be coordinated in the next submission.

- Doors, exterior and interior; types and thicknesses and fire rating identified if applicable. *Section 08 11 13 Hollow Metal Doors and Frames is full of colored text as if in process of editing. This should be reviewed and corrected in the next submission.*

Response: Acknowledged and agreed. To be coordinated in the next submission.

- Interior finishes; materials for floors, walls, bases, wainscots, trim, ceilings, ceiling heights. *Specific colors and types are not indicated in the various finish sections. This should be reviewed and provided in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Electric work; service connection, location, institution or public utility, overhead or underground, transformers including type and location, types of conduit and wiring, types of fixtures, location of main switchboard, radio, fire alarm, telephone, public address, emergency lighting and wiring, emergency or other generators, special features, including Master TV, information retrieval and/or data processing system. *Several of these items are not included, for example: the service connection for electrical is not mentioned; the transformer locations are not indicated; and the location of main switchboard is not indicated. This should be reviewed and indicated in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Other built-in equipment, types and materials. *Built-in equipment does not appear to be included in the Project Manual. This should be reviewed and, if applicable, included in the next submission.*

Response: Acknowledged and agreed. To be included in the next submission.

- Special features. *None provided. Due to the design of the project, this should be reviewed and corrected, if needed.*

Response: Acknowledged and agreed. To be included in the next submission if applicable.



Total Project Budget

City of Framingham  
Fuller Middle School  
Updated for Design Development Cost Estimate

School Building Committee Reviewed on:

8/27/2018

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 <sup>1</sup>	Estimated Maximum Total Facilities Grant <sup>1</sup>
<b>Feasibility Study Agreement</b>				
OPM Feasibility Study	\$175,000	\$0	\$175,000	
A&E Feasibility Study	\$545,000	\$0	\$545,000	
Environmental & Site	\$145,000	\$0	\$145,000	
Other	\$135,000	\$0	\$135,000	
<b>Feasibility Study Agreement Subtotal</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$1,000,000</b>	<b>\$623,100</b>
<b>Administration</b>				
Legal Fees	\$80,000	\$80,000	\$0	\$0
<b>Owner's Project Manager</b>				
Design Development	\$175,445	\$280,118	-\$104,673	
Construction Contract Documents	\$242,886	\$0	\$242,886	
Bidding	\$115,789	\$0	\$115,789	
Construction Contract Administration	\$1,727,876	\$0	\$1,727,876	
Closeout	\$95,905	\$0	\$95,905	
Extra Services	\$40,000	\$0	\$40,000	
Reimbursable & Other Services	\$40,000	\$0	\$40,000	
Cost Estimates	\$80,000	\$0	\$80,000	
Advertising	\$20,000	\$0	\$20,000	
Permitting	\$50,000	\$0	\$50,000	
Owner's Insurance	\$120,000	\$0	\$120,000	
Other Administrative Costs	\$100,000	\$0	\$100,000	
<b>Administration Subtotal</b>	<b>\$2,887,901</b>	<b>\$360,118</b>	<b>\$2,527,783</b>	<b>\$1,575,061</b>
<b>Architecture and Engineering</b>				
<b>Basic Services</b>				
Design Development	\$2,059,998	\$819,669	\$1,240,329	
Construction Contract Documents	\$2,746,664	\$0	\$2,746,664	
Bidding	\$137,334	\$0	\$137,334	
Construction Contract Administration	\$1,833,398	\$0	\$1,833,398	
Closeout	\$89,265	\$0	\$89,265	
Other Basic Services	\$0	\$0	\$0	
<b>Basic Services Subtotal</b>	<b>\$6,866,659</b>	<b>\$819,669</b>	<b>\$6,046,990</b>	
<b>Reimbursable Services</b>				
Construction Testing	\$30,000	\$0	\$30,000	
Printing (over minimum)	\$20,000	\$0	\$20,000	
Other Reimbursable Costs	\$180,000	\$0	\$180,000	
Hazardous Materials	\$170,984	\$0	\$170,984	
Geotechnical & Geo-Environmental	\$155,925	\$0	\$155,925	
Site Survey	\$44,000	\$0	\$44,000	
Wetlands	\$44,000	\$0	\$44,000	
Traffic Studies	\$38,500	\$0	\$38,500	
<b>Architectural/Engineering Subtotal</b>	<b>\$7,550,068</b>	<b>\$819,669</b>	<b>\$6,730,399</b>	<b>\$4,193,712</b>
<b>CM at Risk Preconstruction Services</b>				
Pre-Construction Services	\$400,000	\$0	\$400,000	\$249,240
<b>Site Acquisition</b>				
Land / Building Purchase	\$0	\$0	\$0	
Appraisal Fees	\$0	\$0	\$0	
Recording fees	\$0	\$0	\$0	
<b>Site Acquisition Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

Total Project Budget

City of Framingham  
Fuller Middle School  
Updated for Design Development Cost Estimate

School Building Committee Reviewed on:

8/27/2018

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 <sup>1</sup>	Estimated Maximum Total Facilities Grant <sup>1</sup>
<b>Construction Costs</b>				
<b>SUBSTRUCTURE</b>				
Foundations	\$3,128,871	\$0		
Basement Construction	\$0	\$0		
<b>SHELL</b>				
SuperStructure	\$5,462,233	\$0		
Exterior Closure	\$0	\$0		
Exterior Walls	\$4,410,611	\$0		
Exterior Windows	\$2,162,880	\$0		
Exterior Doors	\$141,120	\$0		
Roofing	\$2,081,748	\$0		
<b>INTERIORS</b>				
Interior Construction	\$5,667,823	\$0		
Staircases	\$517,094	\$0		
Interior Finishes	\$4,497,421	\$0		
<b>SERVICES</b>				
Conveying Systems	\$220,450	\$0		
Plumbing	\$1,923,288	\$0		
HVAC	\$8,143,186	\$0		
Fire Protection	\$788,684	\$0		
Electrical	\$5,149,789	\$0		
<b>EQUIPMENT &amp; FURNISHINGS</b>				
Equipment	\$1,638,726	\$0		
Furnishings	\$1,656,900	\$0		
<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>				
Special Construction	\$0	\$0		
Existing Building Demolition	\$1,465,500	\$0		
In-Building Hazardous Material Abatement	\$857,780			
Asbestos Containing Floor Material Abatement	\$388,800	\$388,800		
Other Hazardous Material Abatement	\$0	\$0		
<b>BUILDING SITEWORK</b>				
Site Preparation	\$3,758,369	\$5,097,393		
Site Improvements	\$3,497,366	\$0		
Site Civil / Mechanical Utilities	\$822,705	\$0		
Site Electrical Utilities	\$826,219	\$0		
Other Site Construction	\$0	\$0		
Scope Excluded Site Cost		\$0		
<b>Construction Trades Subtotal</b>	<b>\$59,207,563</b>	<b>\$5,486,193</b>		
Contingencies (Design and Pricing)	\$4,144,529	\$384,033		
General Conditions	\$3,988,224	\$369,550		
General Requirements	\$2,936,369	\$272,085		
Insurance	\$895,218	\$82,951		
Bonds	\$1,265,706	\$117,281		
GMP Fee	\$1,560,000	\$144,550		
not used		\$0		
GMP Contingency	\$1,652,039	\$153,078		
Escalation to Mid-Point of Construction	\$1,900,563	\$176,107		
Ineligible Auditorium & PE Areas beyond Guidelines		\$6,998,738		
Overall Excluded Construction Cost		\$15,723,250		
<b>Construction Budget</b>	<b>\$77,550,211</b>	<b>\$29,907,817</b>	<b>\$47,642,394</b>	<b>\$29,685,976</b>
<b>Alternates</b>				
Alternates	\$0		\$0	
Alternates Included in the Total Project Budget	\$0	\$0	\$0	
Alternates Excluded from the Total Project Budget	\$0		\$0	
<b>Subtotal to be Included in Total Project Budget</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Miscellaneous Project Costs</b>				
Utility Company Fees	\$280,000	\$0	\$280,000	
Testing Services	\$300,000	\$0	\$300,000	
Swing Space / Modulars	\$0	\$0	\$0	
Other Project Costs (Mailing & Moving)	\$200,000	\$200,000	\$0	
<b>Misc. Project Costs Subtotal</b>	<b>\$780,000</b>	<b>\$200,000</b>	<b>\$580,000</b>	<b>\$361,398</b>
<b>Furnishings and Equipment</b>				
Furniture, Fixtures, and Equipment	\$1,134,000	\$378,000	\$756,000	
Technology	\$1,134,000	\$378,000	\$756,000	
<b>FF&amp;E Subtotal</b>	<b>\$2,268,000</b>	<b>\$756,000</b>	<b>\$1,512,000</b>	<b>\$942,127</b>
Soft Costs that exceed 20% of Construction Cost		\$0		

**Total Project Budget**

**City of Framingham  
Fuller Middle School  
Updated for Design Development Cost Estimate**

**School Building Committee Reviewed on: 8/27/2018**

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 <sup>1</sup>	Estimated Maximum Total Facilities Grant <sup>1</sup>
<b>Project Budget</b>	<b>\$92,436,180</b>	<b>\$32,043,604</b>	<b>\$60,392,576</b>	<b>\$37,630,614</b>

<b>Board Authorization</b>	
Design Enrollment	630
Total Building Gross Floor Area (GSF)	136,790
Total Project Budget (excluding Contingencies)	\$92,436,180
Scope Items Excluded or Otherwise Ineligible	\$32,043,604
Third Party Funding (Ineligible)	\$0
Estimated Basis of Maximum Total Facilities Grant <sup>1</sup>	\$60,392,576
Reimbursement Rate <sup>3,4</sup>	62.31%
Est. Max. Total Facilities Grant (before recovery) <sup>1</sup>	\$37,630,614
Cost Recovery <sup>5</sup>	\$11,858
Estimated Maximum Total Facilities Grant <sup>1</sup>	\$37,618,756

57.83 Reimbursement Rate Before Incentive Points  
4.48 Total Incentive Points<sup>3,4</sup>  
62.31% MSBA Reimbursement Rate

**NOTES**  
This template was prepared by the MSBA as a tool to assist Districts and consultants in understanding MSBA policies and practices regarding potential impact on the MSBA's calculation of a potential Basis of Total Facilities Grant and potential Total Maximum Facilities Grant. This template does not contain a final, exhaustive list of all evaluations which the MSBA may use in determining whether items are eligible for reimbursement by the MSBA. The MSBA will perform an independent analysis based on a review of information and estimates provided by the District for the proposed school project that may or may not agree with the estimates generated by the District using this template.

Construction Contingency <sup>2</sup>	\$4,281,989
Ineligible Construction Contingency <sup>2</sup>	\$3,506,487
"Potentially Eligible" Construction Contingency <sup>2</sup>	\$775,502
Owner's Contingency <sup>2</sup>	\$1,558,709
Ineligible Owner's Contingency <sup>2</sup>	\$0
"Potentially Eligible" Owner's Contingency <sup>2</sup>	\$1,558,709
Total Potentially Eligible Contingency <sup>2</sup>	\$2,334,211
Reimbursement Rate <sup>3,4</sup>	62.31%
Potential Additional Contingency Grant Funds <sup>2</sup>	\$1,454,447
Maximum Total Facilities Grant	\$39,073,203
Total Project Budget	\$98,276,878

1. Does not include any potentially eligible contingency funds and is subject to review and audit by the MSBA.  
2. The proposed demolition of the \_\_\_\_\_ School is expected to result in the MSBA recovering a portion of state funds previously paid to the District for the \_\_\_\_\_ project at the existing facilities completed in \_\_\_\_\_. The MSBA will perform an independent analysis based on a review of information and estimates provided by the District for the proposed school project that may or may not agree with the estimated cost recovery generated by the District and its consultants using this template.  
3. 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.

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.

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\_\_\_\_\_  
By:  
Title: Chair of School Building Committee

\_\_\_\_\_  
By:  
Title: Chief Executive Officer  
  
Date: \_\_\_\_\_

\_\_\_\_\_  
By:  
Title: Superintendent of Schools  
  
Date: \_\_\_\_\_

\_\_\_\_\_  
By:  
Title: Chair of School Committee  
  
Date: \_\_\_\_\_

P:\2017\17050\03-DESIGN\3.4 Submissions\3-SD Submission\Total Project Cost Templates\for 8-27-18 SBC Meeting\Total Project Budget - Schematic Design Submission-updated 10-5-18 per F. Bradley comments-w\Alternate-DD.xls

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#### **6.A.2.1.1 & 6.A.2.1.2 SUBMITTAL REVIEW AND COORDINATION**

The OPM has reviewed the Designer's Design Development Submission and recommends the Owner approve the submission.

#### **OPM REVIEW**

The OPM performed a review of the Progress Design Development documents, dated April 8, 2019 for the drawings and April 12, 2019 for the specifications. The OPM comments are documented in the OPM Design Review, dated April 26, 2019 and appended to the end of this section.

- 1. Technical Accuracy** – The design documents at this Design Development Phase contain the typically expected level of technical accuracy, coordination and clarity. Areas of the building are laid out in plan, elevation, and section, and are generally consistent with the space summary and design requirements of the MSBA and DESE. The Design Development drawing set for this project reflects the complexities of the project design, systems and site constraints.
- 2. Efficiency and Cost Effectiveness** – The project as designed represents a very efficient and compact floor plan that allows the existing building to remain operational for the duration of construction. The location of the mechanical room and electrical room maximizes the efficiency of the system, while also allowing for an efficient piping distribution. The building layout is a cost-effective solution. The materials and equipment included in the design represent generally accepted materials for school construction projects. The District's Facilities Staff has participated in the material and equipment selections.
- 3. Operability** – The project is designed for ease of operation. The location of support spaces are within appropriate distances to the spaces they serve. Access to equipment for preventative maintenance is thoughtful. Lastly, the segregation of the public spaces from the instructional spaces, facilitates community use in an efficient and easily maintained manner.
- 4. Constructability** – Several meetings between the Construction Manager, the OPM and the Designer on constructability and logistics have occurred. The OPM review of the progress Design Development set did not surface any significant constructability issues.

5. **Phasing** –Phase 1 will consist of a permanent parking lot behind the Farley Building and a temporary bus and parent drop-off/pick-up drive with teacher and staff parking to accommodate continued school operation during Phase 2 and Phase 3 construction. The new school is located on the site to allow for the continued operation of the existing school. Once the new school is completed, it can operate unimpeded while the existing is demolished and the parking lot and fields are completed.
6. **Bid-ability** – The MEP elements of the design development drawing set have been coordinated to the level of Design Development. The general layout of the building, floor to floor construction height and the relationship between spaces will facilitate further coordination. The OPM review did not surface any significant bid-ability issues.
7. **Site Access During Construction** – As noted in the Phasing section above, the project has been designed to allow for site access to the operational school during both Phase 2 and Phase 3 construction.

#### **CM REVIEW**

The CM performed a review of the Progress Design Development documents, dated April 8, 2019 for the drawings and April 12, 2019 for the specifications. The CM comments are documented in the CM Design Review, dated May 6, 2019 and appended to the end of this section.



## OPM Design Review Comments

<b>Project Name:</b>	Fuller Middle School, Framingham, Massachusetts	<b>Project Phase:</b>	Design Development
<b>Project Number:</b>	17050	<b>Reviewed Date:</b>	April 26, 2019
<b>Document Reviewer:</b>	Mariana Hernandez, John Hart, Paul Livernois, Christopher Davis, Robert Marshall, Stella Drizin, Patrick Weygint, and Joshua Delaplain-Zook	<b>Discipline</b>	All Disciplines

### DESIGN REVIEW NOTES

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
1.	Architecture	LS101-103	Define the fire and smoke separation required for the 3-story atrium.					
2.	Architecture	LS101-103	No reference shown to type of construction, allowable areas, etc.					
3.	Architecture	LS101	Exit 6 is from a storage room, should not be counted towards egress totals.					
4.	Architecture	LS103	Some areas between corridor and atrium seem to be missing a railing					
5.	Architecture	A101-A103C	Provide overall dimensions, angles and working points					
6.	Architecture	A101-A103C	Indicate partition types on plans					
7.	Architecture	A101-A103C	Some structural grid lines are not appearing on the floor plans					
8.	Architecture	A101-A103C	Coordinate brace locations w/ openings, plumbing and HVAC ductwork					
9.	Architecture	A101-A103C	Reference enlarged toilet rooms back to floor plans.					
10.	Architecture	A101-A103C	Indicate ramp and stair direction					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
11.	Architecture	A101	The interior finish notes mention a bubble skylight on the Auditorium ceiling, this skylight doesn't show on RCP or on Roof plans					
12.	Architecture	A101	Top right corner of Auditorium was cropped out from view					
13.	Architecture	A101A	Exterior HM single egress door from Corridor 1020 may need to be widened to accommodate reach required on a thick wall					
14.	Architecture	A101B and A101C	Cohort Common and Learning Common are each 1'-0" off from the main floor elevation, provide cane detection per Code.					
15.	Architecture	A101D	Room name missing from room facing exterior between Gym and Aud.					
16.	Architecture	A102A	Four apparent flues showing next to Closet 2017 seem in conflict w/ the walls and structure					
17.	Architecture	A102B	Indicate HVAC elliptical duct risers and connection detail.					
18.	Architecture	A102B	Railing missing near Breakout room					
19.	Architecture	A1 022B	East stair not showing					
20.	Architecture	A102C	Ensure required door reach clearance at TP rooms typ.					
21.	Architecture	A102D	How is the roof between Classroom 2224 and Auditorium drained?					
22.	Architecture	A103A	Sunscreen image is confusing should be higher or not shown					
23.	Architecture	A103A	Roof south of Classroom 3144 shows as flat on the framing plans, coordinate with Structural drawings					
24.	Architecture	A103B	Coordinate hanging post locations with bridge, indicate railing					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
25.	Architecture	A104	Indicate tapered insulation and how drain slopes will be achieved. Roof framing plans don't show sloping steel					
26.	Architecture	A104	Indicate different roof levels and how different roof levels are accessed					
27.	Architecture	A104	Any roof ladders required to access the different roof levels?					
28.	Architecture	A104	Indicate amount and layout of roof walk way pads					
29.	Architecture	A104	Include view for stair and elevator roof.					
30.	Architecture	A-104	Smoke vent hatches not shown on roof plans					
31.	Architecture	A104	Indicate roof types, canopy construction					
32.	Architecture	A104	Show openings in Mechanical screen to allow access					
33.	Architecture	A141A-A143C	Consider consolidating room finishes to one location. They are shown/ listed as a note on the A101 series, scheduled on these sheets and with room tags as well					
34.	Architecture	A141A-A143C	Show floor transitions for detailing					
35.	Architecture	A161A-A163C	Coordinate furniture locations with architecture. Ensure clearance around furniture and doors, walls, equip, etc.					
36.	Architecture	A181-A183C	Show HVAC diffusers, return grills and exposed ductwork					
37.	Architecture	A181-A183C	Show light fixtures, sprinkler heads, smoke detectors, motion detectors, etc.					
38.	Architecture	A181-A183C	Indicate ceiling elevations					
39.	Architecture	A181-A183C	Show ceilings legend on all ceiling plans.					



Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
40.	Architecture	A181-A183C	In some areas exposed deck is shown with a line pattern, in other areas is shown blank show one consistent way.					
41.	Architecture	A201	Drawing is very hard to read. Consider highlighting cut areas and fading out planes behind					
42.	Architecture	A211-A217	More detailed information and notes required, consider graphic refinement of patterns to provide more clarity Windows, CW and storefront need to be tagged, brick control joints need to be indicated. Applicable structural gridlines should show on the partial elevations. A key plan for the partial elevations may help in locating them.					
43.	Architecture	A300 and A301	Hard to read what is cut and what is beyond. Work w/ line weights. Label spaces.					
44.	Architecture	A311- A320	Wall sections not developed, need to show dimensions, exterior wall and roof types, indicate insulation and AVB continuity, roof edge treatments, flashing conditions, sun screen structure, overhang structure and insulation criteria, how ceilings meet with exterior walls, windows					
45.	Architecture	Floor plans	Confirm door reach clearance on both pull and push side, on the Break Out spaces					
46.	Architecture	Specs	Specs indicate precast concrete and none shown on drawings.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
47.	Architecture	Specs	Specs call for mineral wool insulation, drawings show Polyiso					
48.	Architecture	Specs	Drawing A501 shows Concrete Unit Masonry block w/ insulated cores. There is no mention of it in the specs					
49.	Civil	All	Include Legends for all series of plans.					
50.	Civil	All	Include detail references.					
51.	Civil	C-0.1 & 0.2	Include parking stripes for clarity					
52.	Civil	C-1.0, 2.0 & 3.0	Phase 1 Notes: Note 1 – Clarify? Note 2 – Fence Limits are unclear & not in legend., Note 4 – Nothing shown as bold					
53.	Civil	C-1.0, 2.0 & 3.0	Clarify the disposition of utilities within demo areas. Remain, remove, abandon, cut/cap, etc.					
54.	Civil	C-1.0, 2.0 & 3.0	Identify salvage items.					
55.	Civil / LA	C-1.1 & L1.2	Civil and LA indicate different parking layouts, curbing, striping and sidewalk materials					
56.	Civil	C-1.1	Does Phase 1 construction include both binder and wearing course? If just binder, striping will be done twice, & structures reset, this needs to be noted.					
57.	Civil	C-1.1	Reconsider using SGC directly against sidewalk on west side of parking lot. Coordinate Phase 3 Fire Access Road with sidewalk and curbing.					
58.	Civil	C-1.2	DMH3 indicates a stub for Phase "4", not Phase 3					
59.	Civil	C-1.2	Consider a filter strip or stone apron at north edge of parking with no curb.					
60.	Civil	C-1.3 & 2.3	No utility text/callouts are indicated. Pipe sizes etc.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
61.	Civil	C-1.4	Clarify limits of pavement, binder or full depth asphalt.					
62.	Civil	C-2.x	Clarify limits of Phase 1 and Phase 2 work on Phase 2 drawings.					
63.	Civil	C-2.3 & C-6.x	Clarify if utilities are in Phase 2 or Phase 3, no roof drains shown.					
64.	Civil	C-2.3	Has City Fire and Water Depts approved a 600' + dead end water pipe for the hydrant to the north?					
65.	Civil	C-2.3 & C-6.1	Coordinate building utilities and roof drains					
66.	Civil	C-3.0	Is entrance drive constructed at the end of Phase 2 or in Phase 3.					
67.	Civil	C-3.0	Define Phase 3 enabling and/or temporary work.					
68.	Civil / LA	C-4.X & L	Coordinate sidewalk locations, curbing and striping.					
69.	Civil	C-4.1	Are gates proposed for the Fire Access Road?					
70.	Civil	C-4.1	Review loading geometry with truck turning movements					
71.	Civil	C-5.X	Has it been confirmed that no stormwater recharge is required for the project?					
72.	Arch/Plumb/ Civil	C-6.1	Is the FDC located in the raised main entrance plaza? Is this acceptable.					
73.	Civil	C-7.2 & 7.3	Repeated and conflicting details on these 2 sheets.					
74.	Landscape		Building Footprint does not match Arch or Civil dwgs.					
75.	Landscape		Coordinate drainage system structures with civil.					
76.	Landscape		Show light poles on all enlargements and Planting Plans for coordinating design.					
77.	Architecture	Specifications	TOC is missing 320000 & 329000. headers are not consistent throughout.					
78.	Civil	Specifications	Check that cross-referenced sections are included.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
79.	Civil	Specifications	Storm Drainage piping materials do not match what is on plans.					
80.	Structural	S-000	Some additional design load information for the structure should be provided. Refer to IBC Section 1603.1					
81.	Structural	S-101A	Indicate slab on grade size and reinforcing.					
82.	Structural	S-101A, S-101B, S-101C, S101D	Indicate slab on grade sawcut control joint locations.					
83.	Structural	S-101A, S-101B, S-101C, S101D	Column sizes should be shown.					
84.	Structural	S-101A, S-101B, S-101C, S101D	Pricing notes are vague and should be more specific for DD level. Typical wall and pier sections with reinforcing should be shown					
85.	Structural	S-101A, S-101B, S-101C, S101D	MSEA requires footing elevations to be shown on the plan along each section and not just in a note.					
86.	Structural	S-101A, S-101B, S-101C, S101D	Gridlines and dimensions should be shown.					
87.	Structural	S-101A, S-101B, S-101C, S101D	More info is required on the extent and depth of the Geo Piers under the footings and the slab-on-grade.					
88.	Structural	S-102A, S-102B, S102C, S102D	Typical grid and general framing dimensions should be shown at DD level submission.					
89.	Structural	S-102A, S-102B, S102C, S102D	Typical member sizes for beams and girders should be shown for DD Level submission.					
90.	Structural	S-102A, S-102B,	What is the fire rating of the floor assembly? Are the framing members					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
		S102C, S102D	fireproofed?					
91.	Structural	S-102A, S-102B, S102C, S102D	Typical framing details should be shown at DD Level, including typical exterior wall support details					
92.	Structural	S-102A, S-102B, S102C, S102D	What is the Top of Steel Elevation?					
93.	Structural	S-102A, S-102B, S102C, S102D	Will there be any expansion joints at this level?					
94.	Structural	S-103A, S-103B, S103C, S103D	Typical grid and general framing dimensions should be shown at DD level submission.					
95.	Structural	S-103A, S-103B, S103C, S103D	Typical member sizes for beams and girders should be shown for DD Level submission,					
96.	Structural	S-103A, S-103B, S103C, S103D	Typical member sizes for beams and girders should be shown for DD Level submission,					
97.	Structural	S-103A, S-103B, S103C, S103D	What is the Top of Steel Elevation?					
98.	Structural	S-103A, S-103B, S103C, S103D	Will there be any expansion joints at this level?					
99.	Structural	S-103A, S-103B, S103C, S103D	Typical braced frame member sizes should be shown.					
100.	Structural	S-103D	Should the roof deck over the Gym be acoustical deck?					
101.	Structural	S-104-B, S104C	Typical braced frame member sizes should be shown.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
102.	Structural	S-104B, S-104C	Typical grid and general framing dimensions should be shown at DD level submission.					
103.	Structural	S-104B, S-104C	Typical member sizes for beams and girders should be shown for DD Level submission.					
104.	Structural	S-104B, S-104C	Typical member sizes for beams and girders should be shown for DD Level submission.					
105.	Structural	S-104B, S-104C	What is the Top of Steel elevation at this level?					
106.	Structural	S-104B, S-104C	Will there be any expansion joints at this level?					
107.	Structural	S-105B, S-105C	Typical Sections at roof screen and top of steel elevations should be shown.					
108.	Structural	S-200, S-201	Is there any special finish required on the exposed steel?					
109.	Structural	S-300	Detail 10: Diamond isolation joints should be avoided as the joints in diamonds will telegraph thru the floor finishes.					
110.	Structural	S-300, S-301, S-302, S-303	Typical concrete and steel details should be provided for the DD set.					
111.	Structural	S-000	Include an allowance for partition loading in the floor Live Loads.					
112.	Structural	S-000	Include Design Live Loads for atypical spaces: Gym, Auditorium, Cafeteria, Media Center/Library, Lecture Halls, etc.					
113.	Fire Protection	General	Are intermediate fire department connections required?					
114.	Fire Protection	FP1.01	Coordinate exact scope of Division 21 work with Civil. Exact scope of work is missing. Suggest site utility dwg as part of FP set, including details.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
115.	Fire Protection	General – floor plans	Typical room sprinkler layouts missing					
116.	Fire Protection	General – floor plans	Verify height of floor control assemblies is in accord with Fire Dept requirements. Height may not be allowed over 7 ft.					
117.	Fire Protection	FP1.03	Fire Dept Valves may not be allowed to be installed in dressing rooms behind stage; especially if rooms are lockable.					
118.	Fire Protection	General - roof	Are roof manifolds required or desired by Fire Dept?					
119.	Plumbing	P0.01	Water heater and pump schedules missing					
120.	Plumbing	P0.01	Backflow preventer detail – dimension to floor is to be from bottom of device to floor per Code.					
121.	Plumbing	P0.02	Detail 1 – Is redundancy required for water heater?					
122.	Plumbing	P0.02	Detail 1 – Valve and pump not allowed between heater and expansion tank. Also, check valve upstream of heater on CW supply not allowed without inspector permission. Mixing valve should be installed below top of heater.					
123.	Plumbing	P0.02	Detail 3 – No valve allowed between heater and expansion tank. Also, check valve upstream of heater on CW supply not allowed without inspector permission. Swing check valve installed in vertical position may not function.					
124.	Plumbing	P0.02	Detail 4 – Verify chip tank is sufficient for chemicals used. pH adjustment system required? Depth of vault structure may not be deep enough.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
125.	Plumbing	General – below slab plans	Verify no footings bearing on piping below slab. Also, wall footings to be dropped at pipe exits and entrances to building.					
126.	Plumbing	General – sanitary venting	Some venting indicated appears to not meet Code.					
127.	Plumbing	General – Plumbing chases	Plumbing chases should be verified for adequate depth to accommodate fixture carriers/piping. Some look shallow.					
128.	Plumbing	General – structural/architectural/plumbing coordination	There appear to be many instances of plumbing chases and walls with plumbing risers being located directly over beams. Requires coordination.					
129.	Plumbing	General	Recommend hot water be recirculated directly behind all lavatories to ensure timely hot water with low flow faucets.					
130.	Plumbing	General	No natural gas indicated on plans					
131.	Plumbing	General	Exterior wall hydrants missing throughout					
132.	Plumbing	P2.01	Emergency shower/eyewash required in boiler room at water treatment – corrosives used missing					
133.	Plumbing	P2.02	Hot water expansion loops					
134.	Plumbing	P2.02	Suggest hot water recirc. loop with small elec heater for non-potable hot water system to Science classroom sinks.					
135.	Plumbing	General – Science rooms	No emergency shower- Eyewash stations seen in Science Classrooms.					
136.	Plumbing	P2.03	Toilet/Shower room 1310 - Recommend floor drain outside shower.					



Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
137.	Plumbing	General	Roof drainage seems to be missing from most of the set. Is secondary roof drainage required?					
138.	Plumbing	P3.03	Floor drain required for water heater and backflow preventer.					
139.	Plumbing	P3.03 & P3.04	Emergency showers/eyewashes missing in Science classrooms					
140.	HVAC	GENERAL	Add key plan to all drawings					
141.	HVAC	M104	Suggest heat to be added in the mechanical pump house					
142.	HVAC	M104	Consider double doors into the pump house					
143.	HVAC	M104	Add floor drains to pump house					
144.	HVAC	M104	What is the makeup air for SEF-1 through SEF-4. Where is it shown?					
145.	HVAC	M103C M102B	Please indicate why two dampers are shown normally closed and one shown normally opened?					
146.	HVAC	M305	All motorized dampers shown on the rooftop unit airflow diagram are tagged normally opened. See note above.					
147.	HVAC	M305 M306	Chilled water flow diagram needs to be shown with air cooled chillers (2) and pump house on the roof. Coordinate these two diagrams please.					
148.	HVAC	Fire Protection Chapter 9 Smoke Control (909)	Provide document that shows the firefighters smoke control panel.					
149.	HVAC	Schematic Design HVAC Narrative Part O	The new BMS is indicated as proprietary by Advanced Energy Management Systems. Please confirm if correct.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
150.	HVAC	Narrative / M101A	Narrative outlines Boiler Plant in the Pump House. Drawings show Boilers in Boiler Room 101B.					
151.	HVAC	GENERAL	Are fire smoke dampers required in the duct leaving the shafts?					
152.	HVAC	M104	Is smoke or fire protection required in the Mechanical Penthouse?					
153.	HVAC	M104	Provide makeup water piping to the Penthouse					
154.	HVAC	M104	Review ventilation requirements for Pump House					
155.	HVAC	M104	How is Pump House installed on Roof? Is it on dunnage like the chillers?					
156.	HVAC	M104	Review internal and external powered convenience outlets for the Pump House.					
157.	HVAC	Fire Alarm Fire Protection	Include a fire alarm input/output matrix for the Smoke Control System.					
158.	HVAC	GENERAL	What discipline or drawing/specification identifies all the requirements for the fire alarm smoke control panel?					
159.	HVAC	GENERAL	What discipline is covering the scope of the special inspector testing consultant? Will this be in Division 1? Please refer to Section 909 Smoke Control.					
160.	Electrical	C-2.1, E-PH-1	Locations of the site lights don't match electrical site plan. Coordinate					
161.	Electrical	C-2.3, E003-1	Electrical manhole is not shown on the civil plan. Location of the power, communication and FA services are not coordinated.					
162.	Electrical	C-2.1, E003-1	Location of the electric car charging stations is not shown on the civil plan.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
163.	Electrical	C-2.1, E003-1	Locations of the site lights, security camera poles are not shown on the civil plan.					
164.	Electrical	C-2.1, E003-1	Generator set location is not shown on the civil plan. Coordinate. Show natural gas line to the generator.					
165.	Electrical	C-4.2, E003-2	Show location of the site lights, refer to electrical plan.					
166.	Electrical	E003-1, P0.02/4, C2.1	Wiring of the (2) acid neutralization tanks is not shown on the electrical plan					
167.	Electrical	C-7.4	Add a base detail for a site lighting pole. Coordinate with detail on dwg. E004					
168.	Electrical	A001	No info shown on the dwg.					
169.	Electrical	A101, A102	Location of a toilet room (at principle office) above main electrical room is not recommended					
170.	Electrical	E300, E301	Confirm the transformers (located remote from the primary side panels) will be with the primary side disconnect switches or lockable devices will be used per MEC 450.14					
171.	Electrical	E301, E302	Panel PP2B is power fed from panel MP1B. Panel MP1B shall be 400A bus/250A main breaker.					
172.	Electrical	E301, E302	Panel MP1B shall be 400A bus/250A main breaker. Is it single or double tub panel?					
173.	Electrical	260000.2.23A, E301	Per spec- 200kW diesel generator set, but per dwg.- 250kW natural gas generator set.					
174.	Electrical	E301	Is a generator set with a natural gas engine approved by local AHJ to support life safety loads?					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
175.	Electrical	260000.2.23K	Per spec- "load bank for indoor mounting adjacent to a generator in series with engine radiator"? Clarify and revise type of housing if required.					
176.	Electrical	260000.2.23 M, E201A, E301	Show a manual transfer switch location and wiring for connection of roll-up generator set					
177.	Electrical	E302	Panel MP3C is fed from 75kVA transformer, it shall be 400A bus/250A main breaker					
178.	Electrical	E301, E302	Is panel 2DP1C power fed from T-6 or T-7 size transformer? Coordinate a schedule and one-line diagram.					
179.	Electrical	E301, TL111	TL dwg. requires 200A power feed to a dimmer rack and also an emergency power feed. Dwg. E301 shall be revised accordingly.					
180.	Electrical	260000.2.14D	Main switchboard short circuit rating of 100kA is too high (add'l cost). Rating should not exceed 65kA.					
181.	Electrical	260000.2.14H and 2.17E, E301	Coordinate location of the utility metering CTs and PTs between the spec pars, revise a diagram accordingly.					
182.	Electrical	All plans	Add a key plan on each dwg.					
183.	Electrical	A102, E300	Rm. 2254 is not emergency electrical closet. Change a room name.					
184.	Electrical	FP1.01	FP service piping is shown in the main electrical room, it should be relocated.					
185.	Electrical	E401A	Show FP tamper and water flow switches in Rm.1023					
186.	Electrical	E401B, FP1.02	Show FP tamper and water flow switches, refer to FP plan					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
187.	Electrical	E401C, FP1.03	Show FP tamper and water flow switches, refer to FP plan					
188.	Electrical	FP plans	Add building key plan on each dwg.					
189.	Electrical	E401D	Quantity of the FA speaker/strobes in Gym is not sufficient for 15dB above ambient noise. Consider high output and overhead mounted devices.					
190.	Electrical	260000 par.2.18Z	FA 1 watt output speakers are not sufficient for public areas such as Gym, atrium, etc.					
191.	Electrical	E402B E402C E403B E403C	Show FP tamper and water flow switches, refer to FP plans					
192.	Electrical	E202.A, FP2.01	Show location of the FP electric bell on electrical plan					
193.	Electrical	P2.01	Multiple piping runs in the main electrical room. Coordinate with electrical/relocate					
194.	Electrical	E201A, M101A, A101A	Pumps P-1 and P-2 are located in custodian toilet rm. 1016. Coordinate.					
195.	Electrical	E303, M301	Circuit breakers for the all RTUs 1 to 8 are oversized. Refer to mechanical schedule.					
196.	Electrical	E302, E303	Equipment schedule indicates all RTUs are wired from main switchboard MSB. MSB schedule does not reflect the same.					
197.	Electrical	E303, M301	Circuit breakers for the both chillers are oversized, 600Amp vs. 400Amp in M301 schedule.					
198.	Electrical	E302, E303	Equipment schedule indicates two chillers are wired from main switchboard MSB. MSB schedule does not reflect the same.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
199.	Electrical	E303, M301	Pumps P1 to P4 are 25HP on electrical plans, but they are not sized yet in schedule on M301. Coordinate.					
200.	Electrical	E204ABCD	Change roof plan number to E204, to be consistent with all other disciplines					
201.	Electrical	E204, M104, A104	Architectural roof plan does not match the engineering plans. Pump house is missing, the chillers location to be changed.					
202.	Electrical	E303, M301	There are (11) ductless cooling units in electrical schedule, and (7) - in mechanical schedule. No electrical data is shown in the mechanical schedule					
203.	Electrical	E303, M301	Exhaust and supply fans data is missing in the mechanical schedule, but electrical schedule on E303 includes the fans HP, voltage and wiring. Quantity is also different. Coordinate.					
204.	Electrical	260000.2.24, E204, E205	Drawings and spec show a different type of a lightning protection system. Coordinate					
205.	Electrical	E302, 260000.2.14 and 2.15	Note 1 for MSB and 4DP1B schedules allows the breakers be series rated. Spec does not state anything. Confirm design intent and coordinate.					
206.	Electrical	Electrical power plans, spec 12 24 14	Spec for motorized shades is included. No wiring is shown on electrical plans. Coordinate.					
207.	Electrical	E303, P0.01	Plumbing equipment schedule is missing on P0.01, although it is shown on E303 with HP, voltage and wiring data. Coordinate.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
208.	Electrical	E102B, A182B	Typical for all classrooms. Ceiling soffits on architectural and electrical plans are not matching. Verify length and installation of the LC3 fixtures					
209.	Electrical	E102B (typical for lighting plans)	Typical for all classrooms. Are (2) LC3 fixtures sufficient for classroom seating area illumination? Verify lighting calculations.					
210.	Electrical	E102D, GA005	Is auditorium lighting layout coordinated with the performance lighting pipes?					
211.	Electrical	A101D, GA001	Theatrical electrical room 1347 size and layout are not matching on these plans					
212.	Electrical	E300/6, GA111/1	Conflict in Room 1347 size and layout of the electrical and theatrical lighting control equipment					
213.	Electrical	260000.1.30, 230000.1.32	Electrical spec requires VFDs for fans/pumps be furnished and installed by Div.23. Mechanical spec requires the same be done by Div.26. VFD spec is not included in either Div.23 or Div.26 specs.					
214.	Electrical	260000.1.31	Par. refers to spec 012300 for Gym Walking Track alternate 3. Section 012300 is missing.					
215.	Security	E500	TS not called out under security system.					
216.	Security	General	Missing key plan for all sheets.					
217.	Security	501A	Floating door contacts.					
218.	Security	E501A	IC not called out on E500. Is AI meant to be IC?					
219.	Security	E501C	Door contact in wall in chair storage room 1164.					
220.	Security	E501D	Missing door hardware and card reader for AV room 1347.					

Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
221.	Security	E502A	Motion detector should be moved out of closet 2017 into conference-1g 2016.					
222.	Security	E502B	Missing motion detector, door hardware and card reader at stair 2005.					
223.	Security	E502C	Missing card reader and door hardware at stair 2065.					
224.	Security	E503B	Missing motion detector at stair-2 3005.					
225.	Security	General	Door contacts at roof access hatches?					
226.	Security	E501A	Missing card reader and door hardware for head end room 1026.					
227.	Technology	General	Wall phone outlets in classrooms are not on the wall.					
228.	Technology	General	Speakers in classrooms are not in center of room.					
229.	Technology	General	Missing key plan for all sheets.					
230.	Technology	General	Head End Room is the MDF?					
231.	Technology	T101A	Missing annotation for tel/data outlet in main electric room 1024.					
232.	Technology	T101B	Consider adding second flush mounted ceiling speaker in media room 1240.					
233.	Technology	T102B	Missing speaker in stair 2005.					
234.	Technology	T102B	Missing speakers in SPED-Classrooms 2260 and 2264.					
235.	Technology	T102C	Missing "W" annotation for outlet next to clock in SPED-Reading room 2168B.					
236.	Technology	T102A	Missing hallway speakers.					
237.	Technology	T102B	Missing hallway speakers.					
238.	Technology	T102C	Missing hallway speakers.					
239.	Technology	T102C	Missing speaker in stair 2065.					



Item	Discipline	DWG/Spec	Design Development		60% Construction Documents		90% Construction Documents	
			OPM Comment	Designer Response	OPM Comment	Designer Response	OPM Comment	Designer Response
240.	Technology	T103B	Missing speaker in stair-2 3005.					
241.	Technology	T103C	Missing speaker in stair-1 3065.					
242.	AV Systems	General	Missing key plan for all sheets.					
243.	AV Systems	AV000	"BP" not called out under AV Junction Box Symbols.					
244.	AV Systems	AV101A	AV System in media room 1240?					
245.	AV Systems	AV102B	AV system in classroom next to classroom 2224?					
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# Fuller Middle School Constructability and Drawing Review Log

As of: 5/6/2019

Revision:



ITEM #	DATE OPENED	DWG NO/DTL OR SPEC SECTION	DESCRIPTION	B/C	DATE RESOLVED	COMMENTS
<b>GENERAL DRAWING REVIEW</b>						
1	4/20/19	General	Provide column line plans			
2	4/20/19	General	Provide fireproofing plans to denote SOFP vs. intumescent			
3	4/20/19	General	Update all discipline sheets to include shaded locust map, similar to Architectural sheets			
4	4/20/19	General	Provide finished floor elevation plans vs. structural elevation (TOC) plans for coordination of gyprocrete overlayment / finishes			
5	4/25/19	General	A540 & E-PH-1 were both included in the drawings but were not on the index. FP4.01, FP4.02, FP4.03 and FP4.04 were missing from the drawings but listed on the index.			
<b>ARCHITECTURAL DRAWING REVIEW</b>						
1	4/20/19	A100s, A410s	Wall types not indicated on floor plans			
2	4/20/19	A700	Add UL listings to partition types for 3rd party fireproofing requirements			
3	4/20/19	A141A	Confirm flooring type in Learning Commons - drawings and finish schedule indicate VCT; JLA email on 4/12 lists polished concrete with porcelain alterante			
4	4/20/19	A141A	Confirm flooring type in Learning Commons - drawings and finish schedule indicate VCT; JLA email on 4/12 lists polished concrete with porcelain alterante			
5	4/20/19	A418 / FS100	Kitchen equipment layouts do not match; update, confirm with MEPS			
6	4/20/19	A104	Note indicates roof pavers, but no layout provided. PVC roof spec 075419 lists walkway pads, not pavers. Coordinate, confirm.			
7	4/20/19	A425	More specific design information required for Auditorium clouds; what is suspension system? Dimensions? Etc.			
8	4/20/19	A103A	Confirm plumbing risers (CL B4 for example) fit inside walls and avoid steel beams/braced frames.			
9	4/26/19	A221-A222	Confirm that all curtain wall openings will use preformed silicone strips to transition to surrounding AVB per spec. typ.			
10	4/26/19	A221	Confirm that double-story curtain wall intent - without any continuous vertical mullions, please clarify how dead and lateral loads will be transferred back to structure?			
11	4/26/19	A311-A320	Please provide additional information or details on the design intent for atypical facade transitions or elements - soffits, copings, canopies, screen walls, etc.			
12	4/26/19	A540	Please provide additional details for skylight intent, include whether the end walls will be glass or metal (or if just the upturned roof membrane)			
13	4/26/19	A741-744	Please provide additional details for typical sunshade intent (even if referenced from a similar past project - e.g. Dearborn as a temporary placeholder)			
<b>STRUCTURAL DRAWING REVIEW</b>						
1	4/20/19	S101A, L1.3, C-4, 1	Discrepancy on South retaining wall; structural and landscape call for unit masonry walls; Civil indicate concrete. Coordinate, confirm			
2	4/20/19	S100s	No posts shown on structural for locker guardrail walls at corridors; how are they supported? Detail section through Learning Commons.			
3	4/20/19	TE-111	Theatre rigging not shown; indicates Division 5 steel, how attached to precast?			
4	4/20/19	S201	Steel hangers are shown at the pre-cast double-tees in the auditorium; how are they attached?			
5	4/20/19		95% of roof is concrete on metal deck; did you consider continuing around skylights?			
6	4/20/19		Review underground Plumbing requirements with respect to rimmed aggregate pier design			
7	4/20/19		Will relieving angles be required at slab edges for brick parapet support?			
8	4/20/19	S101	Confirm SOG thickness at Learning Commons - 5' shown; 6' noted in JLA email 4/12; Suggest recessed SOG with topping slab for polished concrete finishing			
9	4/20/19	S100s	Suggest adding roof drain locations coordinated with Plumbing/Architectural to show any required supplemental framing			
10	4/20/19	S103A	Assume high roof has tapered insulation to roof drains? Only small area showing sloped steel			
11	4/20/19	General	Structural Plans should denote TOC elevations, especially for coordination with gyprocrete overlayment FF elevations			
12	5/1/19	S000	General Note No. 5 is open to speculation and will vary for pricing purposes by the file sub trades as it is not quantifiable.			

# Fuller Middle School Constructability and Drawing Review Log

As of: 5/6/2019

Revision:



ITEM #	DATE OPENED	DWG NO/DTL OR SPEC-SECTION	DESCRIPTION	BIC	DATE RESOLVED	COMMENTS
<b>FIRE PROTECTION DRAWING REVIEW</b>						
1	4/20/19	P5.01-5.04	Roof plans do not show roof drain locations			
2	5/1/19	FP1.01	Check valve shown at incorrect elevation on 3D Model.			
3	5/1/19	FP001	General Note 2 information needs to be shown on FP drawings in addition to Architectural drawings for quantities purposes.			
<b>PLUMBING DRAWING REVIEW</b>						
1	4/20/19	P5.01-5.04	Roof plans do not show roof drain locations			
2	5/1/19	P0.01	General Notes reference plumbing drawings. Language should be reviewed. These notes will be ignored by the trade contractor at bid time.			
3	5/1/19	P1.02	if wall mounted toilet carrier, wall should be at least 14" deep.			
4	5/1/19	P5.04	No hose bibbs located on roof for maintenance purposes. It is suggested to have them strategically placed around equipment.			
5	5/2/19	P1.02	Rain Leader riser is in conflict with shelving in the Academic Storage 1253.			
6	5/2/19	P1.03	3" W. UP seems to be in conflict with millwork.			
7	5/1/19	P2.01	No detail provided for valves (typical to all bathrooms). They appear to be above ceilings. Important detail to know as it pertains to pre-fab options for carriers.			
<b>HVAC DRAWING REVIEW</b>						
1	4/20/19	M1.04	Indicates pre-fab HVAC Pump House; Not referenced on Architectural plans; Concrete pad required?			
2	4/20/19	General	HVAC plans do not show pipe sizing yet, are sizes on riser diagram accurate?			
3	4/20/19	M101A	Boiler Room equipment extends in Custodian Toilet Room; Coordinate vs. A101A			
4	4/20/19	M101C	No duct shown for Klin equipment in Art Workroom 1233 (Col Line A6); Potential conflict between riser and floor layouts above, future PV Array on roof.			
5	4/20/19	M104	Does not show any venting for elevator hoistway			
6	4/30/19	M102B	Duct riser is in conflict with stair and horizontal duct			
7	5/1/19	M102B	In the model, this duct does not fit inside the ceiling cavity provided and is in conflict with all light fixtures and structural steel. This is typical on all levels.			
8	5/1/19	M103C	Motorized damper seems to be inaccessible for service as shown on drawing.			
9	5/1/19	M104	No structural steel reinforcement shown on structural steel drawings for rooftop equipment. Typical for all rooftop equipment.			
10	5/1/19	M201C	Pipe dimensions. No dimensions shown on any HHWS & CHWS&R piping. Typical throughout contract documents.			
11	5/1/19	M201C	Drawing Note No. 5 is not quantifiable. EOR must determine all equipment that requires condensate pumps. This impacts the pipe fitters, electrical and plumbing trades.			
12	5/1/19	M201C	Drawing Note No. 6 is not quantifiable. EOR must specify what rooms meet this requirement. This must be included in electrical drawings as well.			
13	5/1/19	M202C	Condensate Drains: Most mini-split systems do not show condensate drain locations, travel distance, riser location or pipe size. All required for it to be quantifiable.			
14	5/1/19	M203B	Continuation of condensate pipe and refrigeration pipe not shown. Needs to be quantifiable.			
15	5/1/19	M101B	S.A. & R.A. Duct Risers in conflict with structure, ductwork and stairs.			
16	5/1/19	M101B	Typical classroom displacement diffuser seems to be in conflict with smart board assembly.			
17	5/1/19	M101C	What is the intent of this gap in the exterior loop. On some floors there is motorized damper at the end of the duct. Is this supposed to be a continuous loop as the shown for the interior loop? Needs clarification. Cannot pass thru elevator room.			
18	5/2/19	M102C	Motorized damper could be in conflict with wall.			
<b>ELECTRICAL DRAWING REVIEW</b>						
1	4/20/19		Power/Lighting plans do not indicate connections to Auditorium seating for aisle lighting; Confirm not required / Review with Seating type			

Item	Initials	Reference	Comments	Action	Response
<b>SPECIFICATIONS</b>					
<b>DIVISION 01</b>					
1	JAH	011000	Section 1.2.: Several spec sentences indicate a value by listing "xxx". Please review and add required values.	OPEN	Specs will be further refined for 100% DD Set
2	JAH	011000	Section 1.3.A.c: A reference is made to spec 018113. This spec did not appear to be included with the design package (ref. Vol. 1). Please review and reconcile.	OPEN	This section will be included in 100% DD Set
3	JAH	011000	Section 1.3.A.: LEED is indicated , however the level of LEED compliance did not appear to be indicated. Please review and reconcile.	OPEN	Will be defined in 100% DD Set
4	JAH	Div 1 specs	It is suggested that several Div. 1 specs, <u>not</u> currently listed in the TOC, should be added to the design package (ref. Vol. 1). As a minimum, suggest adding specs: 013100 Project Management and Coordination; 013300 Submittal Procedures; 017300 Execution; 017700 Closeout Procedures; 017836 Warranties; and 018113 Sustainable Design requirements. If contents of above-noted additions do not adequately cover Operation and Maintenance manuals and Training requirements, it is also suggested that specs for these be provided.	OPEN	Additional sections will be included in 100% DD Set
5	JRC	General Comment	Many spec sections reviewed has an incorrect section number for Part 3 - Execution. Many sections reviewed start with either 3.2 or 3.3. Suggest reviewing and correcting as required.	OPEN	Specs will be further refined for 100% DD Set
6	JRC	General Comment	Please define where requirements are for submitting shop drawings. These are not provided for in the volume 1 specification sections reviewed.	OPEN	Will be defined in 100% DD Set
<b>DIVISION 04</b>					
7	JRC	04 20 00	Confirm if wetting brick based on IRA testing will be allowed	OPEN	For veneer layout it is not anticipated that wetting brick will be required as the specifications require an IRA of less than 30. Fully grouted brick areas at the base of the building are to be wetted prior to grout installation.
8	JRC	04 20 00-4	Special shapes - confirm number of shapes and confirm that cutting is not allowed.	OPEN	Special shapes are documented on sheet A501. Additional shapes may be added during CD's if warranted (stair towers). Bricks may be cut where required with approval of architect.
9	JRC	04 20 00-18	Consider using the proper term for masonry joints - Masonry Institute states that Brick Expansion Joints (BEJ) is the proper term for clay masonry products.	OPEN	JLA to review.
<b>DIVISION 07</b>					
10	JRC	072100-2	Specification notes that the thickness of the insulation is as noted on the drawings. Please confirm that the designed system will provide minimum continuous R value as required by the energy code.	OPEN	The DD energy model is based on the R values indicated in the drawings. Glazed areas have been reduced significantly and mid level shading has been removed to satisfy value engineering requirements. The energy model will be re-run at 60% CD to confirm compliance with the energy code.
11	JRC	074254	Suggest that coordination guidelines for phenolic wall panels and intersection with other materials such as the aluminum curtainwall and the face brick construction be included in Part 3 - Execution, as they apply.	OPEN	This will be reviewed and provided in the 60% DD set. The design elevations are being finalized for DD based on value management requirements (the phenolic panels have been reduced significantly).
<b>DIVISION 08</b>					
12	JRC	084313	Basis of design is the Kawneer Trifab 451UT system, Center glazed. Note that this does not match the system description of flush or outside glazed system. Please confirm intent. Please review drawing comments regarding integration of framing system with exterior wall materials.	OPEN	Storefront is intended for use in the interior vestibules only. The exterior wall line will be curtain wall.
<b>DIVISION 22</b>					
13	WGH	22 00 00	Section 2.28 Elevator Sump Pump: Consider specifying the required oil minder control panel's ancillary components	OPEN	Will comply.
14	WGH	22 00 00	Section 2.28 Elevator Sump Pump: Consider specifying the required oil minder control panel's ancillary components	OPEN	Will comply.
15	WGH	22 00 00	Section 2.28 Elevator Sump Pump: Consider integrating the control panel alarms with the building management system.	OPEN	Agree. Panel will be intergrated in BMS.
16	WGH	22 00 00	2.31 Acid Neutralization System: Consider integrating the control panel alarms with the building management system.	OPEN	Control panel alarm will be connected to BMS.
<b>DIVISION 23</b>					
17	KML	23 00 00 TOC	Table of Contents does not indicate various spec sections (listed as single section "23 00 00 - HVAC"). Suggest updating TOC with specific sections.	OPEN	Will review and revise table of contents.
18	KML	23 00 00 Part 2.12.7.gg	Chiller controls section indicates "Optional" features. Included in this section is line item 1, which is BMS interface with BACnet or LonTalk. Please verify is this is an optional feature from the chiller manufacturer that is required for the project, or optional for the project. If optional for the project, consider making this a requirement for consolidate system monitoring and operation.	OPEN	This feature is an optional feature from the manufacturer. Will clarify specifications.
19	KML	23 00 00 Part 2.12	Chiller startup requirements call for two working days to ensure proper operation of equipment and owner training. Suggest including coordination with control contractor for integration with BMS during manufacturer's startup.	OPEN	Will review and revise start-up requirements to coordinate with controls contractor.

Item	Initials	Reference	Comments	Action	Response
20	KML	23 00 00 Part 2.13.B.2	Roof Top Air Handling Unit General Description calls for the units to be provided with "e. Modulating direct expansion cooling coil section" and "h. Chilled water cooling coil." Please confirm number of chilled water coils required and remove redundant items.	OPEN	Will review and remove redundant items.
21	KML	23 00 00 Part 2.13.E	Roof Top Air Handling Unit controls sections calls for "All sensors, actuators, controls shall be provided by the ATC/DDC controls subcontractor. AHU General Description section calls for units to be factory assembled and tested. Please verify if controls will be packaged with unit or field-installed custom controls and associated scope of the controls subcontractor.	OPEN	Will review and revise provisions of controls.
22	KML	23 00 00 Part 2.14	Hydronic Terminal Heating Units controls not specified for all types of equipment (devices, setpoints, integration with BMS, etc.). Suggesting noting if equipment is to be provided with packaged controls and no BMS interface.	OPEN	Will review to see if this is needed.
23	KML	23 00 00 Part 2.16	Power and Gravity Ventilators section does not indicate motor/drive integration with BMS. Consider including integration requirement for fans equipped with variable frequency drives (status, speed, alarms, etc.).	OPEN	Will review to see if this is needed.
24	KML	23 00 00 Part 2.24	Please confirm if Ductless Cooling Units will have any interface with the BMS (space temperature, unit status, alarms, etc.)	OPEN	Ductless cooling units will interface with BMS. We will review the specifications to ensure this is indicated.
25	KML	23 00 00 Part 3.14 & 3.15	Sections appear to be redundant ("Installation of HVAC Rooftop Units" vs. "Installation of Rooftop Air Handling Units")	OPEN	Will review and revise/remove redundant information.
26	KML	23 00 00	Sequence of operation not provided for all equipment and systems. To be reviewed once complete.	OPEN	Sequence of operations are underway.
<b>DIVISION 26</b>					
27	JAH	260000	Section 1.2 C.: A reference is made to spec 012300. This spec did not appear to be included with the design package. Please review and reconcile	OPEN	Division 012300 is typically for alternates. We will review and edit as required.
28	JAH	260000	Section 1.3.B: Suggest adding text....."Provide all necessary coordination with other trades and the architect."	OPEN	Done
29	JAH	260000	Section 1.3.B.10: Suggest adding text...."Provide and coordinate required electrical manufacturer's site testing and installation verifications. Identify and coordinate any Factory testing and make provisions for necessary site personnel (e.g., maintenance personnel, client, Cx agent, and engineer of record) to attend FAT execution.	OPEN	Done
30	JAH	260000	Section 1.3.B.26: Suggest adding text...."Provide all necessary technical and material support for the commissioning of the project's electrical components and systems.	OPEN	Done
31	JAH	260000	Sections 1.3.B.25 & 1.7: A reference is made to spec 018113. This spec did not appear to be included with the design package. Please review and reconcile.	OPEN	We will review this reference and correct as required.
32	JAH	260000	Section 1.3.B.14: A reference is made to specs 116133, 116191, and 266111. These specs did not appear to be included with the design package. Please review and reconcile.	OPEN	We will review these references and correct as required.
33	JAH	260000	Section 1.8: A reference is made to spec 018111. This spec did not appear to be included with the design package. Please review and reconcile.	OPEN	We will review this reference and correct as required.
34	JAH	260000	Section 1.3. B. 30: Add line item indicating ..."Work required for Lightning protection and building grounding, including grounding tests and lightning protection certification."	OPEN	Lightning preventor system has been added. The project will not have a lightning protection system.
35	JAH	260000	Section 1.3. B. 20: A reference is made to spec 0150003. This spec did not appear to be included with the design package. Please review and reconcile.	OPEN	We will review this reference and correct as required.
36	JAH	260000	Section 1.8: A reference is made to spec 013100. This spec did not appear to be included with the design package. Please review and reconcile.	OPEN	We will review this reference and correct as required.
37	JAH	260000	Section 1.13: It is suggested "NETA, National Electrical Testing Association" be added to the list of Codes, Ordinances, and Permits	OPEN	Done
38	JAH	260000	Section 1.16. D. It is suggested to add a new item: ... "Electrical Contractor is responsible to provide and/or install the correct designated equipment, components, and materials. Submittal approval by the engineer does not relieve the contractor from any contractual requirement to provide a complete and fully working system."	OPEN	Done
39	JAH	260000	Section 1.15: A reference is made to spec 013300. This spec did not appear to be included with the design package. Please review and reconcile.	OPEN	We will review this reference and correct as required.
40	JAH	260000	Section 1.3 B: It is suggested to add a line item ... "Electrical Subcontractor shall conduct a light level readings in the field to ensure luminaires and their footcandle readings are in accordance with project criteria and the IESNA."	OPEN	Done
41	JAH	260000	Section 1.19. A. : Division number to be provided.	OPEN	Division number will be coordinated and edited.

Item	Initials	Reference	Comments	Action	Response
42	JAH	260000	Section 1.20.C: Add text...."Provide and coordinate required electrical manufacturer's site testing and installation verifications. Site testing protocols shall be submitted by the applicable vendor PRIOR to commencement of site tests. All completed site testing is to be properly documented with test reports submitted as a Cx pre-requisite. Identify any Factory testing and make provisions for necessary site personnel (e.g., maintenance personnel, client, Cx agent, and engineer of record) to attend FAT execution.	OPEN	Done
43	JAH	260000	Section 1.20. D: At add item...."Provide all necessary technical and material support for the commissioning of the project's electrical components and systems. After establishing a general project schedule, add pertinent details of the commissioning workplan, incorporating necessary Cx predecessors, successors, and durations. Obtain/execute/submit all required documentation necessary for Cx to commence".	OPEN	Done
44	JAH	260000	Section 1.23: A reference is made to spec 017700. This spec did not appear to be included with the design package. Please review and reconcile.	OPEN	We will review this reference and correct as required.
45	JAH	260000	Section 2.24: Suggest label indicate "Lightning Protection System", <b>not</b> "Lightning Preventer System"	OPEN	A lightning protection system will not be provided. The project will include a lightning preventor system. No change necessary.
46	JAH	260000	Section 3.4: Add text or additional item: "Ensure that equipment nameplate include date of manufacture".	OPEN	Done
47	JAH	260000	Section 3.16.H.: Clarify/describe NFPA 110 testing requirements for the generator	OPEN	This is described in Part 2 of the specifications.
48	JAH	260000	Suggest that all control points/alarms that are to be indicated at the BMS system which are derived from the generator, generator annunciator, and ATS switches be identified.	OPEN	Done
49	JAH	260000	Section 3.16.H.: Add requirement and references for NFPA 3 & 4 testing (Integrated Life Safety tests)	OPEN	We will review these standards further before editing the specifications.
50	JAH	260000	Suggest that all control points/alarms that are to be indicated at the BMS system which are derived from the FACP be identified.	OPEN	This will be identified in the ATC control drawings point list if required.
51	JAH	260000	Add requirement for electrical subcontractor to provide "in process" panel schedule sheet while loads are being connected. Electrical subcontractor to review phase loading at panelboards at the end of work and prior to closeout to ensure balanced loading. Provide a final typed panel schedule at completion of work.	OPEN	Done
52	JAH	260000	Add requirement for Arc Flash study to provide required PPE/Arc Flash equipment ID labels	OPEN	Already included in 3.17, we will add to this section to provide more detail.
53	JAH	260000	Add requirement for "ring out" of all starters, controllers, circuits and sensors in coordination with BMS checkout to ensure all components properly connected and operable.	OPEN	Requirement will be added.
54	JAH	260000	It is suggested to add text to distribution gear nameplates (panels, switchboards, ATS units, etc.) to provide info of the gear/branch circuit that supplies it and/or which it powers. In addition, the distribution gear nameplates shall identify the year of their manufacture (required for future life cycle reviews)	OPEN	Done
55	JAH	260000	It is suggested to add text to the wiring device nameplates to include info of the panel/branch circuit that supplies it.	OPEN	Done
<b>Drawings</b>					
<b>Architectural</b>					
56	JRC	A-104	As the documents continue through the CD phase please consider the layout of the roof drains, high and low points of the roof, as they relate to the roof skylights. The high point(s) and framing for the skylights will have an impact on the roof sill condition and the method of waterproofing / flashing, as well as the unusual connection at the ends of the skylights	OPEN	The major roof drainage strategy will be shown in the 100% DD set.
57	JRC	General Exterior Comment	As the documents continue through the CD phase please consider the number of differing plan and vertical details required due to specific material / Design considerations. Note that there are a number of air barrier details required for the maintenance of air, thermal and water separation, and proper detailing must support what appears to be a Rain Screen application with the phenolic panels. (Sheet A-501)	OPEN	JLA agrees with comment. The brick and phenolic panel systems are open joint systems.
58	JRC	General Exterior Comment	It is recognized that the Design Development sections noted are raw cut from the building model. As the documents continue through the CD phase please consider the need for integration and coordination of exterior elements and structural framing. In these cases tolerances of material and construction are often overlooked.	OPEN	JLA agrees with the comment.
59	JRC	A-211/A213	A number of elevations indicate phenolic panels with aluminum curtainwall on either or both sides. Consider how the connection is designed for maintaining the air barrier and how the glass panel may be removed in the event of breakage.	OPEN	The curtain wall utilizes a pressure plate which will facilitate any necessary glass replacement. The phenolic panels will not be set into the glazing pocket.
60	JRC	A-211/A212	A number of elevations indicate phenolic panels with face brick panels on either or both sides. Consider how the connection is designed for maintaining the air barrier.	OPEN	The AVB will always run continuous behind the systems. There will be no break or transition in the AVB where the veneer material changes from brick to panel.

Item	Initials	Reference	Comments	Action	Response
61	JRC	A-211/A212	Brick panels, suggest study on BEJ (Brick Expansion Joint) and position of random pattern brick joints as well as masonry openings and their associated lintel design.	OPEN	Generally where the brick rises more than one story there will be a continuous relieving angle bracketed from the floor edge. Localized loose lintels will employed as necessary.
62	JRC	A-213	As the design continues - please consider the offset configuration of the sun shade framing indicated on several of the elevations. The curtainwall specified may not be able to achieve the offset positioning as have been indicated. Primary issue will be structural loading on the horizontal mullions as well as the potential interference with the specified weep designation for each glass panel.	OPEN	It is anticipated that the horizontal will be structural in this configuraion. Openings are being adjusted accordingly. This will maintain the integrity of the separate panels to allow for zone drainage. The current design is under review by manufacturers.
63	JRC	A-214	As the design continues - please consider the location of the horizontal masonry joint and its final location. Confirm that the expansion or contraction limits are maintained.	OPEN	Refer to item 61. The only locations where veneer will bear directly from foundation to roof are at the auditorium and gymnasium.
64	JRC	A-215 - A 217	Please see comments noted above as similar	OPEN	Refer to responses above.
65	JRC	A-311-A-320	The following comments apply generally to all wall sections. Please consider these as suggestions as the construction document phase continues.	OPEN	Refer to responses above.
66	JRC	A Series	Typical head and sill details at curtainwall - consider minimizing potential thermal bridging with structural slab.	OPEN	Thermal bridging will be considered.
67	JRC	A Series	Typical head and sill details at curtainwall - consider the method of flashing and how potential movement may impact it.	OPEN	Flashing and movement will be considered. As details develop JLA would be pleased to do a sit down review of BEX comments.
68	JRC	A Series	Typical brick details - the specifications call for special shapes. As the design continues note that the potential cost and detail consideration increases with the number of special shapes intended for the project.	OPEN	Specials will be detailed as required to meet the design intent.
69	JRC	A Series	Roof / parapet details - provide the masonry walls to expand, minimizing potential water infiltration	OPEN	Details will be provided for review.
70	JRC	A Series	Typical air barrier details - primarily at the intersection of differing materials. Allow for thermal expansion and movement.	OPEN	Details will be provided for review.
71	JRC	A Series	Glazing at offset panels - Standard frames as specified may not achieve the required thermal barrier and subject the framing to condensation, sections 2 and 3 on sheet A318	OPEN	JLA to review. The intent here is not clear to the reviewer due to incomplete drafting.
72	JRC	A Series	Exterior sun shade details - as they develop please consider the limitations on weight and wind loading that could contribute to the limits of the aluminum curtainwall system. In addition, the connections for the sun shades could impact thermal separation, (bridging), and failure of the air barrier cavity seals at the line of insulation.	OPEN	JLA understands comment.
73	JRC	A Series	Details for skylight will be reviewed with next package. Several items to consider are the thermal barrier between the framing and roof deck as well as the height of the skylight curb, primarily for winter snow depth and potential water infiltration.	OPEN	Skylight details are under development. A section at the curb will be provided for review by the commissioning agent.
<b>Plumbing</b>					
74	WGH	P0.02	Schematic H.W. Heater / Storage Tank Piping Detail 1 includes a hot water return recirculation pump connected to the BMS for the potable domestic hot water system. Non-Potable Water Heater Piping Detail includes a hot water return recirculation pump controlled by a (7) programmable time clock. Is this recirc pump and time clock connected to the BMS?	OPEN	Detail to be revised with circ pump connected to BMS.
75	WGH	P0.02	Detail 7 calls for an oil minder control panel. Does this control panel integrate with the BMS? The specified unit includes this option.	OPEN	Yes. Will connect panel to BMS.
76	WGH	P0.02	Detail 7 shows a single float switch. The specifications indicates a stainless steel probe. The specified unit includes additional floats and sensors. Cx suggest coordinating the detail and specifications.	OPEN	Agree Will coordinate and update detail.
<b>Mechanical</b>					
77	KML	General	Drawing set does not include a symbol/abbreviation legend.	OPEN	Symbol/abbreviation legend is included on drawing M302.
78	KML	M Series	All terminal heating/cooling equipment locations not yet indicated. Several occupied spaces are not outfitted with ventilation or tempering.	OPEN	Terminal equipment locations will be indicated.
79	KML	M Series	Mechanical equipment nomenclature/tags not yet indicated.	OPEN	Equipment tags/nomenclature will be indicated.
80	KML	M101A	No exhaust indicated for Recycling/Trash Room 1014.	OPEN	Exhaust will be indicated.
81	KML	M101A	Kitchen makeup and exhaust air equipment and ductwork not indicated on mechanical floor plans.	OPEN	Kitchen make up and exhaust equipment and ductwork will be indicated.
82	KML	M101A	Enlarged Boiler Room Plan appears to indicate the boiler plant is not confined to the designated space (pumps and expansion tank shown in Custodian Toilet 1016.	OPEN	Boiler room plan has been updated.
83	KML	M101A-103D	Ductwork plans do not indicate supply/return designations.	OPEN	Ductwork plans will indicate supply/return designations.
84	KML	M101A-103D	Ductwork plans do not yet show duct routes and connections to all terminal units.	OPEN	Duct routes and connections to all terminal units will be indicated.
85	KML	M101A-103D	Ductwork plans do not indicate min/max airflow values utilized for basis of design and energy modeling.	OPEN	Ductwork plans will indicate max design airflow values for equipment. The VAV schedule will indicate minimum airflow values.
86	KML	M201A-203D	Mechanical piping plans do not indicate system or supply/return designations (CHWS/R, HHWS/R).	OPEN	Piping plans will be updated to indicate supply/return designations.
87	KML	M201A-203D	Mechanical piping plans do not yet show supply and return CHW/HW piping and connections to all terminal units.	OPEN	Piping plans will be updated to indicate connections to terminal units.
88	KML	M201A-203D	Mechanical piping plans do not indicate min/max flow rates or differential pressures utilized for basis of design and energy modeling.	OPEN	Hydronic flow rates of equipment will be indicated in future submissions on the piping plans and schedules.

Item	Initials	Reference	Comments	Action	Response
89	KML	M201A-203D	Mechanical piping plans do not include roof level and connections to Rooftop Air Handling Units equipped with chilled water and heating hot water coils.	OPEN	Drawing M104 indicates both ductwork and piping layout at the roof level.
90	KML	M301	RTU schedule notes call for variable frequency drives for energy recovery wheels. Specifications call for fixed plate heat exchangers or enthalpy plate heat exchangers for energy recovery. Please verify what type of energy recovery, if any, is required.	OPEN	The basis of design rooftop units will be equipped with fixed plate heat exchangers. We will review and revise the RTU schedule notes.
91	KML	M301	Air-Cooled Liquid Chiller schedule notes call for 30% propylene glycol solution for heating hot water system freeze protection. Please verify if this note is applicable for the chilled water system or should be relocated.	OPEN	Schedule note has been updated to indicate chilled water.
92	KML	M301	Equipment schedules in development. To be further reviewed once complete.	OPEN	Equipment schedules will continue to develop.
93	KML	M Series	Roof Top Unit Detail/Layout not included. To be reviewed once complete.	OPEN	Make up air unit detail on drawing M304 will be updated to apply to all rooftop units.
94	KML	M Series	Control diagrams not provided for all equipment and systems. To be reviewed once complete.	OPEN	Control diagrams will be provided in future submissions.
95	KML	M Series	Because of the size of the building and the numerous systems, CxA suggest including single line flow diagrams for the mechanical systems including: heating hot water piping systems, chilled water piping systems, condensate piping, and air distribution systems.	OPEN	Drawing M305 includes flow diagrams for ductwork, heating hot water and chilled water piping systems.
<b>Electrical</b>					
96	JAH	E001	Suggest modifying "Electrical Symbols " with respect to raceways and panels data - a similar symbol is used for both.	OPEN	Ok
97	JAH	E-PH-1	Drawing is not listed on drawing table of contents. In addition, if drawing is to be utilized with or is to complement drawing E003-1, there should be a note or reference between the two.	OPEN	This is an early bid package not to be issued with final set.
98	JAH	E-PH-1 & E002	Drawing E-PH-1 lists two fixtures that do not appear on the lighting fixture drawing (E002) - namely, SL1A & SL2. If these fixture types are correct, and all lighting fixture info is to be found on E002, these fixtures should be added to drawing E002. If incorrect, remove/correct the fixtures on drawing E-PH-1.	OPEN	E-PH-1 is an early bid package not to be issued with the final set.
99	JAH	E-PH-1	Add circuit info for the lights as design is finalized	OPEN	This has been completed.
100	JAH	E002	Complete lighting fixture table . Of the dozen or so fixtures utilized on the lighting drawings, the "mgr. column" (2nd from right) and the "schedule column" (farthest right column) do not contain all required references. Also, for many fixtures, a single alpha character is designated for a manufacturer, however, this is at variance with the fixture manufacturer chart.	OPEN	This will be completed as the drawings develop.
101	JAH	E002	The drawing indicates lighting fixture schedule notes. However, they appear to be a mixed set - some Notes are applicable for ALL fixtures yet some are only applicable to just a few fixtures. Please clarify general from specific notes or ADD notes that apply to all utilized fixtures in the appropriate fixture schedule column.	OPEN	This will be completed as the drawings develop.
102	JAH	E002	Drawing title & contents focus on lighting and lighting fixtures. It is recommended that the ELECTRICAL GENERAL NOTES be moved to a separate drawing.	OPEN	Ok
103	JAH	E003-1	Add circuit info for the lights as design is finalized	OPEN	Ok
104	JAH	E003-2	Add circuit info for the lights as design is finalized	OPEN	Ok
105	JAH	E002-E005 (typ)	Suggest removing north arrow from non-plan drawings	OPEN	Will remove.
106	JAH	E101A (typical for all power and lighting plan drawings)	Instead of just showing a north arrow, it is suggested to show a keyplan for these drawings (would apply to mechanical and plumbing drawings, as well).	OPEN	Ok
107	JAH	E101A (typical for all power and lighting plan drawings)	Add circuit info for all equipment/lights as design progresses.	OPEN	Ok
108	JAH	E201A (typical for all power plan drawings)	Identify all components	OPEN	Ok
109	JAH	E204ABCD	Note 1 indicates a lightning protection system is shown but drawing does not provide this. Review and reconcile.	OPEN	We will revise to what will be a lightning preventor system.
110	JAH	E300	Suggest indicating code/manufacturer clearance for electrical equipment on drawing.	OPEN	Will add to the drawings.
111	JAH	E301	ATS-OC connection to panel EHP3C is not indicated at ATS end. Please add info.	OPEN	Will correct.
112	JAH	E301	Load Bank not indicated at generator. Please add info.	OPEN	Ok
113	JAH	E301	MSB connections to panels LP3C, MHP3C, LP3B and at transformers for panels MP3B and MP3C are not indicated at MSB end. Please add info.	OPEN	Ok
114	JAH	E301	There is an emergency LS panel installed on floors 1 and 2 - suggest adding a similar panel at floor 2	OPEN	Will review to see if this is needed.
115	JAH	E301 and E302	Panel schedule lists panel 4DP1B - Riser does not. Add panel to riser or remove from schedule? Please reconcile.	OPEN	Will correct.
116	JAH	E301 and E302	Verify Main switchboard ID - MSB or MSB-1 ?	OPEN	MSB, this will be corrected.
117	JAH	E302 +	Need to add several more panel schedules to detail all the panels shown on riser (add add'l drawings, as required).	OPEN	Will be added as the drawings progress.
118	JAH	E302+	Complete panel schedules with circuit numbers, AIC rating, and MLO/MCB indication (add add'l drawings, as required).	OPEN	Will be completed as the drawings progress.
119	JAH	E304	Det. 12: Please verify is AHJ requires generator to have local EPO	OPEN	This is a code requirement, we will review with AHJ.



Item	Initials	Reference	Comments	Action	Response
120	JAH	E304	Det. 12: Provide connection detail to load bank at generator	OPEN	Will add to the drawings.
121	JAH	E305	Suggest Automated Lighting Control one-line be presented on a separate drawing for clarity and ease of review	OPEN	Ok
122	JAH	E400	Suggest Smoke Seq of OPs and fire alarm matrix be moved to a separate drawing for clarity and ease of review	OPEN	Ok
123	JAH	E401A (typical for all FA plan drawings)	Instead of just showing a north arrow, it is suggested to show a keyplan for these drawings (would apply to mechanical and plumbing drawings, as well).	OPEN	Ok

## Memorandum

To:	Fuller Middle School Building Committee	Date:	6/3/2019
From:	Joel G. Seeley	Project No.:	17050
Project:	New Fuller Middle School		
Re:	Proprietary Specification		
Distribution:	School Building Committee (MF)		

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School Building Committee Members,

Please find the updated listing of Proprietary Specifications, dated May 22, 2019, recommended to be included in the project by Framingham Public Schools Building and Grounds Department. These have been reviewed by the architect and the engineers and they agree with the recommendation. This is an update of the list reviewed at the April 8, 2019 School Building Committee Meeting.

Also attached is an excerpt from the MSBA's Detailed Design Requirements Module 6, which requires a vote by an elected body of the District for proprietary specifications.

The School Building Committee is requested to approve the attached recommended listing of Proprietary Specifications and recommend approval by the School Committee.

**MEMORANDUM**DATE: March 15, 2019, *Revised March 21, 2019, Revised April 8, 2019, Revised May 22, 2019***PROJECT:** Fuller Middle School Framingham, MA**SUBJECT:** Proprietary Items

TO: Joel Seeley, SMMA

FROM: Elizabeth Bugbee, AIA Jonathan Levi Architects

On February 20, 2019 the Framingham Public Schools Building and Grounds Department identified and recommended the following items to be listed as proprietary in the specifications for the new Fuller School. These items were reviewed with the architect and MEP engineers, who agree with the recommendations. These will need to be voted on and approved by the SBC in order to be included in the specification for the new Fuller Middle School.

SYSTEM	MANUFACTURER	REASON FOR RECOMMENDATION
Automatic Temperature Controls	Tridium Niagara N4 Supervisor - JACE Controller	Tridium Niagara N4/Supervisor is the current City standard for the Building Management System (BMS). This would be an extension of the City's existing building management Architecture system with Tridium Niagara N4/JACE controllers and will provide a seamless tie-in to the existing City's building management system BMS Server. The Tridium Niagara N4/Jace would therefore result in the reduction of costs of maintenance staff training and servicing, to improve reliability of service from contractors, and improve integration of systems into the existing Facility control network. The Tridium Niagara N4 Supervisor system provides an open platform to allow integration of a variety of other control system protocols with JACE Controller (eg BACNet IP, etc.)
Network Switches	HP	Maintaining a standard set of manufacturers for this type of equipment helps to lower the total cost of ownership of the system by allowing the City to maintain a standard operating procedure for installation, operation, support and maintenance.
Access Control	S2	Maintaining a standard set of manufacturers for this type of equipment helps to lower the total cost of ownership of the system by allowing the City to maintain a standard operating procedure for installation, operation, support and maintenance.
Closed Circuit TV	Cisco Meraki System	Maintaining a standard set of manufacturers for this type of equipment helps to lower the total cost of ownership of the system by allowing the City to maintain a standard operating procedure for installation, operation, support and maintenance.
Door Hardware Key System and Lock Cylinders	Schlage Classic Keyways: C, E, EF and F.	The existing Framingham Public Schools master key system is a registered system with Schlage Lock. The school district would like Fuller Middle School keyed into the existing registered master key system.
Classroom Door Hardware	Securitech QID	Allows user to quickly lock classroom door via push button in lieu of thumb turn or key and has visual indicator to notify occupants that the door is deadbolted and the outside lever is locked.

Page 1 of 1

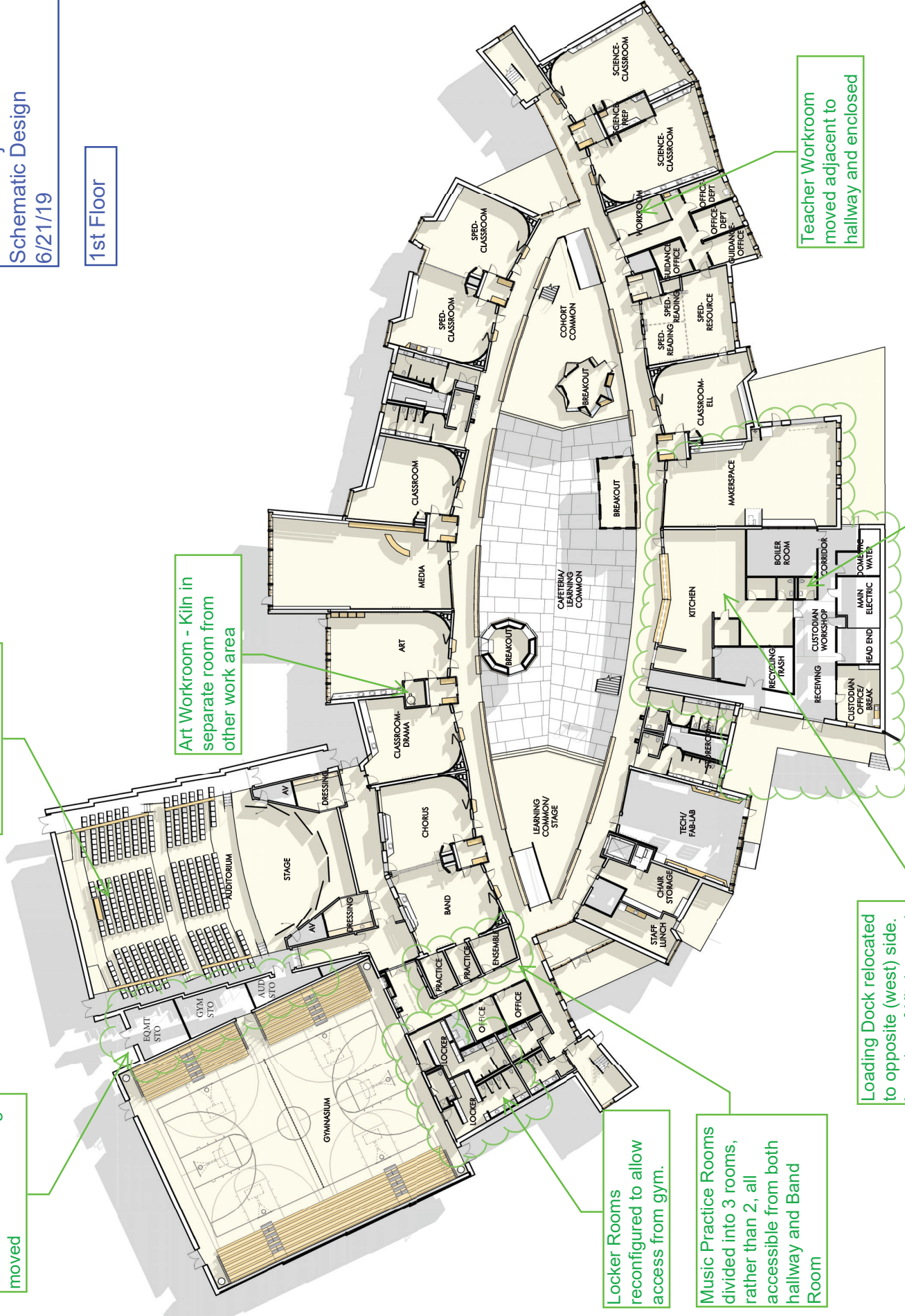
- Provide a list identifying all proposed proprietary items (if any) with an affidavit which shall indicate an elected body of the district (school committee, city or town council, or selectmen, - but not an ad-hoc building committee) has been presented with proposals for proprietary requirements approval action, has had an opportunity to investigate, or to require staff or consultant investigation upon each item so proposed, and has majority voted in an open public session that is in the public interest to do so. Provide MSBA with a certified copy of the vote of the elected body.
- An interior color theory statement describing proposed paint and material selections and colors for typical and special spaces, why they have been selected and how these selections relate to exterior materials and colors. Confirm that color and material selections have been presented to and approved by the District
- Confirmation of project registration with CHPS or USGBC
- Structural narrative including methods of lateral bracing and how requirements of earthquake code will be met
- Structural calculations and required floor loads
- Energy calculations
- Life Cycle cost analysis for energy and water consuming devices
- Heat gain and loss calculations for Heating, Ventilating and Air Conditioning systems
- Calculations showing total electrical load
- Security and visual access requirements:
  - 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
  - Identification of any other security related items particular to the District and/or the proposed project
  - Verification that the following safety and security related issues have been reviewed and are in accordance with the District's procedures as noted above:
    - Main entrance design – describe District protocol for visitor entry and check-in related to the current design for visitors to remain in the vestibule versus a side sub-vestibule
    - Classroom lockset hardware - confirm hardware functions are compatible with the District's protocols related to lockdown
    - 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
    - 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





6.3.2.2

1st Floor



Auditorium rotated 90 degrees

Art Workroom - Kiln in separate room from other work area

Outdoor equipment storage added. Gym and Auditorium Storage moved

Locker Rooms reconfigured to allow access from gym.

Music Practice Rooms divided into 3 rooms, rather than 2, all accessible from both hallway and Band Room

Loading Dock relocated to opposite (west) side. Location of Kitchen and Maker Space mirrored from SD plan.

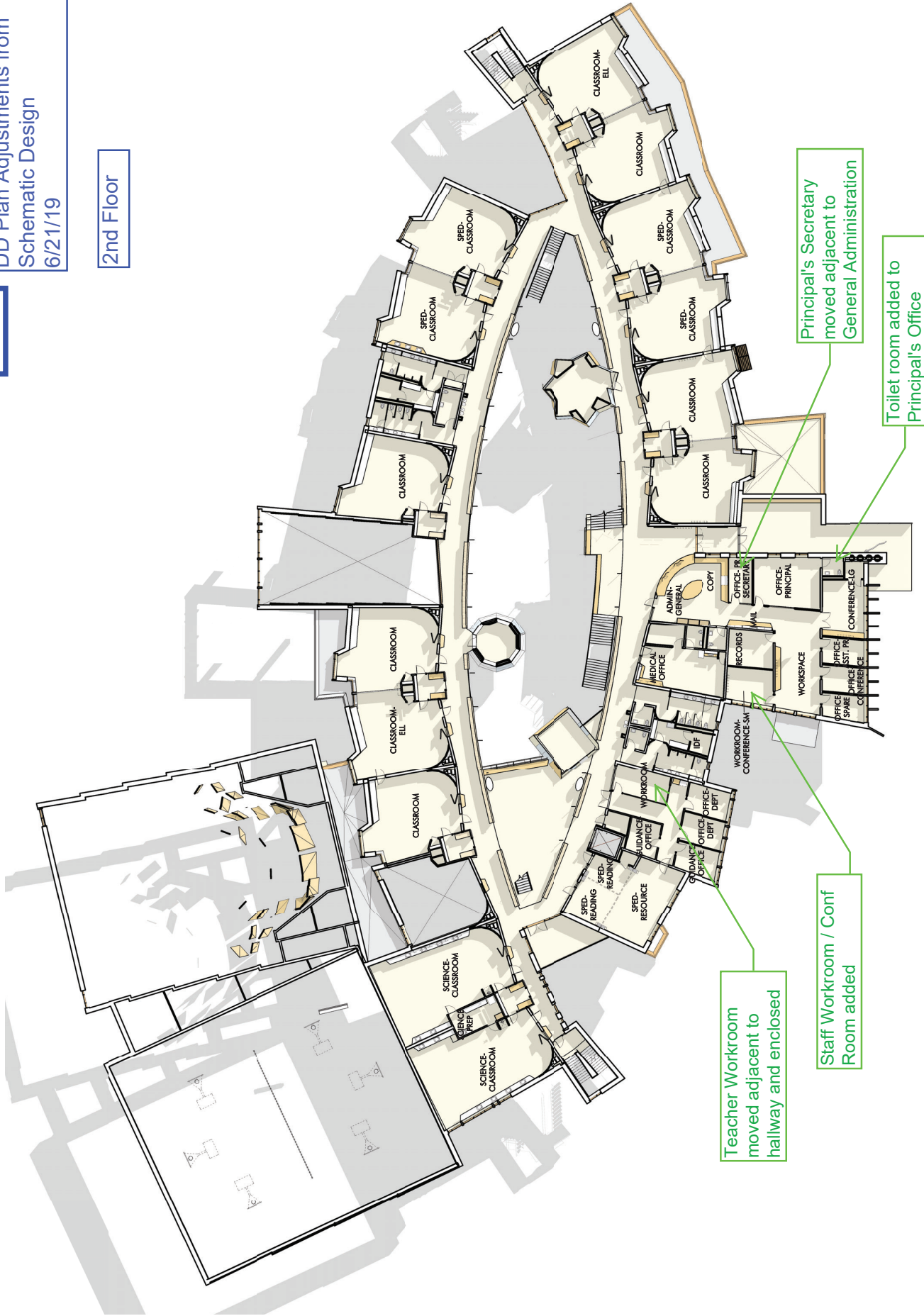
Teacher Workroom moved adjacent to hallway and enclosed

Added staff toilet room

Fuller Middle School  
DD Plan Adjustments from  
Schematic Design  
6/21/19

6.3.2.2

2nd Floor

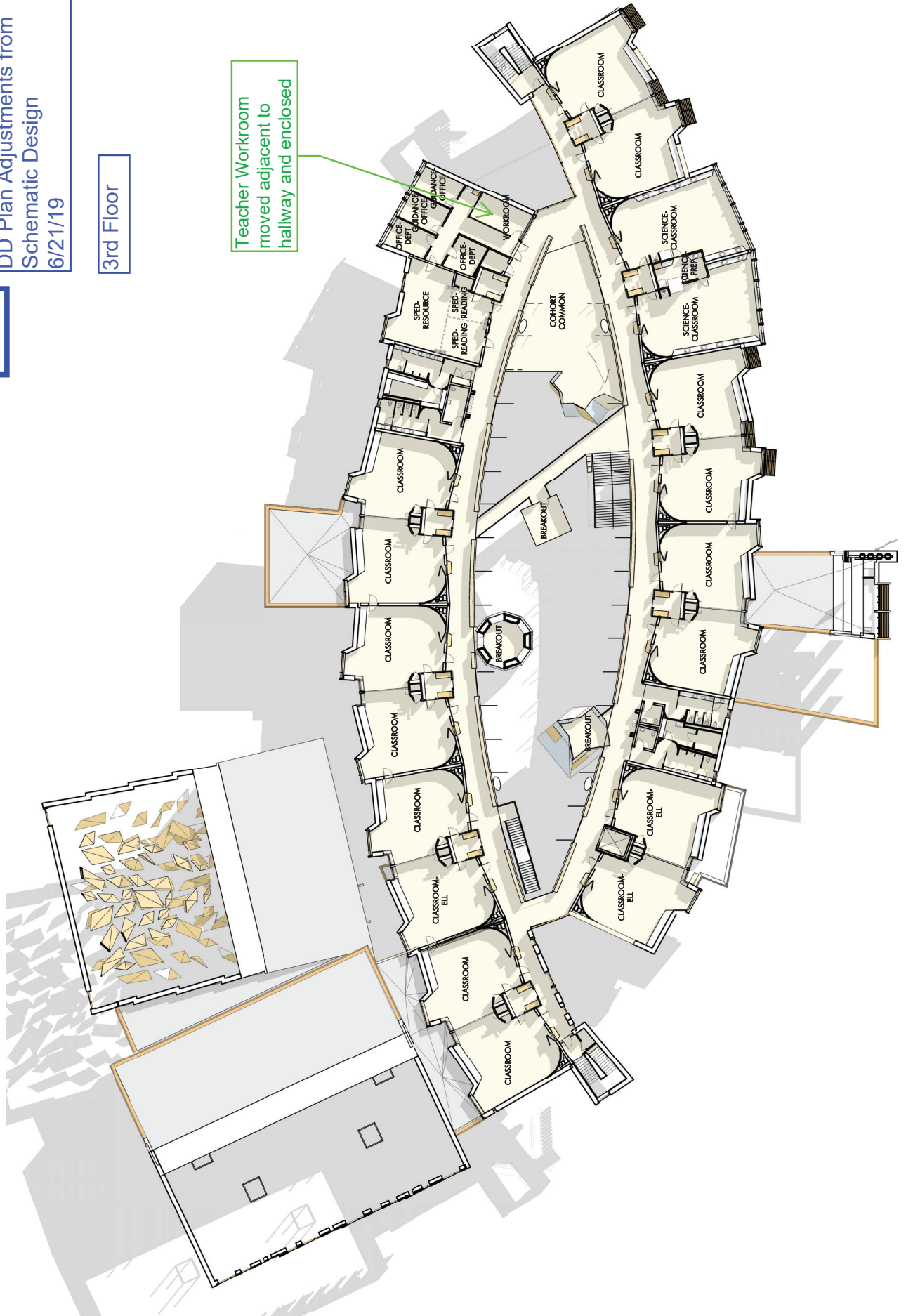




6.3.2.2 Fuller Middle School  
DD Plan Adjustments from  
Schematic Design  
6/21/19

3rd Floor

Teacher Workroom  
moved adjacent to  
hallway and enclosed





CITY OF FRAMINGHAM  
DEPARTMENT OF PUBLIC WORKS  
FRAMINGHAM, MASSACHUSETTS 01702

PETER A. SELLERS  
EXECUTIVE DIRECTOR | FDPW  
PAUL G. BARDEN  
DEPUTY DIRECTOR | FDPW  
WILLIAM R. SEDEWITZ - PE  
CHIEF ENGINEER | FDPW  
DIANE M. CONNER  
ASSISTANT DIRECTOR | FDPW

April 30, 2019

Ms. Amanda Loomis  
Framingham Planning Board  
Memorial Building Room 205  
150 Concord Street  
Framingham, MA 01702

Re: Fuller Middle School – 31 Flagg Drive, Framingham

Dear Ms. Loomis,

The Department of Public Works (DPW) is in receipt of submittals for the above referenced project. It should be noted that the DPW and the School Department have met on multiple occasions to review and discuss this project. These meetings have been beneficial and the School Department has addressed DPW issues. Therefore the comments below should be taken in context for the deliverables as submitted to the Planning Board and Conservation Commission and provided to DPW. We anticipate that many of these comments have already been addressed. Nonetheless, based on that context, we have reviewed said submittal, and subsequently offer the following observations:

GENERAL:

1. All work should be inspected by a DPW Utility Inspector. To schedule a pre-construction meeting, contact the Engineering Division at (508) 532-6022 or (508) 532-6010 forty-eight hours prior to the start of work.
2. All site drainage, water, and sewer work outside the building footprint shall be performed by a licensed Framingham Drain layer.
3. Any proposed surface openings and excavation work within the City right-of-way limits will require a Street Opening Permit (SOP) with the work conducted under said permit being performed in compliance with the City of Framingham SOP Policy.
4. A Trench Opening Permit (TOP) shall be obtained prior to the excavation of any trench. A trench is defined under MGL 82A and 520 CMR 14.00 as any excavation greater than 3' in depth and less than 15' between soil walls as measured from the bottom.
5. All proposed work shall comply with City of Framingham DPW construction standards. City of Framingham construction standards are available on the City of Framingham website.

ROADWAY:

1. The applicant should review MassDOT minimum warrants for the proposed school zone.
2. The proposed school zone needs to be reviewed and approved by the City of Framingham Traffic Commission.

DRAINAGE:

1. DPW recommends the applicant to design the stormwater system to meet the requirements of the EPA MS4 General Permit issued to the City.
2. The "Rules & Regulations Governing the Subdivision of Land in Framingham", amended April 3, 2017, states "The specified design storms shall be defined as a 24-hour storm using the rainfall distribution recommended by the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, as amended, or the Northeast

Regional Climate Center (NRCC) "Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada." The stormwater calculations should be updated using the correct rainfall data. Applicant should resubmit calculations.

WATER:

1. The existing water service shall be cut and capped at the water main prior to the demolition of the building. The existing tee shall be removed and replaced with a straight piece.
2. Tapping the proposed hydrants off 6-inch water lines is inconsistent with DPW construction standards. Hydrants shall be tapped off a minimum 8-inch water main.
3. The proposed inline gate valves should be located on the outside of the 6-inch fire service and the 2-inch domestic service.

SEWER:

1. The existing sewer service shall be cut and capped at the sewer main in Flagg Drive.
2. Provide a sewer profile for the proposed sewer lateral including the invert elevation at the building and the sewer main invert elevation in the street.
3. Provide two sewer manholes one upstream and one downstream of the proposed grease interceptor.

ITEMS REVIEWED:

1. Plan: Walnut Street Pump Station and Sewer Project 1, 31 Flagg Drive, Framingham, MA; Prepared by: CDW Consultants, LLC; Stamped & Signed by: Eric S. Wilhelmsen, P.E.; Date: April 5, 2019 (title block).
2. Doc.: Stormwater Report Fuller Middle School 31 Flagg Drive, Framingham, MA; Prepared by: CDW Consultants, LLC.

If you have any questions or require additional information, please contact the Engineering & Transportation Division at (508) 532-6010.

Yours very truly,



Tam D. Nguyen  
Civil Engineer



Eric V. Johnson, P.E.  
City Engineer

TDN/EVJ

CC: W. Sedewitz, Chief Engineer      D. Nau, Dir. of Highway & Sanitation      B. Lukis, Dir. of Water & Sewer  
S. Leone, Asst. Dir. of Water & Sewer      J. Stefanini, DPW Permit Engineer      J. Barsanti, Asst. Dir. of Water & Sewer



## 2.2 Project Schedule

The project schedule anticipates submission of the 60% Construction Documents on August 9, 2019 and the 90% Construction Documents on October 11, 2019. The submission dates incorporate the MSBA review periods for each submission.

The schedule anticipates early packages for sitework, foundations and building structure. The Early Site Work Contract Documents were released for bid on May 10, 2019. The Early Foundation and Steel Package will be released on August 9, 2019 for bid. The Early Masonry Package will be released October 2, 2019.

The main package will be released on November 15, 2019 with the GMP expected in January 3, 2020. Substantial Completion of the building is scheduled for June 2021 and occupancy in August 2021. Thereafter, demolition of the existing building and construction of the playfields and parking lots will be completed by December 2021.

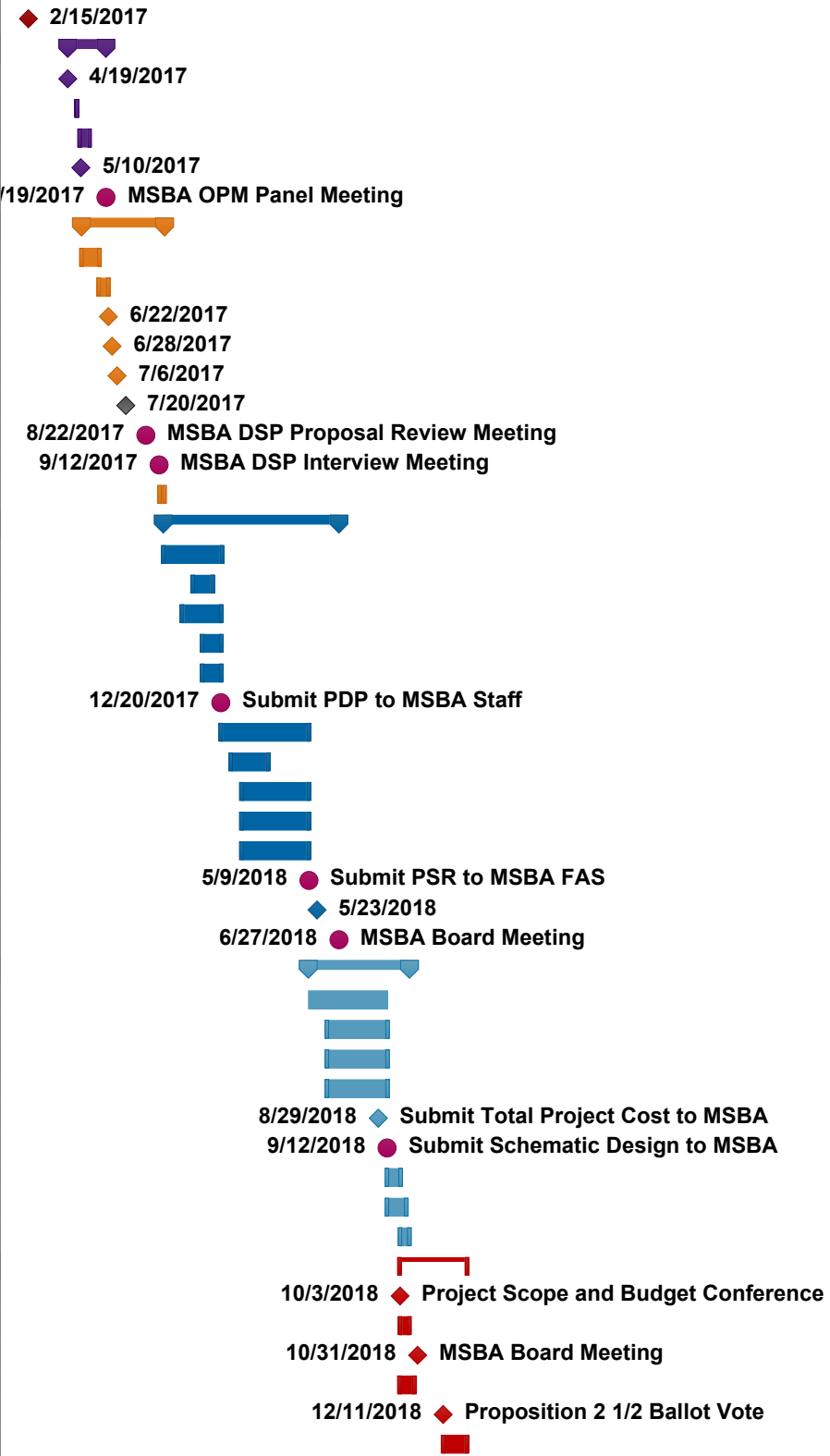
The following is the status of project approvals:

- DESE – Special Education approval by Department of Elementary and Secondary Education – Approved September 27, 2018
- MHC – Project Notification Form and approvals by MA Historical Commission – Approved January 2, 2018
- OIG – Construction Manager at Risk approval by the Office of Inspector General – Approved December 21, 2018
- Executive Office of Energy and Environmental Affairs / EEA:
  - MEPA – MA Environmental Policy Act by Energy & Environmental Affairs:
    - ENF – Environmental Notification Form – Not Applicable, an ENF is not required.
    - EIR – Environmental Impact Report – Not Applicable, an EIR is not required.
  - Article 97 Land Disposition Policy approval by Energy & Environmental Affairs – Not Applicable to this project.
- MA DEP – Massachusetts Department of Environmental Protection – Release Abatement Measure submitted July 17, 2019.
- MA DOT – Massachusetts Department of Transportation – Not Applicable
- MA DPH – Massachusetts Department of Public Health – Not Applicable
- EPA – NPDES National Pollutant Discharge Elimination System Notice of Intent approval by the US Environmental Protection Agency – Submitted by CM on June 10, 2019 and approval received on June 24, 2019.
- MAAB – Accessibility variances by MA Architectural Access Board – Not Applicable as no variances are required.
- Framingham Planning Board – Site Plan Approval received on May 2, 2019.
- Framingham Conservation Commission – NOI approved on July 1, 2019

The letter from the District, dated August 9, 2019, confirming compliance with Article 4.12 of the executed Project Funding Agreement is attached.

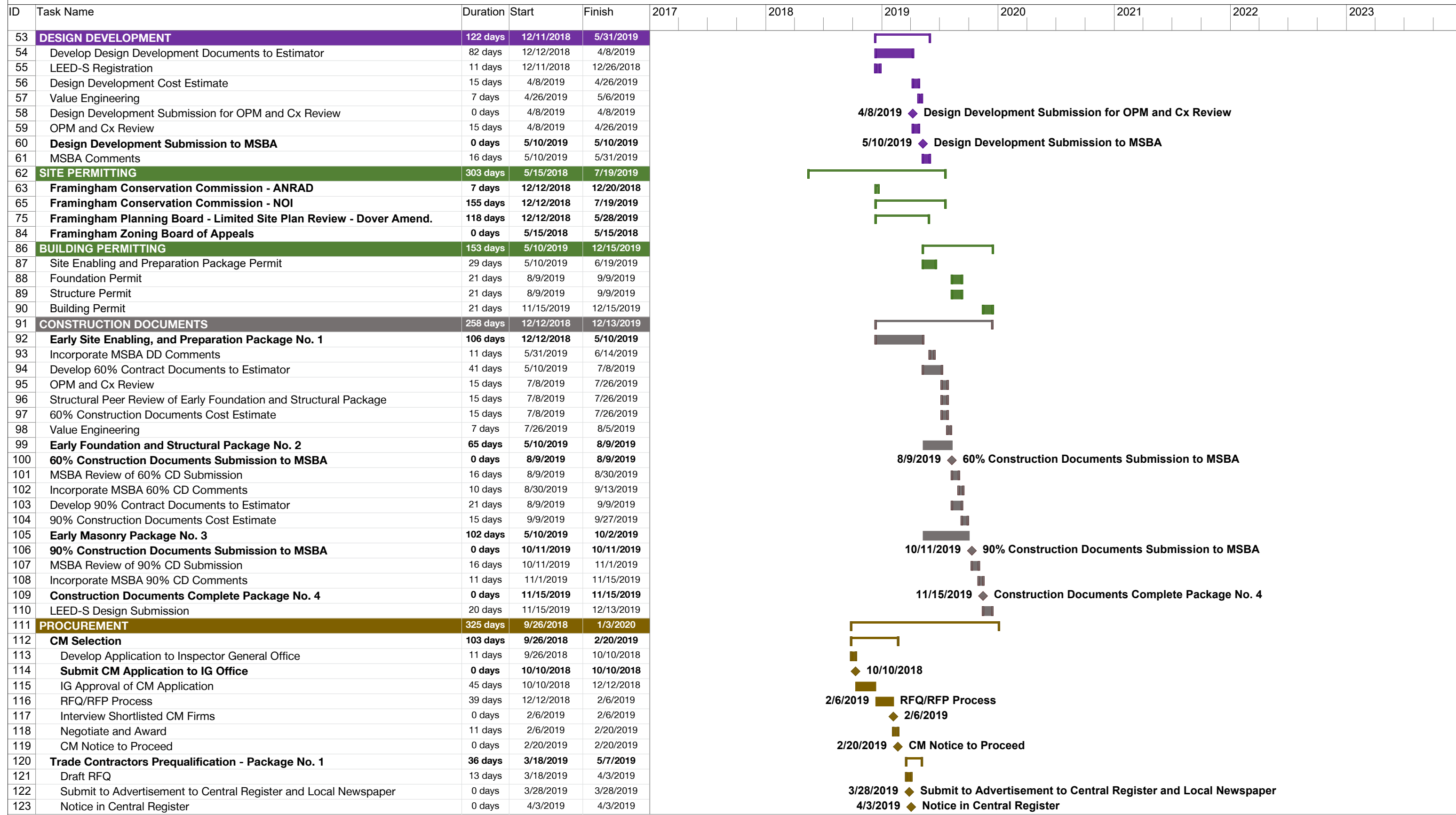
The Project Schedule is appended to the end of this section.

ID	Task Name	Duration	Start	Finish	2017	2018	2019	2020	2021	2022	2023
1	<b>MSBA PREREQUISITES</b>	496 days	3/13/2015	2/15/2017							
2	Original Statement of Interest (SOI) Submission	0 days	3/13/2015	3/13/2015							
3	MSBA Invite into Eligibility	0 days	5/25/2016	5/25/2016							
4	Execute Feasibility Study Agreement (FSA)	0 days	2/15/2017	2/15/2017							
5	<b>RETAIN OPM</b>	43 days	4/19/2017	6/19/2017							
6	Submit OPM Proposals	0 days	4/19/2017	4/19/2017							
7	OPM Interview	1 day	5/3/2017	5/3/2017							
8	Negotiate OPM Contract	12 days	5/8/2017	5/23/2017							
9	Submit Documents to MSBA OPM Panel	0 days	5/10/2017	5/10/2017							
10	<b>MSBA OPM Panel Meeting</b>	0 days	6/19/2017	6/19/2017							
11	<b>RETAIN DESIGNER</b>	93 days	5/11/2017	9/20/2017							
12	Draft Designer RFS and Submit to MSBA	21 days	5/11/2017	6/8/2017							
13	MSBA Approve Draft RFS	11 days	6/8/2017	6/22/2017							
14	Submit to Central Register	0 days	6/22/2017	6/22/2017							
15	Notice in Central Register	0 days	6/28/2017	6/28/2017							
16	Briefing Session	0 days	7/6/2017	7/6/2017							
17	Submit Designer Proposals	0 days	7/20/2017	7/20/2017							
18	<b>MSBA DSP Proposal Review Meeting</b>	0 days	8/22/2017	8/22/2017							
19	<b>MSBA DSP Interview Meeting</b>	0 days	9/12/2017	9/12/2017							
20	Negotiate Designer Contract	6 days	9/13/2017	9/20/2017							
21	<b>FEASIBILITY STUDY (FS)</b>	198 days	9/19/2017	6/27/2018							
22	Develop Preliminary Design Program (PDP)	67 days	9/19/2017	12/21/2017							
23	Submit PNF to MHC	23 days	11/5/2017	12/6/2017							
24	Community Presentations	44 days	10/19/2017	12/20/2017							
25	Town Council Presentations	22 days	11/20/2017	12/20/2017							
26	School Committee Presentations	22 days	11/20/2017	12/20/2017							
27	<b>Submit PDP to MSBA Staff</b>	0 days	12/20/2017	12/20/2017							
28	Develop Preferred Schematic Report (PSR)	99 days	12/20/2017	5/9/2018							
29	Receive MHC Clearance	42 days	1/5/2018	3/5/2018							
30	Community Presentations	78 days	1/22/2018	5/9/2018							
31	City Council Presentations	78 days	1/22/2018	5/9/2018							
32	School Committee Presentations	78 days	1/22/2018	5/9/2018							
33	<b>Submit PSR to MSBA FAS</b>	0 days	5/9/2018	5/9/2018							
34	<b>FAS Presentation</b>	0 days	5/23/2018	5/23/2018							
35	<b>MSBA Board Meeting</b>	0 days	6/27/2018	6/27/2018							
36	<b>SCHEMATIC DESIGN (SD)</b>	114 days	5/9/2018	10/17/2018							
37	Develop Schematic Design	89 days	5/9/2018	9/12/2018							
38	Community Presentations	67 days	6/8/2018	9/12/2018							
39	City Council Presentations	67 days	6/8/2018	9/12/2018							
40	School Committee Presentations	67 days	6/8/2018	9/12/2018							
41	Submit Total Project Cost to MSBA	0 days	8/29/2018	8/29/2018							
42	<b>Submit Schematic Design to MSBA</b>	0 days	9/12/2018	9/12/2018							
43	MSBA Review Schematic Design (SD) Submission	16 days	9/12/2018	10/3/2018							
44	DESE Review	23 days	9/12/2018	10/12/2018							
45	Respond to MSBA Comments	11 days	10/3/2018	10/17/2018							
46	<b>PROJECT SCOPE AND BUDGET</b>	75 days	10/2/2018	1/17/2019							
47	Project Scope and Budget Conference	0 days	10/3/2018	10/3/2018							
48	Execute Scope and Budget Agreement	11 days	10/3/2018	10/17/2018							
49	<b>MSBA Board Meeting</b>	0 days	10/31/2018	10/31/2018							
50	City Council Meeting to Vote Funds for Total Project Budget	18 days	10/2/2018	10/25/2018							
51	Proposition 2 1/2 Ballot Vote	0 days	12/11/2018	12/11/2018							
52	Execute Project Funding Agreement	26 days	12/11/2018	1/17/2019							











ID	Task Name	Duration	Start	Finish	2017	2018	2019	2020	2021	2022	2023
124	Prepare SOQ	11 days	4/3/2019	4/17/2019							
125	Submit SOQs	0 days	4/17/2019	4/17/2019			4/17/2019				
126	Review SOQs	9 days	4/17/2019	4/29/2019							
127	Recommend Prequalified Trade Contractors to SBC	0 days	5/6/2019	5/6/2019			5/6/2019				
128	Issue Notification Letters to Prequalified Trade Contractors	0 days	5/7/2019	5/7/2019			5/7/2019				
129	<b>Trade Contractors Prequalification - Package No. 2</b>	<b>69 days</b>	<b>5/1/2019</b>	<b>8/6/2019</b>							
130	Develop Draft RFQs	41 days	5/1/2019	6/26/2019							
131	Submit Advertisement to Central Register and Local Newspaper	0 days	6/25/2019	6/25/2019			6/25/2019				
132	Notice in Central Register	0 days	7/3/2019	7/3/2019			7/3/2019				
133	Prepare SOQ	10 days	7/3/2019	7/17/2019							
134	Submit SOQs	0 days	7/17/2019	7/17/2019			7/17/2019				
135	Review SOQs	14 days	7/17/2019	8/5/2019							
136	Recommend Prequalified Trade Contractors to SBC	0 days	8/5/2019	8/5/2019			8/5/2019				
137	Issue Notification Letters to Prequalified Trade Contractors	0 days	8/6/2019	8/6/2019			8/6/2019				
138	<b>Trade Contractors Prequalification - Package No. 3</b>	<b>55 days</b>	<b>7/1/2019</b>	<b>9/17/2019</b>							
139	Develop Draft RFQs	21 days	7/1/2019	7/30/2019							
140	Submit Advertisement to Central Register and Local Newspaper	0 days	7/30/2019	7/30/2019			7/30/2019				
141	Notice in Central Register	0 days	8/7/2019	8/7/2019			8/7/2019				
142	Prepare SOQ	11 days	8/7/2019	8/21/2019							
143	Submit SOQs	0 days	8/21/2019	8/21/2019			8/21/2019				
144	Review SOQs	13 days	8/21/2019	9/9/2019							
145	Recommend Prequalified Trade Contractors to SBC	0 days	9/16/2019	9/16/2019			9/16/2019				
146	Issue Notification Letters to Prequalified Trade Contractors	0 days	9/17/2019	9/17/2019			9/17/2019				
147	<b>Trade Contractors Prequalification - Package No. 4</b>	<b>60 days</b>	<b>8/20/2019</b>	<b>11/12/2019</b>							
148	Develop Draft RFQs	15 days	8/20/2019	9/10/2019							
149	Submit Advertisement to Central Register and Local Newspaper	0 days	9/10/2019	9/10/2019			9/10/2019				
150	Notice in Central Register	0 days	9/18/2019	9/18/2019			9/18/2019				
151	Prepare SOQ	11 days	9/18/2019	10/2/2019							
152	Submit SOQs	0 days	10/2/2019	10/2/2019			10/2/2019				
153	Review SOQs	24 days	10/2/2019	11/4/2019							
154	Recommend Prequalified Trade Contractors to SBC	0 days	11/11/2019	11/11/2019			11/11/2019				
155	Issue Notification Letters to Prequalified Trade Contractors	0 days	11/12/2019	11/12/2019			11/12/2019				
156	<b>100% Construction Document Package No. 4</b>	<b>46 days</b>	<b>10/29/2019</b>	<b>1/3/2020</b>							
157	Submit Advertisement to Central Register and Newspaper	0 days	10/29/2019	10/29/2019			10/29/2019				
158	Notice in Central Register	0 days	11/6/2019	11/6/2019			11/6/2019				
159	Trade Contractor Bid Package	15 days	11/15/2019	12/6/2019							
160	Pre-Bid Meeting	0 days	11/22/2019	11/22/2019			11/22/2019				
161	Trade Contractor Bid Due	0 days	12/6/2019	12/6/2019			12/6/2019				
162	CM Develop GMP	19 days	12/6/2019	1/3/2020							
163	GMP Approval	0 days	1/3/2020	1/3/2020			1/3/2020				
164	<b>EARLY PACKAGES PROCUREMENT</b>	<b>122 days</b>	<b>5/7/2019</b>	<b>10/28/2019</b>							
165	<b>Early Site Package No. 1</b>	<b>30 days</b>	<b>5/7/2019</b>	<b>6/17/2019</b>							
166	Submit Advertisement to Central Register and Newspaper	0 days	5/7/2019	5/7/2019			5/7/2019				
167	Notice in Central Register	0 days	5/15/2019	5/15/2019			5/15/2019				
168	Issue Early Site Package Bid Documents	0 days	5/10/2019	5/10/2019			5/10/2019				
169	PreBid Meeting	0 days	5/20/2019	5/20/2019			5/20/2019				
170	Trade Contractor Bids Due	0 days	5/24/2019	5/24/2019			5/24/2019				
171	Site Contractor Bids Due	0 days	5/31/2019	5/31/2019			5/31/2019				
172	Descoping and Development of GMP Amendment	12 days	5/31/2019	6/17/2019							
173	Award Early Site Package GMP	0 days	6/17/2019	6/17/2019			6/17/2019				
174	<b>Early Foundation and Structural Package No. 2</b>	<b>33 days</b>	<b>7/30/2019</b>	<b>9/16/2019</b>							
175	Submit Advertisement to Central Register and Newspaper	0 days	7/30/2019	7/30/2019			7/30/2019				



ID	Task Name	Duration	Start	Finish	2017	2018	2019	2020	2021	2022	2023
176	Notice in Central Register	0 days	8/7/2019	8/7/2019			8/7/2019				
177	Issue Early Foundation and Structural Package Bid Documents	0 days	8/9/2019	8/9/2019			8/9/2019				
178	PreBid Meeting	0 days	8/19/2019	8/19/2019			8/19/2019				
179	Trade Contractor Bids Due	0 days	8/26/2019	8/26/2019			8/26/2019				
180	Concrete and Steel Contractor Bids Due	0 days	8/30/2019	8/30/2019			8/30/2019				
181	Descoping and Development of GMP Amendment	10 days	8/30/2019	9/13/2019							
182	Award Early Foundation and Structural Package GMP	0 days	9/16/2019	9/16/2019			9/16/2019				
183	<b>Early Masonry Package No. 3</b>	<b>29 days</b>	<b>9/17/2019</b>	<b>10/28/2019</b>							
184	Submit Advertisement to Central Register and Newspaper	0 days	9/17/2019	9/17/2019			9/17/2019				
185	Notice in Central Register	0 days	9/25/2019	9/25/2019			9/25/2019				
186	Issue Early Masonry Package Bid Documents	0 days	10/2/2019	10/2/2019			10/2/2019				
187	PreBid Meeting	0 days	10/8/2019	10/8/2019			10/8/2019				
188	Trade Contractor Bids Due	0 days	10/23/2019	10/23/2019			10/23/2019				
189	Award Early Masonry Package GMP	0 days	10/28/2019	10/28/2019			10/28/2019				
190	<b>CONSTRUCTION</b>	<b>731 days</b>	<b>6/18/2019</b>	<b>4/21/2022</b>							
191	Notice to Proceed	0 days	6/18/2019	6/18/2019			6/18/2019				
192	Site Mobilization	0 days	6/20/2019	6/20/2019			6/20/2019				
193	<b>Substantial Completion - Phase 1 "Enabling Work"</b>	<b>0 days</b>	<b>8/20/2019</b>	<b>8/20/2019</b>			8/20/2019				
194	50% DCAMM Evaluation	0 days	8/15/2020	8/15/2020						8/15/2020	
195	Punch List Start	0 days	4/15/2021	4/15/2021						4/15/2021	
196	Punch List Complete	0 days	6/15/2021	6/15/2021						6/15/2021	
197	<b>Substantial Completion - Phase 2 "Building Construction"</b>	<b>0 days</b>	<b>6/15/2021</b>	<b>6/15/2021</b>						6/15/2021	
198	Final Completion, Closeout and Commissioning	34 days	6/15/2021	7/30/2021							
199	FFE/Technology Installation	34 days	6/15/2021	7/30/2021							
200	Teacher/Staff Move-In	21 days	8/2/2021	8/30/2021							
201	<b>Occupancy</b>	<b>0 days</b>	<b>8/30/2021</b>	<b>8/30/2021</b>						8/30/2021	
202	Abate and Demolish Existing School	67 days	7/3/2021	10/5/2021							
203	Parking Lot and Playfield Construction	55 days	10/4/2021	12/20/2021							
204	CM Request for Final Payment	0 days	12/20/2021	12/20/2021							
205	<b>Substantial Completion - Phase 3 "Demolition and Site Work"</b>	<b>0 days</b>	<b>12/20/2021</b>	<b>12/20/2021</b>							
206	Closeout	46 days	12/20/2021	2/21/2022							
207	Final Completion	46 days	12/20/2021	2/21/2022							
208	100% DCAMM Evaluation	0 days	2/21/2022	2/21/2022							
209	LEED-S Construction Submission	46 days	12/20/2021	2/21/2022							
210	MSBA Final Payment Reimbursement Request	0 days	3/1/2022	3/1/2022							
211	Commissioning Agent 10-month Inspection	0 days	4/15/2022	4/15/2022							
212	Commissioning Agent Final Report Submission to MSBA	0 days	4/15/2022	4/15/2022							
213	Commissioning Agent Submission of Certification	0 days	4/15/2022	4/15/2022							
214	USGBC Issuance of Certification	0 days	4/21/2022	4/21/2022							



## 2.3 Scope and Budget

### 2.3.1 Project Scope and Budget

The Project Budget for the New Fuller Middle School is \$98,776,878 as defined in the Project Funding Agreement. The project is on budget, as shown on the Total Project Budget Form, inclusive of the Reconciled Construction Cost Estimate, appended at the end of this section.

The Construction Budget is \$77,935,429. The 60% Construction Documents Estimate provided by Consigli Construction Co., Inc., dated August 5, 2019, is currently tracking on budget at \$77,752,185 and as defined by the Cost Estimate Comparison Spreadsheet appended at the end of this section.

Three independent 60% Construction Documents Estimates were prepared. The estimates, prepared by A.M. Fogarty, dated July 26, 2019; Miyakoda Consulting, dated July 29, 2019 and Consigli Construct Co., Inc., dated July 26, 2019, were reconciled with each other through an intensive series of review meetings with the entire design team, the OPM and the estimators. Both estimates and the Draft Cost Estimate Comparison Spreadsheet are appended at the end of this section.

Value Engineering was performed with the School Building Committee (SBC) on August 5, 2019, meeting minutes attached. The following Value Engineering items were approved:

1. Remove the raised traffic table on Flagg Drive – Deduct \$247,000
2. Remove the stepped terraces on the amphitheater – Deduct \$139,000
3. Change the Centralized pH Neutralization System to a point of use system – Deduct \$101,000

The approved value engineering items will be incorporated into the 90% Construction Documents and Estimate.

Additionally, the design phase includes a cost estimating and value engineering period during the 90% Construction Document Phase to ensure the project remains within the approved budget.





# COST ESTIMATE COMPARISON SPREADSHEET (UNIFORMAT)

## New Fuller Middle School, Framingham MA - New Construction

Estimated Construction Start Date:		July-19			July-19			July-19			July-19			July-19		
Division #	Description	Project Scope & Budget			Project Funding Agreement			Design Development			60% CD			100% CD		
		GSF	Total Cost	Unit Cost	GSF	Total Cost	Unit Cost	GSF	Total Cost	Unit Cost	GSF	Total Cost	Unit Cost	GSF	Total Cost	Unit Cost
A	Substructure	136,790	\$3,342,276	\$24.43	136,790	\$3,342,276	\$24.43	136,790	\$3,128,871	\$22.87	136,790	\$1,634,809	\$11.95			#DIV/0!
B	Shell	136,790	\$14,511,874	\$106.09	136,790	\$14,511,874	\$106.09	136,790	\$14,258,592	\$104.24	136,790	\$14,334,245	\$104.79	0	0	#DIV/0!
B10	Superstructure	136,790	\$4,939,081	\$36.11	136,790	\$4,939,081	\$36.11	136,790	\$5,462,233	\$39.93	136,790	\$5,419,732	\$39.62	0		#DIV/0!
B20	Exterior Enclosure	136,790	\$7,306,182	\$53.41	136,790	\$7,306,182	\$53.41	136,790	\$6,714,611	\$49.09	136,790	\$6,524,343	\$47.70	0	0	#DIV/0!
	B2010 Exterior Walls	136,790	\$4,172,373	\$30.50	136,790	\$4,172,373	\$30.50	136,790	\$4,410,611	\$32.24	136,790	\$4,491,061	\$32.83	0		#DIV/0!
	B2020 Exterior Windows	136,790	\$3,024,209	\$22.11	136,790	\$3,024,209	\$22.11	136,790	\$2,162,880	\$15.81	136,790	\$1,848,658	\$13.51	0		#DIV/0!
	B2030 Exterior Doors	136,790	\$109,600	\$0.80	136,790	\$109,600	\$0.80	136,790	\$141,120	\$1.03	136,790	\$184,624	\$1.35	0		#DIV/0!
B30	Roofing	136,790	\$2,266,611	\$16.57	136,790	\$2,266,611	\$16.57	136,790	\$2,081,748	\$15.22	136,790	\$2,390,170	\$17.47	0		#DIV/0!
C	Interiors	136,790	\$10,819,707	\$79.10	136,790	\$10,819,707	\$79.10	136,790	\$10,682,338	\$78.09	136,790	\$11,764,093	\$86.00	0		#DIV/0!
D	Services	136,790	\$15,330,863	\$112.08	136,790	\$15,330,863	\$112.08	136,790	\$16,225,397	\$118.62	136,790	\$16,385,620	\$119.79	0	0	#DIV/0!
D10	Conveying	136,790	\$242,200	\$1.77	136,790	\$242,200	\$1.77	136,790	\$220,450	\$1.61	136,790	\$220,450	\$1.61	0		#DIV/0!
D20	Plumbing	136,790	\$2,051,850	\$15.00	136,790	\$2,051,850	\$15.00	136,790	\$1,923,288	\$14.06	136,790	\$2,257,270	\$16.50	0		#DIV/0!
D30	HVAC	136,790	\$7,052,250	\$51.56	136,790	\$7,052,250	\$51.56	136,790	\$8,143,186	\$59.53	136,790	\$7,906,183	\$57.80	0		#DIV/0!
D40	Fire Protection	136,790	\$752,345	\$5.50	136,790	\$752,345	\$5.50	136,790	\$788,684	\$5.77	136,790	\$791,653	\$5.79	0		#DIV/0!
D50	Electrical	136,790	\$5,232,218	\$38.25	136,790	\$5,232,218	\$38.25	136,790	\$5,149,789	\$37.65	136,790	\$5,210,064	\$38.09	0		#DIV/0!
E	Furnishings & Fixed Equipment	136,790	\$3,228,022	\$23.60	136,790	\$3,228,022	\$23.60	136,790	\$3,295,626	\$24.09	136,790	\$3,485,989	\$25.48	0		#DIV/0!
<b>Building Subtotal</b>		<b>136,790</b>	<b>\$47,232,742</b>	<b>\$345</b>	<b>136,790</b>	<b>\$47,232,742</b>	<b>\$345</b>	<b>136,790</b>	<b>\$47,590,824</b>	<b>\$347.91</b>	<b>136,790</b>	<b>\$47,604,756</b>	<b>\$348.01</b>	<b>0</b>	<b>0</b>	<b>#DIV/0!</b>
F	Special Construction & Demo	136,790	\$3,063,200	\$22.39	136,790	\$3,063,200	\$22.39	136,790	\$2,712,080	\$19.83	136,790	\$2,872,380	\$21.00	0		#DIV/0!
G	Other Site Construction	136,790	\$6,719,690	\$49.12	136,790	\$6,719,690	\$49.12	136,790	\$8,904,659	\$65.10	136,790	\$11,303,743	\$82.64	0	0	#DIV/0!
G10	Site Preparation	136,790	\$2,816,982	\$20.59	136,790	\$2,816,982	\$20.59	136,790	\$3,758,369	\$27.48	136,790	\$4,960,910	\$36.27	0		#DIV/0!
G20	Site Improvements	136,790	\$2,786,868	\$20.37	136,790	\$2,786,868	\$20.37	136,790	\$3,497,366	\$25.57	136,790	\$4,788,307	\$35.00	0		#DIV/0!
G30	Mechanical Utilities	136,790	\$715,840	\$5.23	136,790	\$715,840	\$5.23	136,790	\$822,705	\$6.01	136,790	\$1,025,389	\$7.50	0		#DIV/0!
G40	Electrical Utilities	136,790	\$400,000	\$2.92	136,790	\$400,000	\$2.92	136,790	\$826,219	\$6.04	136,790	\$529,137	\$3.87	0		#DIV/0!
<b>Subtotal</b>		<b>136,790</b>	<b>\$57,015,632</b>	<b>\$417</b>	<b>136,790</b>	<b>\$57,015,632</b>	<b>\$417</b>	<b>136,790</b>	<b>\$59,207,563</b>	<b>\$432.84</b>	<b>136,790</b>	<b>\$61,780,879</b>	<b>\$451.65</b>	<b>0</b>	<b>0</b>	<b>#DIV/0!</b>
Z	Mark-Ups	136,790	\$17,444,969	30.6%	136,790	\$17,444,969	30.6%	136,790	\$16,442,085	27.8%	136,790	\$15,135,459	24.5%	0	#REF!	#REF!
Z	Insurance	136,790	\$1,663,351	2.9%	136,790	\$1,663,351	2.9%	136,790	\$2,160,924	3.6%	136,790	\$2,195,889	3.6%	0	#REF!	#REF!
Z	GMP Contingency	136,790	\$1,900,000	3.3%	136,790	\$1,900,000	3.3%	136,790	\$1,652,039	2.8%	136,790	\$1,653,353	2.7%	0	#REF!	#REF!
Z	General Requirements	136,790	\$2,842,476	16.3%	136,790	\$2,842,476	16.3%	136,790	\$2,936,369	17.9%	136,790	\$3,084,502	20.4%	0	#REF!	#REF!
Z	Design & Pricing Contingency	136,790	\$5,395,243	9.5%	136,790	\$5,395,243	9.5%	136,790	\$4,144,529	7.0%	136,790	\$2,653,491	4.3%	0	#REF!	#REF!
Z	General Conditions	136,790	\$3,651,036	6.4%	136,790	\$3,651,036	6.4%	136,790	\$3,988,224	6.7%	136,790	\$3,988,224	6.5%	0	#REF!	#REF!
Z	Overhead & Profit	136,790	\$1,992,863	3.5%	136,790	\$1,992,863	3.5%	136,790	\$1,560,000	2.6%	136,790	\$1,560,000	2.5%	0	#REF!	#REF!
<b>Construction Subtotal</b>		<b>136,790</b>	<b>\$74,460,601</b>	<b>\$544</b>	<b>136,790</b>	<b>\$74,460,601</b>	<b>\$544</b>	<b>136,790</b>	<b>\$75,649,648</b>	<b>\$553.03</b>	<b>136,790</b>	<b>\$76,916,338</b>	<b>\$562.30</b>	<b>0</b>	<b>#REF!</b>	<b>#REF!</b>
Z	Escalation to Construction Mid-Point	136,790	\$3,474,828	6.1%	136,790	\$3,474,828	6.1%	136,790	\$1,900,563	3.2%	136,790	\$835,850	1.4%	0	#REF!	#REF!
<b>Total Addition Cost</b>		<b>136,790</b>	<b>\$77,935,429</b>		<b>136,790</b>	<b>\$77,935,429</b>		<b>136,790</b>	<b>\$77,550,211</b>		<b>136,790</b>	<b>\$77,752,188</b>		<b>0</b>	<b>#REF!</b>	
<b>\$/GSF</b>			<b>\$570</b>			<b>\$570</b>			<b>\$567</b>			<b>\$568</b>			<b>#REF!</b>	

Alternates																
1																
2																
3																
4																

MSBA TEMPLATE (UNIFORMAT), REVISED 5-13-2010

- NOTES:**
- 1 Project Scope & Budget costs are based on 2018 dollars.
  - 2 Design Development costs are based on 2019 dollars.



# COST ESTIMATE COMPARISON SPREADSHEET (CSI FORMAT)

## New Fuller Middle School, Framingham MA - New Construction

Estimated Construction Start Date:		Jul-19			Jul-19			Jul-19		
Description		60% CD			100% CD			Bid Data		
		GSF	Total Cost	Unit Cost	GSF	Total Cost	Unit Cost	GSF	Total Cost	Unit Cost
<b>General Requirements Subgroup</b>										
1	General Requirements	136790	3,084,502	\$22.55	0		#DIV/0!	0		#DIV/0!
	Insurance	136790	895,218	\$6.54	0		#DIV/0!	0		#DIV/0!
	Subcontractor Bonds	136790	1,300,671	\$9.51	0		#DIV/0!	0		#DIV/0!
	Construction Contingency	136790	1,653,353	\$12.09	0		#DIV/0!	0		#DIV/0!
	Design & Pricing Contingency	136790	2,653,491	\$19.40	0		#DIV/0!	0		#DIV/0!
	General Conditions	136790	3,988,224	\$29.16	0		#DIV/0!	0		#DIV/0!
	Overhead & Profit	136790	1,560,000	\$11.40	0		#DIV/0!	0		#DIV/0!
<b>Facilities Construction Subgroup</b>										
2	Existing Conditions	136790	2,872,380	\$21.00	0		#DIV/0!	0		#DIV/0!
3	Concrete	136790	2,772,298	\$20.27	0		#DIV/0!	0		#DIV/0!
4	Masonry	136790	2,015,845	\$14.74	0		#DIV/0!	0		#DIV/0!
5	Metals	136790	5,438,115	\$39.76	0		#DIV/0!	0		#DIV/0!
6	Wood, Plastics and Composites	136790	2,101,375	\$15.36	0		#DIV/0!	0		#DIV/0!
7	Thermal & Moisture Protection	136790	3,789,139	\$27.70	0		#DIV/0!	0		#DIV/0!
8	Openings	136790	4,382,132	\$32.04	0		#DIV/0!	0		#DIV/0!
9	Finishes	136790	7,533,160	\$55.07	0		#DIV/0!	0		#DIV/0!
10	Specialties	136790	1,087,728	\$7.95	0		#DIV/0!	0		#DIV/0!
11	Equipment	136790	1,431,329	\$10.46	0		#DIV/0!	0		#DIV/0!
12	Furnishings	136790	668,465	\$4.89	0		#DIV/0!	0		#DIV/0!
13	Special Construction	136790	0	\$0.00	0		#DIV/0!	0		#DIV/0!
14	Conveying	136790	220,000	\$1.61	0		#DIV/0!	0		#DIV/0!
<b>Facilities Services Subgroup</b>										
21	Fire Suppression	136790	791,653	\$5.79	0		#DIV/0!	0		#DIV/0!
22	Plumbing	136790	2,257,270	\$16.50	0		#DIV/0!	0		#DIV/0!
23	HVAC	136790	7,906,183	\$57.80	0		#DIV/0!	0		#DIV/0!
25	Integrated Automation	136790	0	\$0.00	0		#DIV/0!	0		#DIV/0!
26	Electrical	136790	5,739,201	\$41.96	0		#DIV/0!	0		#DIV/0!
27	Communications	136790	0	\$0.00	0		#DIV/0!	0		#DIV/0!
28	Electronic Safety and Security	136790	0	\$0.00	0		#DIV/0!	0		#DIV/0!
<b>Site and Infrastructure Subgroup</b>										
31	Earthwork	136790	4,960,910	\$36.27	0		#DIV/0!	0		#DIV/0!
32	Exterior Improvements	136790	4,788,307	\$35.00	0		#DIV/0!	0		#DIV/0!
33	Utilities	136790	1,025,389	749.6%	0		#DIV/0!	0		#DIV/0!
34	Transportation	136790	0	0.0%	0		#DIV/0!	0		#DIV/0!
35	Waterway and Marine Construction	136790	0	\$0.00	0		#DIV/0!	0		#DIV/0!
<b>Construction Subtotal</b>		136790	76,916,338	\$562.30	0	0	#DIV/0!	0	0	#DIV/0!
	Escalation to Construction Mid-Point	136790	835,850	\$6.11	0		#DIV/0!	0		#DIV/0!
<b>Total Cost \$/GSF</b>		136790	77,752,188		0	0	#DIV/0!	0	0	#DIV/0!
			\$568				#DIV/0!			#DIV/0!

Alternates										
1										
2										
3										
4										

- 1 60% Construction Document costs are based on 2019 dollars.
- 2 100% Construction Document costs are based on 2019 dollars.
- 3 Bid costs are based on 2019 dollars.



### 2.3.2 Reconciled Cost Estimate - OPM

Attached is the reconciled OPM Cost Estimate and Cost Estimate Comparison Spreadsheet.



**60% Construction Documents  
Fuller Middle School  
Framingham, MA**

3-Aug-19

BUILDING AND SITEWORK	\$66,586,328
EARLY SITE PACKAGE #1	\$10,957,843
	-----
TOTAL CONSTRUCTION COST	\$77,544,171

**60% Construction Documents**  
**Fuller Middle School**  
**Framingham, MA**

**3-Aug-19**

NEW BUILDING				\$47,135,819
SITEWORK				\$2,877,281
BUILDING DEMOLITION	196,000	GSF	\$7.50	\$1,470,000
ASBESTOS REMOVAL ( cdw 5/5/19 )				\$710,330
VAT REMOVAL ( cdw 5/5/19 )				\$536,250
OTHER HAZARDOUS MATERIAL ( cdw 5/5/19 )				\$138,050
				-----
TOTAL DIRECT COST ( estimated to the mid-point of construction )				\$52,867,729
Chapter 149 a:				
DESIGN CONTINGENCY		5%		\$2,643,386
CM CONTINGENCY		2.5%		\$1,387,778
ESCALATION ( bid 12/19 )		1.5%		\$853,483
SDI				\$360,416
SUB BOND				\$413,891
GENERAL CONDITIONS				\$3,401,447
GENERAL REQUIREMENTS				\$2,652,483
TRAFFIC MITIGATION				\$0
BUILDING PERMIT		waived		
GENERAL LIABILITY INSURANCE				\$668,571
FEE				\$1,337,143
				-----
				TOTAL CONSTRUCTION COST
				\$66,586,328
				COST PER S.F.
				\$487.45

**60% CD ALTERNATES**

ALTERNATE NO. 1 - RESURFACE FLAGG DRIVE \$0



PROJECT: Fuller Middle School  
 LOCATION: Framingham, MA  
 CLIENT: SMMA Architects  
 DATE: 03-Aug-19

NO. OF SQ. FT.: 136,600  
 COST PER SQ. FT.: \$366.13

No.: 18020

SUMMARY

	<u>TOTAL</u>	<u>PERCENT OF PROJECT</u>	<u>COST PER SF</u>
<b>A. SUBSTRUCTURE</b>			
<b>A10 - FOUNDATIONS</b>			
A1010 STANDARD FOUNDATIONS	1,014,343	2%	7.43
A1020 SPECIAL FOUNDATIONS	0	0%	0.00
A1030 SLAB ON GRADE	579,262	1%	4.24
<b>A20 - BASEMENT CONSTRUCTION</b>			
A2010 BASEMENT EXCAVATION	0	0%	0.00
A2020 BASEMENT WALLS	0	0%	0.00
<b>B. SHELL</b>			
<b>B10 - SUPERSTRUCTURE</b>			
B1010 FLOOR CONSTRUCTION	3,063,684	6%	22.43
B1020 ROOF CONSTRUCTION	2,044,901	4%	14.97
<b>B20 - EXTERIOR ENCLOSURE</b>			
B2010 EXTERIOR WALLS	4,581,555	9%	33.54
B2020 EXTERIOR WINDOWS	1,897,387	4%	13.89
B2030 EXTERIOR DOORS	193,692	0%	1.42
<b>B30 - ROOFING</b>			
B3010 ROOF COVERINGS	1,648,569	3%	12.07
B3020 ROOF OPENINGS	689,020	1%	5.04
<b>C. INTERIORS</b>			
<b>C10 - INTERIOR CONSTRUCTION</b>			
C1010 PARTITIONS	4,355,925	9%	31.89
C1020 INTERIOR DOORS	797,773	2%	5.84
C1030 FITTINGS	1,001,500	2%	7.33
<b>C20 - STAIRS</b>			
C2010 STAIR CONSTRUCTION	380,827	1%	2.79
C2020 STAIR FINISHES	44,038	0%	0.32
<b>C30 - INTERIOR FINISHES</b>			
C3010 WALL FINISHES	1,730,495	3%	12.67
C3020 FLOOR FINISHES	1,260,201	3%	9.23
C3030 CEILING FINISHES	2,053,480	4%	15.03
<b>D. SERVICES</b>			
<b>D10 - CONVEYING</b>			
D1010 ELEVATORS & LIFTS	218,037	0%	1.60
<b>D20 - PLUMBING</b>			
D2010 PLUMBING	2,212,119	4%	16.19

	<u>TOTAL</u>	<u>PERCENT OF PROJECT</u>	<u>COST PER SF</u>
D30 - HVAC			
D3010 HVAC	8,094,058	16%	59.25
D40 - FIRE PROTECTION			
D4010 SPRINKLERS	848,755	2%	6.21
D4020 STANDPIPES	0	0%	0.00
D4030 FIRE PROTECTION SPECIALTIES	0	0%	0.00
D4090 OTHER FIRE PROTECTION SYSTEMS	0	0%	0.00
D50 - ELECTRICAL			
D5010 ELECTRICAL SERVICE & DISTRIBUTION	5,083,192	10%	37.21
E. EQUIPMENT & FURNISHINGS			
E10 - EQUIPMENT			
E1010 COMMERCIAL EQUIPMENT	415,270	1%	3.04
E1020 INSTITUTIONAL EQUIPMENT	0	0%	0.00
E1030 VEHICULAR EQUIPMENT	0	0%	0.00
E1090 OTHER EQUIPMENT	1,281,637	3%	9.38
E20 - FURNISHINGS			
E 2010 FIXED FURNISHINGS	1,646,099	3%	12.05
E2020 MOVABLE FURNISHINGS	0	0%	0.00
F. SPECIAL CONSTRUCTION & DEMOLITION			
F10 - SPECIAL CONSTRUCTION			
F1010 SPECIAL STRUCTURES	0	0%	0.00
F20 - SELECTIVE BUILDING DEMOLITION			
F2010 BUILDING ELEMENTS DEMOLITION	0	0%	0.00
F2020 HAZARDOUS COMPONENTS ABATEMENT	0	0%	0.00
G. BUILDING SITEWORK			
G10 - SITE PREPARATION			
G1010 SITE CLEARING	0	0%	0.00
G1020 SITE DEMOLITION & RELOCATIONS	0	0%	0.00
G1030 SITE EARTHWORK	442,753	1%	3.24
G1040 HAZARDOUS WASTE REMEDIATION	0	0%	0.00
G20 - SITE IMPROVEMENTS			
G2010 ROADWAYS	0	0%	0.00
G2020 PARKING LOTS	0	0%	0.00
G2030 PEDESTRIAN PAVING	261,792	1%	1.92
G2040 SITE DEVELOPMENT	939,225	2%	6.88
G2050 LANDSCAPING	655,344	1%	4.80

	<u>TOTAL</u>	<u>PERCENT OF PROJECT</u>	<u>COST PER SF</u>
G30 - SITE MECHANICAL UTILITIES			
G3010 WATER SUPPLY	0	0%	0.00
G3020 SANITARY SEWER	0	0%	0.00
G3030 STORM SEWER	0	0%	0.00
G3040 HEATING DISTRIBUTION	0	0%	0.00
G3050 COOLING DISTRIBUTION	0	0%	0.00
G3060 FUEL DISTRIBUTION	0	0%	0.00
G3090 OTHER SITE MECHANICAL UTILITIES	0	0%	0.00
G40 - SITE ELECTRICAL UTILITIES			
G4010 ELECTRICAL DISTRIBUTION	106,696	0%	0.78
G4020 SITE LIGHTING	471,470	1%	3.45
G4030 SITE COMMUNICATIONS & SECURITY	0	0%	0.00
G4090 OTHER SITE ELECTRICAL UTILITIES	0	0%	0.00
G90 - OTHER SITE CONSTRUCTION			
G9090 OTHER SITE SYSTEMS	0	0%	0.00
	-----	-----	-----
TOTAL DIRECT COST	50,013,099	100%	366.13

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>A. SUBSTRUCTURE</u>				
A10 - FOUNDATIONS				
A1010 STANDARD FOUNDATIONS				
<u>033000 CAST IN PLACE CONCRETE</u>				
Column Footing - (F 3 thru F 12 @ 135 ea):				
4000 psi, NW, (incl. placement)	450	CY	205.00	92,250
Formwork	6,004	SFCA	9.50	57,038
Rebar	45,000	LBS	1.22	54,900
<i>*unit cost \$453.75</i>				
Perim Wall Footing 1' x 3/4' ( 1,578 LF ):				
4000 psi, NW, (incl. placement)	180	CY	208.00	37,440
Formwork	3,200	SFCA	8.10	25,920
Rebar	9,000	LBS	1.22	10,980
<i>*unit cost \$413.00</i>				
Foundation Wall 16" thick x height varies ( 1,962 lf):				
4000 psi, NW, (incl. placement)	442	CY	215.00	95,030
Formwork - 4' or less	8,808	SFCA	13.00	114,504
Formwork - 4' Aud/Gym	4,960	SFCA	13.50	66,960
Formwork - 15'	3,120	SFCA	20.00	62,400
Brick Shelf	1,962	LF	14.50	28,449
Reinforcing steel	66,300	LBS	1.22	80,886
<i>*unit cost \$1,014.09</i>				
Auditorium Interior Foundations:				
Wall footing	32	CY	350.00	11,200
12" Knee wall	48	CY	850.00	40,800
Loading Dock:				
Wall footing - 8'		inc. above		
Foundation wall	36	CY	975.00	35,100
Misc. Foundations:				
CMU Footing	19	CY	385.00	7,315
Grade Beam #1, #2	53	CY	675.00	35,775
12" Elevator mat	6	CY	650.00	3,900
Elev sump pit	1	EA	900.00	900
12" Elevator pit wall -5'D	7	CY	900.00	6,300
Interior Mechanical pads - allow	1	LS	5,000.00	5,000
Concrete Pilaster	28	CY	1,100.00	30,800
Setting Anchor Bolts and Grout	132	EA	310.00	40,920

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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\*Includes Section 031000 - 033500

Band Shell Foundation:

Wall Footing 1' x 5'	6	CY	800.00	4,800
16" Radial Found wall	9	CY	1,300.00	11,700

071000 DAMPPROOF., WATERPROOF. & CAULKING\*

Foundation dampproofing	6,884	SF	1.90	13,080
Retaining wall waterproofing	1,360	SF	6.85	9,316
Elev. pit waterproofing	1	LOC	4,300.00	4,300

072100 INSULATION

2" Rigid found. insul - ret. wall	1,360	SF	3.20	4,352
2" Rigid found. insul - frost wall	6,884	SF	3.20	22,029

-----  
1,014,343

A1030 SLAB ON GRADE

033000 CAST IN PLACE CONCRETE

5" Slab on Grade - Typ:

3,500 psi, NW, (incl. placement)	988	CY	228.00	225,264
6x6 W2.9 X W2.9	64,048	SF	1.80	115,286
Control Joint	4,300	LF	2.60	11,180
Form Commons slab edge/ haunch		deleted		
Trowel Finish	64,048	SF	2.10	134,501

\*unit cost \$7.59

Misc. Slabs and Concrete:

Ext. 6" Loading Dock	1,125	SF	10.00	11,250
Loading Dock Stair Structure-allow	1	FLT	7,500.00	7,500
Gyp cement underlayment(spec 035413)		w/C3020		

072100 INSULATION

2" Rigid Slab Insul.- 4' @ perim.	6,400	SF	3.10	19,840
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\*Exterior wall sections do not show 100%

072600 VAPOR RETARDER

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Stegro vapor barrier (15 mil) *Excludes under slab waterproofing system	64,048	SF	0.85	54,441
				----- 579,262
<b>TOTAL A10 FOUNDATIONS</b>				<b>1,593,605</b>

B. SHELL

## B10 - SUPERSTRUCTURE

## B1010 FLOOR CONSTRUCTION

051200 STRUCTURAL STEEL

Wide Flange - beam	210.52	TONS	3,700.00	778,924
HSS Beam	36.2	TONS	3,900.00	141,180
HSS Brace Frame	46.7	TONS	4,075.00	190,303
Wide Flange- Column	10.7	TONS	3,550.00	37,985
HSS Column	88.3	TONS	3,900.00	344,370
Bolted Ledger Angle	1.5	TONS	3,550.00	5,325
Relieving Angle - Masonry Veneer only	1,050	LF	185.00	194,250
4" x 4" x 1/8" Bolted angle at found - allow	250	LF	65.00	16,250
Folding Panel partition Support:				
Typ classroom (13 EA)	208	LF	165.00	34,320
Music classroom (DBL panel 1 EA)	19	LF	165.00	3,135
SPED suite (3 EA)	120	LF	165.00	19,800
Hilti bolt conn	74	EA	128.00	9,472
Moment Connection	194	EA	750.00	145,500
Shear stud ( 10/100sf)	16,200	EA	5.35	86,670
Atrium Beam Detailing #4/S500	1	LS	40,000.00	40,000
<b>TOTAL STEEL WEIGHT</b>	<b>394</b>	<b>TONS</b>		

033000 CAST IN PLACE CONCRETE

3 1/4" LW Deck fill	68,431	SF	8.65	591,928
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053100 STEEL DECKING

3" x 18 Ga. Comp Deck- Typ	68,431	SF	3.20	218,979
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078120 FIREPROOFING

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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Allow:

Spray fireproofing	68,431	SF	3.00	205,293
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3,063,684

**B1020 ROOF CONSTRUCTION****051200 STRUCTURAL STEEL**

Wide Flange - beam	200.8	TONS	3,700.00	742,960
HSS Beam	61.0	TONS	4,100.00	250,100
DLH Bar Joist	47.84	TONS	3,657.00	174,951
HD Galv HSS Roof Screen	4.70	TONS	5,200.00	24,440
HD Galv HSS Entrance Canopy	2.60	TONS	6,000.00	15,600
HSS Brace Frame		w/ floor construction		
Wide Flange- Column		w/ floor construction		
HSS Column		w/ floor construction		
Bolted Ledger Angle	3	TONS	3,550.00	10,650
Hilti bolt conn	140	EA	128.00	17,920
Moment connection	38	EA	750.00	28,500
Galv Roof Dunnage	5	TONS	4,500.00	22,500

**033000 CAST IN PLACE CONCRETE**

3 1/4" LW Deck fill :				
R 6.25 3" x 18 Ga. Comp Deck- Typ	3,641	SF	8.70	31,677
3 1/4" LW Deck fill :				
R 5.5 3" x 18 Ga. Comp Deck- Typ	29,586	SF	8.70	257,398
Allow - Roof top 8" x 12"H Concrete Curb @:				
Pre-fab mech PH unit ( loc)	500	LF	82.00	41,000
Misc Equip curbs	1	LS	10,000.00	10,000

**053100 STEEL DECKING**

R 1.5 1 1/2" x 20Ga Roof deck	765	SF	2.80	2,142
R3 3" X 18 Ga. Typical Roof Deck	13,702	SF	3.00	41,106
R 6.25 3" x 18 Ga. Comp Deck- Typ	3,641	SF	3.18	11,578
R 5.5 3" x 18 Ga. Comp Deck- Typ	29,586	SF	3.18	94,083
R 1.5A 1 1/2" Acoustical Roof Deck - gym	8,835	SF	4.25	37,549
R3A 3" Acoustical Roof Deck - aud	7,563	SF	7.25	54,832

**078120 FIREPROOFING**

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Allow:				
Spray fireproofing	36,041	SF	2.80	100,915
 <u>090007 PAINTING*</u>				
Intumescent paint - roof struct.	1	LS	75,000.00	75,000
*Exposed structure @ atrium noted				
*Includes Section 099646				
				-----
				2,044,901
<b>TOTAL B10 SUPERSTRUCTURE</b>	<b>317</b>	<b>TONS</b>		<b>5,108,585</b>

## B20 - EXTERIOR ENCLOSURE

## B2010 EXTERIOR WALLS

**100% GSF Exterior -73,206**040001 MASONRY\*

## Backup :

Gym 12" CMU Back-up - Exposed	7,497	SF	25.50	191,174
Aud 12" CMU Back-up - Exposed	7,342	SF	25.50	187,221
Int GF finish premium	14,839	SF	4.75	70,485

## Masonry Veneer Building ( QTY Noted):

4x4x12 Scored brick veneer	6,252	SF	31.00	193,812
4x8x8 Scored brick veneer	6,722	SF	33.75	226,868
4x8x16 Scored ground face CMU	21,345	SF	27.00	576,315
4x4x12 Scored ground face CMU	3,512	SF	29.00	101,848
Insulation		W/072000		

SS Masonry flashing	1	LS	35,000.00	35,000
Staging		inc. w/ unit		

## A501 Premium:

Sill brick		w/Unit Cost		
Lip brick		w/Unit Cost		

## Precast Concrete:

Precast Planter - on grade	26	LF	750.00	19,500
Precast Planter - on roof	24	LF	750.00	18,000



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Misc. BLDG precast veneer *Site planters are included w/ site improvements		N/A		
2nd Floor Main Entry Terrace:				
(3/ A316)4'6"H Brick Partial HT wall-complete	26	LF	560.00	14,560
(3/ A316) Wall Cap	26	LF	175.00	4,550
<u>054000 COLD FORMED METAL FRAMING</u>				
Exterior wall Backup:				
10" x 16 Ga. stud @ Typ 14'	41,150	SF	11.70	481,455
(6/A323) 6" stud @ raised common 5-6'h	2,486	SF	9.85	24,487
Chimney framing	650	SF	9.85	6,403
1/2" Dens glass sheathing	44,286	SF	3.30	146,144
* Mech Penthouse Unit - Complete		W / HVAC		
Ext Ceiling Framing @ :				
Canopy & covered entry	1,056	SF	6.50	6,864
1/2" Dens glass sheathing	1,056	SF	3.50	3,696
Simplfy Admin Pop- up	-1	LS	40,000.00	-40,000
<u>050001 MISCELLANEOUS &amp; ORNAMENTAL IRON*</u>				
42" Perf Metal Guardrail:				
LVL 2 entry	20	LF	350.00	7,000
LVL 2 emerg. egress	34	LF	350.00	11,900
Galv, loose lintel	67	LF	36.00	2,412
Misc metals @ ext wall - allow	1	LS	25,000.00	25,000
Reliving angle		W /Structural		
Bolted galv. sill angle @ fnd		W /Structural		
<u>062000 FINISH CARPENTRY</u>				
Main Entry LVL 2:				
Wd bench @ precast planter	24	LF	550.00	13,200
Phenolic bench @ col. M	7	LF	500.00	3,500
<u>071000 DAMPPROOF., WATERPROOF. &amp; CAULKING*</u>				
Fluid Applied air & vapor barrier:				
Exterior Wall - CMU & Sheathing	59,125	SF	8.00	473,000
Bay covered entry	1,119	SF	8.00	8,952
<u>072100 INSULATION</u>				
Exterior Wall A501:				
3" Mineral fiber insul @ masonry	43,331	SF	3.72	161,191

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
4" Mineral fiber insul @ panel wall	11,380	SF	4.15	47,227
Spray foam at perm openings	9,299	LF	8.25	76,717
6/A323 Exterior Wall: Mineral fiber insul	2,486	SF	2.65	6,588
Exterior Ceiling Insulation @ : Bay / covered entry	1,119	SF	5.00	5,595
<u>070002 ROOFING AND FLASHING*</u>				
6/A323 Raised Common Exterior Wall: 5'6"H Ridid Insul. W/ PVC Membrane ( sa roofing sy	2,486	SF	15.00	37,290
<u>074000 WALL PANELS &amp; TRIM</u>				
Exterior Wall Panel System ( QTY Noted): Corregated metal panel	5,500	SF	48.00	264,000
Composite metal panel	2,662	SF	55.00	146,410
Phenolic panel	8,718	SF	76.00	662,568
Exterior Ceiling Stucco System: Bay/covered entry	1,119	SF	32.00	35,808
8'H Mech roof screen(NIC Struct Frame): 8' Corrugated Perf Mtl wall panel-complete	1,112	SF	42.00	46,704
Screen wall cap	139	LF	30.00	4,170
(2 sided) Phenolic fin - complete: Fin 4'x12'h (3 loc)	288	SF	120.00	34,560
Fin 6'x20'h (2 loc)	480	SF	120.00	57,600
*Includes Sections 074214 & 074224				
<u>079513 EXPANSION JOINTS (SPEC)</u>				
Control and expansion joints	1	LS	30,000.00	30,000
<u>090007 PAINTING*</u>				
Misc exterior painting -allow	1	LS	10,000.00	10,000
<u>092116 GYPSUM WALLBOARD ASSEMBLIES</u>				
1 lyr 5/8" gyp @ stud	43,553	SF	2.50	108,883
<u>109000 MISCELLANEOUS SPECIALTIES</u>				
Ext. Signage:				

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
18" Cast bronze letter (1 loc)	6	EA	650.00	3,900
Misc. bldg mtd signage -allow	1	LS	20,000.00	20,000
LVL 2 entry flagpole 34' H	1	EA	9,000.00	9,000
				-----
				4,581,555
B2020 EXTERIOR WINDOWS				
<u>061000 ROUGH CARPENTRY</u>				
P.T. - perim blocking	9,009	LF	8.65	77,928
<u>071000 DAMPPROOF., WATERPROOF. &amp; CAULKING*</u>				
Flex flashing - perim	9,009	LF	8.00	72,072
Exterior sealants - perim.	9,009	LF	7.50	67,568
<u>080001 METAL WINDOWS*</u>				
Storefront (RFI # )	14,162	SF	110.00	1,557,820
ALLOW:				
Security Glazing Film 2nd flr entry	125	SF	36.00	4,500
Exterior Wall Mock-up	1	LS	35,000.00	35,000
<u>089000 METAL WALL LOUVERS</u>				
Vert Alum louver w/damper (RFI #17)	660	SF	125.00	82,500
				-----
				1,897,387
B2030 EXTERIOR DOORS				
<u>050001 MISCELLANEOUS &amp; ORNAMENTAL IRON*</u>				
OH door frame @:				
Tech-Makerspace (12'x 10' )	1	EA	500.00	500
<u>061000 ROUGH CARPENTRY</u>				
P.T. - perim blocking HM open	316	LF	8.00	2,528

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>071000 DAMPPROOF., WATERPROOF. &amp; CAULKING*</u>				
Perim. Ext HM & OH opening:				
Flex flashing - perim	348	LF	8.00	2,784
Exterior sealants - perim.	348	LF	7.50	2,610
<u>080001 METAL WINDOWS*</u>				
Alum. Doors (Incl. Glass, Glazing):				
7' 1st Flr Entry - sgl	2	EA	4,100.00	8,200
7' 1st Flr Entry - dbl	3	PR	8,200.00	24,600
7' 2nd Flr Entry - dbl	1	PR	8,200.00	8,200
2nd Flr Terrace - sgl	1	EA	4,100.00	4,100
2nd Flr Terrace - dbl	1	PR	8,250.00	8,250
7' Main office egress - sgl	1	EA	4,100.00	4,100
7' Stair egress - sgl	2	EA	4,100.00	8,200
7' Staff lunch rm	1	EA	4,100.00	4,100
8' Media ctr - sgl	1	EA	4,100.00	4,100
Premium :				
Auto opener	2	EA	4,500.00	9,000
School Guard (5 lvs ) - Factory glazing	75	SF	36.00	2,700
<u>081113 HOLLOW METALWORK</u>				
Ext Insulated HM Doors and Frame:				
Sgl B1 7'H	4	EA	585.00	2,340
Dbl B2 7'H	1	EA	1,170.00	1,170
Sgl B1 8'H	1	EA	630.00	630
Dbl B2 8'H	8	EA	1,260.00	10,080
<u>083323 SPECIAL DOORS</u>				
Motor Operated Insulated OH Door:				
Tech-Makerspace (12'x 10' )	1	EA	8,500.00	8,500
<u>087100 DOOR HARDWARE</u>				
Hardware Set @ Ext. Alum Door:				
1	1	EA	750.00	750
2	1	EA	825.00	825
3	3	EA	2,250.00	6,750
4	2	EA	2,300.00	4,600
5	1	EA	3,850.00	3,850
SGL -allow	2	EA	2,500.00	5,000
9	1	EA	1,425.00	1,425
11	1	EA	5,900.00	5,900
12	1	EA	6,300.00	6,300

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Hardware Set # Ext HM Door:				
6	1	EA	1,150.00	1,150
8	3	EA	2,925.00	8,775
10	2	EA	4,500.00	9,000
13	1	EA	2,475.00	2,475
14	3	EA	2,325.00	6,975
16	1	EA	750.00	750
17	1	EA	3,350.00	3,350
18	1	EA	1,400.00	1,400
19	1	EA	5,100.00	5,100
*Hardware also included with 080001				
<u>090007 PAINTING*</u>				
Paint HM door & Frame - sgl	5	EA	120.00	600
Paint HM door & Frame - dbl	9	EA	225.00	2,025
				-----
				193,692
<b>TOTAL B20 - EXTERIOR ENCLOSURE</b>				<b>6,672,634</b>

## B30 - ROOFING

## B3010 ROOF COVERINGS

061000 ROUGH CARPENTRY

## Flat Roof Blocking @:

Base flashing	1,620	LF	12.50	20,250
Typ roof fascia	3,182	LF	12.50	39,775
Expansion joint	86	LF	40.00	3,440
Gable skylight curb ( 4 EA)	567	LF	45.00	25,515
Flash Pre Fab Roof Top Mech curb block	500	LF	35.00	17,500
Misc Equip blocking	1	LS	7,500.00	7,500
Roof hatch-allow	1	EA	750.00	750
Stage vent-allow	1	EA	750.00	750
Atrium vent-allow	2	EA	750.00	1,500

070002 ROOFING AND FLASHING\*

## White 60 mil PVC Roofing w/R-36 (6" Insul ) :

Typ Flat roof	64,092	SF	16.50	1,057,518
1/2 " glass mat cover bd -100%	64,092	SF	1.45	92,933

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1/2" glass mat protection bd(nic conc deck)	33,000	SF	1.45	47,850
Poly vapor retarder-100%	64,092	SF	0.42	26,919
3' High Rubber Walkway Pad	765	SF	7.00	5,355
Membrane flashing	64,092	SF	0.50	32,046
Base flashing	1,620	LF	32.00	51,840
Alum Typ roof fascia	3,182	LF	22.00	70,004
Expansion joint - allow	86	LF	185.00	15,910
Flash gable skylight curb ( 4 EA)	567	LF	32.00	18,144
Flash Pre Fab Roof Top Mech encl curb	500	LF	32.00	16,000
Scupper - allow	4	EA	750.00	3,000
Flash roof drain - allow	32	EA	135.00	4,320
Chimney cap flashing -complete	60	SF	100.00	6,000
Misc roof flashing	1	LS	25,000.00	25,000

## Premium Terrace Paver Sys:

Terrace #2063		deleted		
Main entrance #2000	730	SF	45.00	32,850
Credit for Scored Concrete Pavement	-730	SF	30.00	-21,900
Egress #2025		N/A		

\*Includes Sections 075419, 076200, 077236 &amp; 086300

084500 STRUCTURED-POLY CARB PANEL

## Main Entrance Canopy -Complete:

Clear Polycarb glazing w/ alum struct -7'w	416	SF	175.00	72,800
Reduce Entrance Canopy Size	-1	LS	25,000.00	-25,000

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1,648,569

## B3020 ROOF OPENINGS

## 05510000 MISCELLANEOUS METALS

Roof &amp; Terrace Guardrail W C1030

070002 ROOFING AND FLASHING\*

Gable Skylight ( 4 loc)	4,261	SF	140.00	596,540
Gable Skylight Endwall ( 8 loc)	427	SF	140.00	59,780
Roof hatch-allow	1	EA	4,200.00	4,200
Stage vent-allow	2	EA	13,500.00	27,000

089000 LOUVERS AND VENTS

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Elevator vent	1	EA	1,500.00	1,500
				-----
				689,020
<b>TOTAL B30 ROOFING</b>				<b>2,337,589</b>

C. INTERIORS

## C10 - INTERIOR CONSTRUCTION

## C1010 PARTITIONS

**Breakout 3,400 GSF**

## Floor Framing:

Light guage floor	1,600	SF	18.00	28,800
9/16" Metal Deck	1,600	SF	3.00	4,800
Concrete Deck fill		w/ steel		

## Breakout Space (RFI #18 7/19/19/):

## Pavilion A:

Plam walls	54	SF	55.00	2,970
GWB walls	1,684	SF	25.00	42,100
Glass walls	334	SF	75.00	25,050

## Pavilion B:

Plam walls	74	SF	55.00	4,070
GWB walls	1,134	SF	25.00	28,350
Glass walls	683	SF	75.00	51,225

## Pavilion C:

Plam walls	150	SF	55.00	8,250
GWB walls	1,360	SF	25.00	34,000
Glass walls	482	SF	75.00	36,150

## Pavilion D:

Plam walls	0	SF	55.00	0
GWB walls	0	SF	25.00	0
Glass walls	556	SF	75.00	41,700

## Pavilion E:

Plam walls	47	SF	55.00	2,585
GWB walls	430	SF	25.00	10,750
Glass walls	222	SF	75.00	16,650
GWB roof	60	SF	25.00	1,500

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>040001 MASONRY*</u>				
Interior 12" CMU Partition:				
Gym - 28'	4,480	SF	26.00	116,480
Auditorium - 28'	2,660	SF	26.00	69,160
Auditorium - 14'	420	SF	26.00	10,920
GF CMU - Aud. Only	2,660	SF	4.50	11,970
Acoustical Block - Premium		SF		0
CMU Partition (Gym & Aud):				
Bond beam	37	LF	48.00	1,776
<u>050001 MISCELLANEOUS &amp; ORNAMENTAL IRON*</u>				
Folding Panel partition Support:				
Typ classroom (13 EA)		w/ structural		
Music classroom (DBL panel 1 EA)		w/ structural		
SPED suite (3 EA)		w/ structural		
Folding Grille Support @:				
Learning common	46	LF	200.00	9,200
Sgl custom security gate (7'w)	2	EA	4,000.00	8,000
Coiling Grille Support:				
Servery	35	LF	100.00	3,500
Main office(1 EA)	21	LF	100.00	2,100
CMU Partition (Gym & Aud):				
CMU clip @ 4' oc	70	EA	115.00	8,050
Glazed Toilet Screen Partition:				
13/A-600 Stl pipe		deleted		
Misc Metals @ Corridor Locker Enclosure (nic mtl locker) - allow (7/A650):				
#7 Guard Rail support - upper floor	735	LF	425.00	312,375
Misc. metals	136,600	GSF	1.00	136,600
<u>061000 ROUGH CARPENTRY</u>				
Interior blocking	136,600	GSF	0.50	68,300
Misc. rough carpentry	136,600	GSF	0.50	68,300
(5/A601) Frame AV monitor box	65	EA	250.00	16,250
<u>062000 FINISH CARPENTRY</u>				



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Interior Borrowed Light Window /Sidelight-A620 (NIC Break out Area):				
PTD MDF sill 9"	866	LF	32.00	27,712
PTD MDF head 9"	866	LF	25.00	21,650
PTD MDF jamb 9"		N/A		
<u>072100 INSULATION</u>				
Firestopping	136,600	GSF	0.65	88,790
<u>071000 DAMPPROOF., WATERPROOF. &amp; CAULKING*</u>				
Joint sealants	136,600	GSF	0.85	116,110
<u>079513 EXPANSION JOINT COVER ASSEMBLIES (NO SPEC)</u>				
Int Wall Expansion joints	1	LS	10,000.00	10,000
<u>081113 HOLLOW METALWORK</u>				
Interior HM Frame Glass & Glazing:		N/A		
<u>083323 SPECIAL DOORS</u>				
Access panels	1	LS	30,000.00	30,000
<u>080001 METAL WINDOWS*</u>				
Aluminum Storefront Frame, Glass & Glazing-Allow: 1st Floor Vestibule (11A/A221)		w/B2010		
Office/ vestibule security window (6/A403) 2nd Flr Main office	1	EA	5,000.00	5,000
<u>080002 GLASS AND GLAZING*</u>				
Toilet Entry Screen (Translucent/etched): 4'Wx5'6" - 12 loc		deleted		
Interior Window /Sidelight-A620 (NIC Break out Area):				
SGL Alum channel ,glass & glazing	5,071	SF	62.00	314,402
DBL Alum channel ,glass & glazing	930	SF	88.00	81,840
GL-Graduated pattern film premium	3,094	SF	10.00	30,940
3m Safty Glazing	4,332	SF	15.00	64,980

092116 GYPSUM WALLBOARD

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
H6 Elevator shaft - 56'6"H	2,095	SF	14.75	30,901
C4 Auditorium -28'H	952	SF	14.55	13,852
C7 Auditorium - 28'H	4,755	SF	13.55	64,430
Aud. furr w/gyp @ fnd stage front	300	SF	9.00	2,700
F1 gym storage -28'H	695	SF	16.95	11,780
F1 gym storage chase 1 side -28'H	105	SF	16.95	1,780
1 side class radial mech chase 14'H	7,318	SF	11.50	84,157
B4 1 side radial plumb chase 14'H	1,095	SF	11.00	12,045
Chase @ fnd wall 14'H	996	SF	9.00	8,964
Drinking fountain chase wing wall 14'H	689	SF	9.00	6,201
D6 & D6 Bulkhead @ dbl op part - 6'H	114	SF	12.00	1,368
Curb 1'H @ glazed part	866	SF	15.00	12,990
Curb 1'H @ toilet rm screen (12 loc)	66	LF	15.00	990
Bulkhead 6'H @ galzed part	5,196	SF	12.00	62,352
F6 Bulkhead @ op part - 6'H	1,248	SF	12.00	14,976
Breakout Room		Above		
TYP -14' Drywall Partitions:				
B1	2,541	SF	7.10	18,041
B3	1,726	SF	8.10	13,981
B4	5,348	SF	9.85	52,678
C2	3,758	SF	11.75	44,157
C3	9,149	SF	11.75	107,501
C4	2,589	SF	11.75	30,421
C6	1,184	SF	14.00	16,576
C7	1,112	SF	11.75	13,066
C8	181	SF	16.50	2,987
C10	229	SF	14.00	3,206
D3	1,429	SF	9.80	14,004
D6	455	SF	12.05	5,483
E3	10,614	SF	13.60	144,350
E4	580	SF	13.60	7,888
E6	1,181	SF	15.85	18,719
E7	894	SF	20.60	18,416
E8	18,658	SF	18.35	342,374
E9	2,588	SF	18.35	47,490
F1	4,933	SF	15.15	74,735
F2	2,142	SF	17.40	37,271
F6	4,592	SF	15.15	69,569
F8	775	SF	19.90	15,423
H4	686	SF	13.75	9,433
J1	7,734	SF	16.40	126,838
K1	7,317	SF	20.60	150,730
K2	1,724	SF	20.60	35,514
GWB @ Corridor Locker Enclosure (nic mtl locker) - allow (7/A650):				
Freestanding	315	LF	150.00	47,250
Freestanding -guardrail	735	LF	55.00	40,425

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Additional framing @ sloped AWP (A601)	10,700	SF	7.50	80,250
(5/A601) frame AV monitor box	65	EA	100.00	6,500
Tile Backer Bd Premium		W / TILE FSB		
Impact resis. Gwb premium	1	LS	50,000.00	50,000
Misc. GWB assemblies (inc extruded alum reveal trin	136,600	GSF	0.50	68,300
Load, Distribute and Misc.	136,600	GSF	0.25	34,150
*Partitions include sound attenuation, tape & joint compound finish				

#### 109000 MISCELLANEOUS SPECIALTIES

##### Folding Panel partition:

16' x 8' H Typ classroom (13 EA)	1,664	SF	110.00	183,040
(22/A620)Dbl 19' x 8' H Music class -acoustical (1 EA)	152	SF	110.00	16,720
8' H SPED suite (3 LOC)	960	SF	110.00	105,600

\*Includes pass dr & white bd finish

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4,355,925

#### C1020 INTERIOR DOORS

##### 081113 HOLLOW METAL DOORS AND FRAMES

##### Int. HM Door Frame:

Single Door 7'H	22	EA	285.00	6,270
Double Door 7'H	1	EA	305.00	305
Single Door 8' H	238	EA	320.00	76,160
Double door 8'H	26	EA	345.00	8,970

##### Int. HM Door:

Sgl B1 7'H	15	EA	495.00	7,425
90 Min Sgl B1 7'H	1	EA	530.00	530
Dbl B2 7'H	1	EA	990.00	990
Sgl B1 8'H	25	EA	540.00	13,500
90 Min Sgl B1 8'H	1	EA	565.00	565
90 Min Dbl B2 8'H	3	EA	1,130.00	3,390

##### 081416 FLUSH WOOD DOORS

##### Int. Prefinished Wood Door:

Sgl B1 2'x 8'H	35	EA	490.00	17,150
Sgl B1 3'x 8'H	64	EA	530.00	33,920
90 Min Sgl B1 3'x 8'H	8	EA	560.00	4,480
Dbl B2 8'H	13	EA	1,060.00	13,780
Sgl C1 7'H	6	EA	610.00	3,660
Sgl C1 8'H	105	EA	635.00	66,675

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Dbl C2 8'H	9	EA	1,270.00	11,430
Dbl C3 8'H	1	EA	1,240.00	1,240
<u>080002 GLASS AND GLAZING*</u>				
Glass & Glazing @ Interior Wood Door:				
Sgl C1 7'H ( 6 EA )	60	SF	48.00	2,880
Sgl C1 8'H ( 105 EA )	1,260	SF	48.00	60,480
Dbl C2 8'H ( 9 EA )	216	SF	48.00	10,368
Dbl C3 8'H ( 1 EA )	4	SF	48.00	192
<u>087100 DOOR HARDWARE</u>				
Hardware Set @ Int. Alum Door:				
15	5	EA	5,425.00	27,125
Hardware Set @ Typ Int. Doors ( per Spec ):				
20	1	EA	1,500.00	1,500
21 Slider	24	DELETED		
22	2	EA	785.00	1,570
23	1	EA	805.00	805
24	13	EA	695.00	9,035
25	2	EA	485.00	970
26	1	EA	460.00	460
27	2	EA	590.00	1,180
28	23	EA	670.00	15,410
29	10	EA	510.00	5,100
30	44	EA	585.00	25,740
31	1	EA	480.00	480
32	39	EA	680.00	26,520
33	1	EA	510.00	510
34	1	EA	510.00	510
35	1	EA	810.00	810
36	12	EA	810.00	9,720
37	1	EA	910.00	910
38	2	EA	835.00	1,670
39	1	EA	835.00	835
40	49	EA	985.00	48,265
41	18	EA	835.00	15,030
42	2	EA	1,785.00	3,570
43	5	EA	785.00	3,925
44	1	EA	805.00	805
45	1	EA	1,835.00	1,835
46	6	EA	2,005.00	12,030
47	1	EA	3,085.00	3,085
48	2	EA	1,470.00	2,940
49	1	EA	885.00	885
50	1	EA	1,045.00	1,045

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
51	3	EA	1,345.00	4,035
52	1	EA	1,415.00	1,415
53	5	EA	1,665.00	8,325
54	3	EA	1,485.00	4,455
55	2	EA	1,135.00	2,270
56	3	EA	2,790.00	8,370
57	2	EA	1,945.00	3,890
58	1	EA	4,270.00	4,270
59	1	EA	4,465.00	4,465
60	1	EA	4,445.00	4,445
61	2	EA	4,610.00	9,220
62 - Coiling dr		w/Unit Cost		
63 - Stage panel		w/Unit Cost		

080001 METAL WINDOWS\*

Aluminum ( Frame, Door, Glass, Glazing and Hdw):

7' 1st Flr Entry Vestibule - sgl	1	EA	4,000.00	4,000
7' 1st Flr Entry Vestibule - dbl	2	PR	8,150.00	16,300
8' 2nd Flr Entry Vestibule- sgl	1	EA	4,400.00	4,400
8' 2nd Flr Entry Vestibule - dbl	1	PR	8,600.00	8,600

Premium:

School Guard ( 9 lvs ) - Factory glazing	135	SF	36.00	4,860
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083323 SPECIAL DOORS

Coiling Door :

Kitchen dish drop window ( 5'x4')		W/Kitchen Equip		
Servery (15'x7')		N/A		
Servery (7'x7')		N/A		

Café/Learning Common:

Coiling Security Mesh Drape ( 21'x 8' -2EA)	336	SF	95.00	31,920
Coiling Security Gate- sgl ( 7' x7'10")	2	EA	7,000.00	14,000

Servery :

Coiling Security Mesh Drape ( 40'x 8' -1EA)	320	SF	95.00	30,400
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Main office:

Coiling Security Mesh Drape ( 21' x 5' 6"-1EA)	116	SF	95.00	10,973
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Auditorium Swing Panel (Dr Schedule):

5'w x 26'h door #1348 a #1344 a		deleted		
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090007 PAINTING\*

Paint Int HM door frame:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Single Door 7'H	22	EA	125.00	2,750
Double Door 7'H	1	EA	145.00	145
Single Door 8' H	238	EA	140.00	33,320
Double door 8'H	26	EA	160.00	4,160
Paint Int HM door:				
Sgl B1 7'H	15	EA	150.00	2,250
90 Min Sgl B1 7'H	1	EA	150.00	150
Dbl B2 7'H	1	EA	300.00	300
Sgl B1 8'H	25	EA	175.00	4,375
90 Min Sgl B1 8'H	1	EA	175.00	175
90 Min Dbl B2 8'H	3	EA	300.00	900
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				797,773

## C1030 FITTINGS

050001 MISCELLANEOUS & ORNAMENTAL IRON\*

## Auditorium:

Stage front access stair & rails	2	FLT	2,500.00	5,000
Aisle access stair & rails	2	FLT	2,500.00	5,000
Auditorium equip. supports	1	LS	15,000.00	15,000

## Interior Metals:

1st Flr common stair guardrail (4 loc)	14	LF	310.00	4,340
Learning commons #1059 ramp guardrail	45	LF	310.00	13,950
Learning commons #1050 ramp guardrail	45	LF	310.00	13,950
1st Flr Lobby guard rail (5.39)		deleted		
2nd & 3rd Flr Lobby guard rail (6/A650)	367	LF	450.00	165,150
OT/PT equip support-allow	1	RM	2,500.00	2,500
Gym equip supports	1	LS	10,000.00	10,000
Concealed stl angle @ corr built-in bench		W/ Unit Cost		
Concealed stl angle @ casework ctr		W/ Unit Cost		

## Interior:

A312 Int panel grilles (Rulon)	450	LF	150.00	67,500
4/ A601 Curved perf arch grille - classroom 2' 6"h	1,536	SF	50.00	76,800

## Exterior Rails:

Loading dock stair/ramp guardrail	15	LF	265.00	3,975
Loading dock stair/ramp wall rail	15	LF	150.00	2,250
2nd flr entry terrace guardrail	30	LF	500.00	15,000
2nd flr Terrace rail	28	LF	500.00	14,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
High roof safety rail	73	LF	125.00	9,125
#7 Guard Rail support - ground floor	315	LF	195.00	61,425
<u>062000 FINISH CARPENTRY</u>				
Int panel grilles (Rulon) *casework is included w/ E2010		W/ EXT WALL		
<u>080002 GLASS &amp; GLAZING*</u>				
Multi User Toilet & Locker Rm (16 ea): 5'H mirror @ lav ctr	1,215	SF	38.00	46,170
Dressing Rm (2 ea): 5'H mirror @ ctr	190	SF	38.00	7,220
<u>102113 TOILET COMPARTMENTS</u>				
HDPE Toilet Partitions (Per Plan):				
Std. partition	23	EA	1,220.00	28,060
HC partition	16	EA	1,430.00	22,880
Urinal screen	15	EA	310.00	4,650
*Spec notes metal				
<u>102813 TOILET ACCESSORIES</u>				
SGL User Toilet Rm Accessories ( 15 ea):				
Tilt mirror @ wall hung lav	15	EA	220.00	3,300
Soap dispenser (owner furnish & installed)		NIC		
Toilet tissue dispenser	15	EA	48.00	720
San. prod. disposal	15	EA	60.00	900
Toilet grab bars	30	EA	85.00	2,550
Paper towel dispenser-allow	15	EA	135.00	2,025
Waste receptacle	15	EA	150.00	2,250
Elec hand dryer - allow		NIC		
Coat hook	15	EA	25.00	375
Fixed diaper changing sta - allow	3	EA	550.00	1,650
3' ADA SHW accessories -allow	1	EA	550.00	550
Multi User Toilet & Locker Rm Accessories (16 ea):				
Soap dispenser (owner furnish & installed)		NIC		
Toilet tissue dispenser	39	EA	48.00	1,872
San. prod. disposal	27	EA	60.00	1,620
Toilet grab bars	32	EA	85.00	2,720
Paper towel dispenser- 2/rm	32	EA	135.00	4,320
Waste receptacle - 2/rm	32	EA	150.00	4,800
Elec hand dryer - allow		NIC		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Coat hook	39	EA	25.00	975
5' ADA shw accessories - allow	2	EA	550.00	1,100
Dressing Rm Accessories (2 ea): Soap dispenser (owner furnish & installed)		NIC		
Allow:				
Misc. locker rm accessories	2	EA	1,000.00	2,000
Janitor shelf/mop holder	7	EA	200.00	1,400
*Excludes classroom and workroom accessories				
<u>101100 MARKERBOARDS &amp; TACKBOARDS - No Spec</u>				
Allow:				
4'H Tack Board	30	EA	400.00	12,000
*Dry-erase magnetic wall covering is included in C3010				
*Classroom folding panel partition include white bd finish				
<u>102600 WALL AND DOOR PROTECTION</u>				
Vinyl/Acrylic Composite:				
Corner guard	1	LS	5,000.00	5,000
Crash rail	1	LS	5,000.00	5,000
<u>109000 MISCELLANEOUS SPECIALTIES</u>				
Allow:				
Building directory	1	EA	5,000.00	5,000
Dedication plaque	1	EA	3,800.00	3,800
Room ID sign	136,600	GSF	0.22	30,052
Misc Int. ADA signage	136,600	GSF	0.12	16,392
Phenolic Locker-Allow:				
15" wx12"dx36"H Student corridor (nic enclosure)	660	EA	375.00	247,500
Metal Locker:				
15"w x 15"d x 30"H PE student 2 tiered	40	EA	215.00	8,600
12" Custodian/kitchen staff dbl tier	6	EA	265.00	1,590
12" Kitchen staff dbl tier	3	EA	265.00	795
Locker base @ :				
Student corridor		W /Enclosure		
PE student	50	LF	36.00	1,800
PE staff	9	LF	36.00	324
Free Standing Wood Bench:				
PE locker rm (2 EA)	12	LF	125.00	1,500



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Health office cubicle track w/ curtain	3	EA	1,325.00	3,975
Safety Specialties (104000):				
Hose connection cabinet	16	EA	350.00	5,600
First aid kit (nic sci rm)	6	EA	450.00	2,700
Fire Dept key cab	2	EA	1,000.00	2,000
Fire extinguisher and cab (nic sci rm)	20	EA	475.00	9,500
AED & cabinets	4	EA	750.00	3,000
*See also science equipment				
Secure wall panels-Allow:				
OT/PT rm (1 ea)	320	SF	15.00	4,800
Padded athletic flr tiles - allow:				
OT/PT rm (1 ea)	100	SF	15.00	1,500
*Includes Sections 101400, 102600 & 104000				
				-----
				1,001,500
<b>TOTAL C10 - INTERIOR CONSTRUCTION</b>				<b>6,155,197</b>

## C20 - STAIRS

## C2010 STAIR CONSTRUCTION

050001 MISCELLANEOUS & ORNAMENTAL IRON\*

## 5' 6"W Metal Pan Stair #3 @ Learning Commons 1st- 2nd (1 FLT):

Metal pan stair treads/risers	132	LFR	85.00	11,220
Metal pan landing	33	SF	55.00	1,815
Guardrail	66	LF	400.00	26,400
Cane rail	1	EA	1,350.00	1,350

## 8'6" W Metal Pan Stair #14 @ Learning Commons 1st- 2nd (1 FLT):

Metal pan stair treads/risers	204	LFR	85.00	17,340
Metal pan landing	51	SF	55.00	2,805
Guardrail	66	LF	400.00	26,400
Cane rail	1	EA	1,350.00	1,350

## 5'10" W Metal Pan Stair #6 @ Learning Commons 2nd - 3rd(1 FLT):

Metal pan stair treads/risers	138	LFR	85.00	11,730
Metal pan landing	33	SF	55.00	1,815
Guardrail	66	LF	400.00	26,400

## 8' 6"W Metal Pan Stair #5 @ Learning Commons 2nd - 3rd(1 FLT):

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Metal pan stair treads/risers	204	LFR	85.00	17,340
Metal pan landing	55	SF	55.00	3,025
Guardrail	66	LF	400.00	26,400
5' W Metal Pan Stair Hall 1 & 2 ( 2 loc 1st - 3rd 4 FLT):				
Metal pan stair treads/risers	480	LFR	85.00	40,800
Metal pan landing	240	SF	55.00	13,200
Wall rail	128	LF	165.00	21,120
Guardrail	128	LF	400.00	51,200
Guardrail flr open	12	LF	400.00	4,800
Cane rail	2	EA	1,350.00	2,700
5' W Metal Pan Stair @ #1 Penthouse ( 1 FLT):				
Metal pan stair treads/risers	120	LFR	85.00	10,200
Metal pan landing	60	SF	55.00	3,300
Wall rail	32	LF	165.00	5,280
Guardrail	32	LF	400.00	12,800
Access gate	1	EA	1,800.00	1,800
* Typ, perforated metal mesh guardrail				
Aud Rails & Stairs		W/ C1030		
Lobby rails		W/ C1030		
<u>033000 CAST IN PLACE CONCRETE</u>				
Conc stair pan fill :				
Metal pan stair treads and risers	1,278	LFR	22.00	28,116
Metal pan landing	472	SF	18.00	8,496
(A651) Precast tread		NIC		
Recessed Slab 12" Common #1009 & #1059( 2 LOC) :				
Sloped walkway - premium	325	SF	5.00	1,625
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				380,827

## C2020 STAIR FINISHES

090005 RESILIENT FLOORING\*

## Metal Pan Stair Learning Commons Stair ( 4 FLT):

VCT tile landing	172	SF	8.00	1,376
VCT treads & risers w/rub nosing	678	LFR	14.25	9,662

Aud Stair Finish

W/ C1030

Recessed Slab 12" Common #1009 &amp; #1059( 2 LOC)

W/ C1030

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>090007 PAINTING*</u>				
Paint Metal Pan Stair & Rail:				
5' W @ Learning Commons 1st- 3rd	2	FLTS	2,500.00	5,000
8' W @ Learning Commons 1st- 2nd	2	FLTS	2,750.00	5,500
5' W @ Stair Hall	5	FLTS	2,500.00	12,500
Seal Concrete Finish:				
5' W @ Stair Hall	5	FLTS	2,000.00	10,000
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				44,038
<b>TOTAL C20 - STAIRS</b>				<b>424,865</b>

## C30 - INTERIOR FINISHES

## C3010 WALL FINISHES

Breakout Areas w/C1010

040001 MASONRY\*

CMU premium finish w/Partition

062000 FINISH CARPENTRY

(A600) 18" mdo w/ ample cap Bumper w/HD Wd Marker Tray:

Bumper Rail	3,480	LF	45.00	156,600
Bumper Top	1,660	LF	30.00	49,800

097233 DRY ERASE WALL COVERING

Dry Erase Wall Finish	6,640	SF	25.00	166,000
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P.lam Wall Panel:

11/A600 Drinking Fountain Alcove (7 loc 7'H)	245	SF	55.00	13,475
P.Lam wall panel @ class entry controls	59	LOC	550.00	32,450
Auditorium vestibule	393	SF	48.00	18,864
Stage full ht	2,880	SF	48.00	138,240

Misc Wood Wall Panel &amp; Trim- Allow :

Lower stage front p.lam panel(8/A602)	300	SF	55.00	16,500
Auditorium -allow	1	LS	25,000.00	25,000
Stage (100% wall fin?)		W/ Acoustical Panels		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>097200 WALL COVERING</u>				
Mural - Digital image wall covering - install only w/ 1/2" GWB Back up:				
Media center	1,400	SF	15.00	21,000
Main office	50	SF	50.00	2,500
<u>097733 WALL PANELS</u>				
8' FRP Wall Panel -allow:				
Main kitchen	2,233	SF	9.75	21,772
Cementitious Wood Fiber Wall Panel:				
Music practice rm ( 3 EA)	409	SF	19.00	7,771
Band Rm ( 1 EA)	833	SF	19.00	15,827
Gymnasium	4,344	SF	19.00	82,536
Fabric Wrapped Acoustical Panels 1" (Per Email 7/22/19):				
Media ctr	1,260	SF	32.00	40,320
Science Lab Classroom (260 SF /6 EA)	1,560	SF	32.00	49,920
Makerspace ( 1 EA)	224	SF	32.00	7,168
Fab-lab ( 1 EA)	250	SF	32.00	8,000
Art Class Room ( 1 EA)	300	SF	32.00	9,600
Teacher Prep Room ( 24 EA)		N/A		
Typ, SPED & ELL Classroom 206SF / 32 EA)	6,592	SF	32.00	210,944
Drama Classroom ( 1 EA)	300	SF	32.00	9,600
Band Rm ( 1 EA)	912	SF	32.00	29,184
Chorus Classroom ( 1 EA)	309	SF	32.00	9,888
Guidance Suite (133 SF /3 Loc)	399	SF	32.00	12,768
Break out areas		NIC		
Stage		NIC		
Auditorium		NIC		
<u>090002 TILE*</u>				
Drinking Fountain Alcove (7 loc):				
Ceramic wall tile 7'h	476	SF	35.00	16,660
Multi User Toilet Rm (16 EA)				
Ceramic wall tile 5'6"	2,033	SF	23.00	46,759
Sgl User Toilet Rm (15 EA):				
Ceramic wet wall tile 5'6"	777	SF	23.00	17,871
1/4" Stl plate @ tile - 6" w (10/A620)	1	LS	30,000.00	30,000
*Tile includes alum trim				
Tile Backer Bd Premium	3,210	SF	1.85	5,939

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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090005 RESILIENT FLOORING\*

Wall base 12" VCT tile w/ Schluter top edge where e:	28,500	LF	6.50	185,250
Wall base 6" @ locker box	1,050	LF	5.00	5,250
Typ resilient wall base - allow	1	LS	7,500.00	7,500

090007 PAINTING\*

Interior painting- walls	136,600	GSF	1.90	259,540
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1,730,495

## C3020 FLOOR FINISHES

033000 CAST IN PLACE CONCRETE

## PC Power Troweled Concrete Floor Finish::

Auditorium	3,788	SF	5.00	18,940
Makerspace ( 1 EA)	1,972	SF	5.00	9,860

090007 PAINTING:

## SC Sealed Concrete Floor Finish (030513):

Storage, mech, elec & receiving	5,561	SF	2.00	11,122
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093000 TILE

## (10/A602) Learning Common Step (2 loc):

Porcelain tile tread	176	LFT	45.00	7,920
Porcelain tile riser	176	LFR	30.00	5,280

## Café/Learning Commons:

Porcelain tile	6,300	SF	24.00	151,200
Anti-fracture membrane	6,300	SF	6.00	37,800

## Quarry Tile:

Kitchen / servery	1,654	SF	17.25	28,532
Wall base	290	LF	9.75	2,828
Transitions strip		inc.		
Anti-fracture membrane	1,654	SF	6.00	9,924

\*Includes cooler &amp; freezer

090005 RESILIENT FLOORING\*

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Moisture mitigation -spec	45,525	SF	1.00	45,525
LT-linoleum tile TYP	59,665	SF	5.00	298,325
LP - linoleum plank Corridor	28,069	SF	6.50	182,449
LP - linoleum plank breakout area		w/ corr.		
Acoustical Mat - nr 99	40,000	SF	2.50	100,000
*Includes sections 0965000 & 096513				
<u>095000 WOOD &amp; ATHLETIC FLOOR</u>				
Main Gym:				
Moisture mitigation -allow	8,276	SF	4.75	39,311
Wood Maple Gym flooring	8,276	SF	19.00	157,244
Vented wall base	365	LF	9.85	3,595
Auditorium (8/A602):				
Stage flooring - 4" assembly	1,540	SF	14.00	21,560
Stage nosing	59	LF	38.00	2,242
Stage wall base /transition	113	LF	9.85	1,113
*Includes Sections 096429 & 096466				
<u>096723 RESINOUS FLOORING</u>				
SGL User Toilet Room (15 EA) :				
Epoxy flr w/int base	997	SF	18.00	17,946
Shw receptor 3x3	1	EA	550.00	550
Shw receptor 5x3	2	EA	700.00	1,400
Threshold/transition	15	EA	200.00	3,000
Multi User Toilet & Locker Room( 18 EA):				
Epoxy flr w/int base	4,601	SF	18.00	82,818
Threshold/transition	18	EA	200.00	3,600
<u>096800 CARPET</u>				
Auditorium:				
Carpet aisle	1,033	SF	6.00	6,198
Carpet aisle stair/stage (4 riser)	4	FLT	500.00	2,000
<u>124813 MATS</u>				
Walk off mat (2 loc)	360	SF	22.00	7,920
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				1,260,201

## C3030 CEILING FINISHES

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>050001 MISCELLANEOUS METALS</u>				
Note #5.55 Perf Arch Grille: 3rd Flr clg -12"W	210	SF	200.00	42,000
<u>092116 GYPSUM WALLBOARD</u>				
Acoustical Gypsum Plaster (092313): Clg spray sys - allow	1	LS TBD		
Typ, Sci, Art, Music, SPED & ELL Classroom CLG & Soffits:				
Summer Beam bottom 3"W (1/A690)	3,530	SF	12.00	42,360
Summer Beam light cove & vert framing (1/A690)	2,354	LF	75.00	176,550
Typ. gyp clg bay	1,161	SF	15.00	17,415
Complete soffit @ gyp bay	326	LF	48.00	15,648
Complete beam box 11'6" bot	998	LF	80.00	79,840
Sloped ACT clg - metal deck transition soffit	1,365	LF	32.00	43,680
Complete soffit @ OP partition class (6/A601)		N/A		
Central Corridor CLG & Soffits:				
Horiz gyp clg 8'AFF	5,869	SF	14.00	82,166
Horiz gyp clg 12'AFF	1,851	SF	14.00	25,914
(9/A690) Soffit @ bot of sloped ACT	1,852	LF	35.00	64,820
(8/A690) Soffit @ topof sloped ACT	1,590	LF	45.00	71,550
(7/A650) Cap @ locker box	565	LF	50.00	28,250
(6/A650) Soffit @ guardrail	367	LF	50.00	18,350
Misc. Soffits @:				
Toilet rm light cove (7/A690)	593	LF	48.00	28,464
ACT - GWB transition 8" AFF	150	LF	32.00	4,800
Pyramid Skylight 2'H	1,134	SF	22.00	24,948
Gyp Ceiling System :				
Atrium 3rd flr sloped gyp clg	6,727	SF	21.00	141,267
Typ Toilet Room (NICArea C & kit)	3,684	SF	11.00	40,524
Typ gyp ceiling	1,680	SF	12.00	20,160
Emergency shw gyp clg	54	SF	12.00	648
1 Hr gyp mech/elec	474	SF	12.00	5,688
2Hr gyp mech/elec	169	SF	16.00	2,704
A651 Underside monumental Stair w/ return	800	SF	16.00	12,800
Underside proj rm/bridge	600	SF	16.00	9,600
Sub acoustical clg (2/A690)	5,296	SF	24.00	127,104
<u>062000 FINISH CARPENTRY</u>				
Auditorium/Stage-(A461 & A691): P. lam clouds	2,000	SF	120.00	240,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Area Reduction - 30%	-600	SF	120.00	-72,000
<u>090003 ACOUSTICAL TILE*</u>				
A1 2'x2'and 4' ACT Ceiling System @ :				
Splayed admin	1,452	SF	9.00	13,068
Commons w/ exp structure	2,963	SF	8.25	24,445
Corr, Admin, workroom & storage	13,502	SF	8.25	111,392
Area C Toilet & Locker Room	1,224	SF	8.25	10,098
A2 Typ, Sci, Art, Music, & Media :				
A2 ACT	6,786	SF	9.00	61,074
A2 Splayed ACT (20%)	18,480	SF	9.00	166,320
A 3 ACT 2 x 2				
A 4 Kitchen / servery	1,688	SF	6.75	11,394
Random Size Ultima:				
Corridor 8'w	14,190	SF	10.00	141,900
C1 Aud vestibule	393	SF	10.00	3,930
Breakout rooms (GWB Roof NIC)	3,430	SF	10.00	34,300
Exterior Soffit panel		W /Ext Wall		
*Includes Sections 095100 & 095133				
<u>090007 PAINTING*</u>				
Paint gyp ceiling	45,000	SF	1.00	45,000
Paint gyp soffits	1	LS	25,000.00	25,000
Paint exposed structure- 100%:				
Class Small Closet( 34 loc)	408	SF	2.00	816
Typ mech, elec & storage rm	5,527	SF	2.00	11,054
Auditorium & stage	5,996	SF	2.50	14,990
Main gym deck	8,268	SF	4.00	33,072
Typ, Sci, Art, Music, & Media - exp deck	23,986	SF	2.00	47,972
Stairhall	1,203	SF	2.00	2,406
				-----
				2,053,480
<b>TOTAL C30 - INTERIOR FINISHES</b>				<b>5,044,176</b>

D. SERVICES

## D10 - CONVEYING



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
D1010 ELEVATORS & LIFTS				
<u>140001 ELEVATORS &amp; LIFTS*</u>				
Passenger elevator ( 1 door - 4,500 lb) *Includes roof level stop	4	STOP	53,000.00	212,000
<u>050001 MISCELLANEOUS &amp; ORNAMENTAL IRON*</u>				
Elev. framing	1	EA	3,000.00	3,000
Elev. pit ladder	1	EA	1,537.00	1,537
Elev. sump grate	1	EA	1,500.00	1,500
				-----
				218,037
<b>TOTAL D10 - CONVEYING</b>				<b>218,037</b>

## D20 - PLUMBING

## D2010 PLUMBING

220001 PLUMBING\*

## Plumbing Fixtures ( Per Plumbing):

P-1 water closet	20	EA	1,850.00	37,000
P-1A water closet	31	EA	1,850.00	57,350
P-2 Urinal	18	EA	1,575.00	28,350
P-2A Urinal	8	EA	1,575.00	12,600
P-3 Lav ctr mtd	47	EA	1,100.00	51,700
P-3A Lav wall hung	31	EA	1,375.00	42,625
P-4 Drinking Fountain	11	EA	3,150.00	34,650
P-5 Mop Receptor	5	EA	1,425.00	7,125
P-6 Shower 3x3	1	EA	2,850.00	2,850
P-6 Shower 5x3	2	EA	3,000.00	6,000
P-7 Science	40	EA	2,200.00	88,000
P-7A	2	EA	2,200.00	4,400
P - 8	4	EA	1,500.00	6,000
P - 9 Art Sink w/ Plaster Trap	4	EA	2,150.00	8,600
P - 10 Eye Wash Station	5	EA	2,800.00	14,000
Sink - Aud. dressing rm	4	EA	1,500.00	6,000
Sink - health office	1	EA	1,500.00	1,500
Sink - SPED	1	EA	1,500.00	1,500
Sink - Tech Lab	2	EA	1,500.00	3,000
Sensor Faucet ( spec only)	78	EA	525.00	40,950

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Sensor Flush ( spec onl; not indicated)	77	EA	485.00	37,345
FPSC wall hydrant	8	EA	450.00	3,600
HB hose bibb	18	EA	350.00	6,300
IMB Conn	5	EA	500.00	2,500
Fix Connection	237	EA	300.00	71,100
Misc. Specialties:				
MV-1	1	EA	7,500.00	7,500
MV-2 - science room	5	EA	1,250.00	6,250
1" Mech BFP	3	EA	950.00	2,850
Misc. Mix valve	4	EA	450.00	1,800
P - 11 Fume Hood Connection	3	EA	2,500.00	7,500
Heat Trace non potable water ( spec )	1	LS	5,000.00	5,000
Fire sealing penetration	1	LS	45,000.00	45,000
Elevator Sump pump	1	EA	3,500.00	3,500
Pumps:				
RP-1 & RP-2	2	EA	15,000.00	30,000
RP-3	1	EA	4,500.00	4,500
RP-4	1	EA	4,500.00	4,500
Gas Fire Hot Water Supply Boiler:				
BLR-1, 2(Lochinvar - Armor AWN501P )	2	LS	19,500.00	39,000
HW Storage Tank	1	EA	18,000.00	18,000
Mech Rm Neutralization	1	EA	4,000.00	4,000
Boiler Valve and Trim	1	LS	30,000.00	30,000
Heat Trace	1	LS	7,500.00	7,500
Interior Grease Interceptor:				
GI-1 & GI-2	2	EA	8,500.00	17,000
Roof/Storm Drain System				
Underground D/W/V Pipe:				
4"	61	LF	46.00	2,806
6"	75	LF	61.00	4,575
8"	75	LF	96.00	7,200
10"	93	LF	110.00	10,230
12"	19	LF	132.00	2,508
FCO	8	LF	425.00	3,400
Above Ground D/W/V Pipe:				
4"	230	LF	48.00	11,040
6"	932	LF	63.00	58,716
8"	486	LF	99.50	48,357
10"	150	LF	112.00	16,800
CO	20	EA	400.00	8,000
RD - 4"	7	EA	1,275.00	8,925
RD - 5"	3	EA	1,320.00	3,960

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
RD - 6"	9	EA	1,460.00	13,140
RD - 8"	2	EA	1,545.00	3,090
Insulate leader	1,000	LF	13.00	13,000
Footing drain	100	LF	36.50	3,650
Acid Waster System:				
Underground D/W/V Pipe:				
2"	43	LF	41.00	1,763
4"	587	LF	62.00	36,394
FCO	6	EA	485.00	2,910
FD	5	EA	725.00	3,625
Above Ground Sanitary D/W/V Pipe:				
4"	447	LF	67.00	29,949
Acid Neutralization Precast Structure	1	EA	15,000.00	15,000
Neutralization Tank and Alarm	1	EA	35,000.00	35,000
Precast Pump Chamber	1	EA	25,000.00	25,000
Domestic Piping:				
1 1/2"	339	LF	33.75	11,441
1 1/4"	754	LF	26.90	20,283
1"	2,678	LF	22.25	59,586
1/2"	1,245	LF	17.25	21,476
2 1/2"	533	LF	66.00	35,178
2"	567	LF	46.00	26,082
3"	50	LF	89.00	4,450
3/4"	1,590	LF	19.90	31,641
6"	100	LF	142.00	14,200
Kitchen conn	1	LS	30,000.00	30,000
Water Hammer arrestors	1	LS	5,000.00	5,000
Allow for Piping	1	LS	50,000.00	50,000
1" Pipe Insulation:				
1 1/2"	339	LF	8.00	2,712
1 1/4"	754	LF	7.90	5,957
1"	2,678	LF	7.50	20,085
1/2"	1,245	LF	7.10	8,840
2 1/2"	533	LF	9.00	4,797
2"	567	LF	8.45	4,791
3"	50	LF	9.50	475
3/4"	1,590	LF	7.40	11,766
6"	100	LF	14.45	1,445
Sanitary System				
Underground D/W/V Pipe:				
2"	79	LF	32.00	2,528
3"	392	LF	38.00	14,896
4"	971	LF	49.00	47,579

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
5"	284	LF	56.00	15,904
6"	14	LF	63.00	882
8"	31	LF	99.50	3,085
Floor Drain	17	EA	580.00	9,860
Gas and Sand separator	1	EA	15,000.00	15,000
5,000 gal. Grease Trap	1	EA	22,000.00	22,000
Sewer manhole	1	EA	4,000.00	4,000
Floor Sink	8	EA	2,200.00	17,600
FCO	25	EA	425.00	10,625
Above Ground D/W/V Pipe:				
2"	1,289	LF	32.00	41,248
3"	600	LF	38.00	22,800
4"	1,249	LF	49.00	61,201
FD	18	EA	800.00	14,400
CO	20	EA	495.00	9,900
Trap primer Pipe	1	LS	5,000.00	5,000
Roof Vent Term.	8	EA	1,100.00	8,800
Allow for Piping	1	LS	50,000.00	50,000
Gas Pipe:				
1" - Science hw conn?	300	LF	36.00	10,800
2" - main	135	LF	75.00	10,125
3/4" - kitchen	50	LF	30.00	1,500
1" - 1/2' lab connection	1	RM	30,000.00	30,000
Kitchen Connection	1	LS	5,000.00	5,000
Boiler Room Connections	1	LS	5,000.00	5,000
Kitchen Master Shut off	1	LS	4,000.00	4,000
Gas sub metering	3	EA	3,000.00	9,000
Flues:				
6" HW Flue	60	LF	95.00	5,700
Generator:				
Gas Connection	1	LS	25,000.00	25,000
Exhaust Breeching		NIC		
Underground Water Service:				
6"	10	LF	150.00	1,500
Meter Install Only	1	EA	2,500.00	2,500
Sub-meter	3	EA	3,000.00	9,000
6" BFP	1	EA	12,500.00	12,500
Staging and Lifts	1	LS	30,000.00	30,000
Commissioning Coordination	200	HRS	125.00	25,000
Sanitize system	1	LS	25,000.00	25,000
Test , permit misc gc	1	LS	75,000.00	75,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
				-----
				2,212,119
<b>TOTAL D20 - PLUMBING</b>	<b>\$16.19</b>	<b>/SF</b>		<b>2,212,119</b>

## D30 - HVAC

## D3010 HVAC

230001 HVAC\*

## Rooftop Units:

RTU-1 (22,000 cfm)	22,000	CFM	15.00	330,000
RTU-2 (22,000 cfm)	22,000	CFM	15.00	330,000
RTU-3 (22,000 cfm)	22,000	CFM	15.00	330,000
RTU-4 (22,000 cfm)	22,000	CFM	15.00	330,000
RTU-5 (15,000 cfm)	15,000	CFM	15.00	225,000
RTU-6 (12,000 cfm)	12,000	CFM	15.00	180,000
RTU-7 (2,000 cfm)	2,000	CFM	13.50	27,000
Make Up Air Units:				
MAU-1 (5,000 cfm)	5,000	CFM	12.00	60,000
Sound Attenuators ( 17 ea )	234,000	CFM	0.55	128,700

## Exhaust Fans:

EF-1 G-VG - roof	1	EA	3,150.00	3,150
EF-2 G-VG - roof	1	EA	3,150.00	3,150
EF-3 G-VG - roof	1	EA	3,150.00	3,150
EF-4 G-VG - roof	1	EA	3,150.00	3,150
EF-5 SQ-VG - kiln	1	EA	2,850.00	2,850
SEF-1 QEI - roof	1	EA	22,000.00	22,000
SEF-2 QEI - roof	1	EA	22,000.00	22,000
SEF-3 QEI - roof	1	EA	22,000.00	22,000
SEF-4 QEI - roof	1	EA	22,000.00	22,000
KEF-1 Cube - roof	1	EA	5,500.00	5,500
KEF-2 Cube - roof	1	EA	5,500.00	5,500
FEF-1 Vektor - roof	1	EA	12,250.00	12,250
FEF-2 Vektor - roof	1	EA	12,250.00	12,250
FEF-3 Vektor - roof	1	EA	12,250.00	12,250

## Dust Collection:

DC-1	1	EA	35,000.00	35,000
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## Dust Connection:

Bandsaw	1	EA	2,500.00	2,500
Combo sander	1	EA	2,500.00	2,500
Planer	1	EA	2,500.00	2,500

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Table swa	1	EA	2,500.00	2,500
Jointer	1	EA	2,500.00	2,500
Mitre saw	1	EA	2,500.00	2,500
HW System:				
HWB-1 (AR 4,000)	1	EA	52,500.00	52,500
HWB-2 (AR 4,000)	1	EA	52,500.00	52,500
HWP-1,2	2	EA	15,000.00	30,000
BP 1,2	2	EA	2,250.00	4,500
VFD	2	EA	3,200.00	6,400
Chemical feed	1	LS	35,000.00	35,000
Air separator	1	EA	2,800.00	2,800
Expansion tank	1	EA	3,200.00	3,200
8" Feed Manifold	50	LF	350.00	17,500
6" Manifold S&R	100	LF	225.00	22,500
Boiler piping trim and valves	1	LS	26,000.00	26,000
10" Flue	365	LF	185.00	67,525
Flue Roof Term and Mast	4	EA	1,500.00	6,000
PH Tank	1	LS	1,500.00	1,500
Intake Louver and Damper	1	LS	6,000.00	6,000
Exhaust Louver and Damper	1	LS	6,000.00	6,000
10" Boiler flue	275	LF	160.00	44,000
Elec Room Exhaust fan and Louver	1	LS	3,500.00	3,500
Air-Cooled Chiller:				
CH - 1	370	TON	1,050.00	388,500
Chiller rough in, valve and trim	1	LS	20,000.00	20,000
Pump Package	1	LS	175,000.00	175,000
Ductwork:				
Aud - dbl wall	10,299	LBS	10.00	102,990
Atrium Spiral	15,376	LBS	13.54	208,191
Corridor Rect - return	24,796	LBS	11.00	272,756
Gal Ductwork - allow	85,000	LBS	11.00	935,000
Stainless Steel - welded	4,500	LBS	25.00	112,500
24" Fabric duct soc	706	LF	38.00	26,828
Kitchen hood exhaust duct - welded	1,250	LBS	17.50	21,875
Alum. dishwasher ductwork	500	LBS	12.00	6,000
Duct Insulation:				
Duct liner - corr	17,015	SF	6.25	106,344
Duct liner - aud.	3,208	SF	6.25	20,050
Duct liner - s&r	2,368	SF	6.25	14,800
1" Duct insul	39,000	SF	3.90	152,100
EPDM wrap	3,000	SF	12.00	36,000
Fire wrap at duct	400	SF	9.00	3,600

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<b>Air Devices:</b>				
DD - 1	13	EA	450.00	5,850
DD - 2	7	EA	575.00	4,025
DD - 3	14	EA	375.00	5,250
DD - 4	31	EA	310.00	9,610
DD - 5	41	EA	985.00	40,385
DD - 6	9	EA	450.00	4,050
DD - 7	4	EA	750.00	3,000
E - 1	65	EA	195.00	12,675
R - 2	6	EA	205.00	1,230
SA - 1	4	EA	220.00	880
VAV Box	156	EA	1,250.00	195,000
Volume Damper	46	EA	245.00	11,270
Auto Damper	16	EA	1,400.00	22,400
Fire damper	30	EA	550.00	16,500
Destratification fan	3	EA	8,500.00	25,500
<b>AC Split System:</b>				
<b>Ductless Cooling Unit Systems:</b>				
DCUe-1	1	EA	9,500.00	9,500
DCUe-2	1	EA	9,500.00	9,500
DCUe-3	1	EA	9,500.00	9,500
DCUe-4	1	EA	9,500.00	9,500
DCUe-5	1	EA	9,500.00	9,500
DCUe-6	1	EA	9,500.00	9,500
DCUe-7	1	EA	9,500.00	9,500
<b>Condensate Pumps:</b>				
CP-1 & Cond. Piping	7	EA	1,200.00	8,400
<b>Hydraunic Heater:</b>				
Cab heater	0	EA	2,650.00	0
Unit Heater	16	EA	1,100.00	17,600
Perimeter Radiant Heat Panel	2,126	LF	158.00	335,908
Fin Tube Radiation - aud.	126	LF	88.00	11,088
Fin Tube Radiation - gym	168	LF	88.00	14,784
Modulating Valve	100	EA	285.00	28,500
Isolation valve	200	EA	92.00	18,400
Credit RP for Fin tube	-1	LS	55,000.00	-55,000
<b>HVAC Pipe:</b>				
Branch pipe 3/4" - 1 1/2"	6,648	LF	25.00	166,200
Main 2"- 6"	7,368	LF	76.00	559,968
<b>Pipe Insulation:</b>				
Branch pipe 3/4" - 1 1/2"	6,648	LF	7.75	51,522
Main 2"- 6"	7,368	LF	10.50	77,364

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<b>Mechanical Piping:</b>				
AHU Valving	8	EA	3,500.00	28,000
Misc. Control Valve	8	EA	2,500.00	20,000
<b>Temperature Control:</b>				
AHU/ERV	8	EA	25,000.00	200,000
Chiller and Cooling Equipment	1	LS	30,000.00	30,000
Boiler and Heating	1	LS	20,000.00	20,000
Pump	6	EA	1,800.00	10,800
VAV	156	EA	1,500.00	234,000
Hydronic point	100	EA	1,000.00	100,000
Exhaust Fan	17	EA	1,500.00	25,500
CO2 Sensor	45	EA	1,250.00	56,250
Misc. temp control	1	LS	50,000.00	50,000
Seismic & vibrator control	1	LS	35,000.00	35,000
Test and balance	136,600	GSF	0.65	88,790
Staging and Lifts	1	LS	30,000.00	30,000
Commission coordination	1	LS	25,000.00	25,000
GC & misc.	1	LS	25,000.00	25,000
HVAC Allowance	1	LS	325,000.00	325,000
				-----
				8,094,058
<b>TOTAL D30 - HVAC</b>				<b>8,094,058</b>

<b>TOTAL D30 - HVAC</b>	<b>\$59.25 /sf</b>	<b>8,094,058</b>
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## D40 - FIRE PROTECTION

## D4010 SPRINKLERS

210001 FIRE SUPPRESSION\*

6" BF Preventer	1	EA	7,450.00	7,450
Wet valve assembly	1	LS	3,500.00	3,500
Elec. bell	1	LS	1,500.00	1,500
Siamese fire dept connection	1	LS	1,350.00	1,350
<b>Fire Dept. Connection:</b>				
2 1/2" w/cabinet	9	EA	1,850.00	16,650
Siamese FD Connection	2	EA	1,235.00	2,470
FCVA - 4"	9	EA	1,050.00	9,450
Tamper sw	30	EA	225.00	6,750



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Heads and Branch:				
Semi Recess head - typ.	946	EA	310.00	293,260
Concealed head - aud.	41	EA	750.00	30,750
Upright head	315	EA	329.00	103,635
Upright w/ cage	71	EA	360.00	25,560
Sidewall	144	EA	285.00	41,040
Window wash	12	EA	385.00	4,620
3" drain	220	LF	31.50	6,930
2 1/2" - 6"	5,100	LF	39.00	198,900
4" Shut off	4	EA	1,025.00	4,100
6" Shut off	4	EA	1,185.00	4,740
Misc. Valve	1	LS	10,000.00	10,000
Underground Fire Prot. Service:				
6"	10	LF	110.00	1,100
Coring and firesafing	1	LS	5,000.00	5,000
Staging and Lifts	1	LS	30,000.00	30,000
Test, as built	1	LS	40,000.00	40,000
				-----
				848,755
<b>TOTAL D40 - FIRE PROTECTION</b>		<b>\$6.21 /sf</b>	<b>848,755</b>	

## D50 - ELECTRICAL

## D5010 ELECTRICAL SERVICE &amp; DISTRIBUTION

260001 ELECTRICAL\*

## Lighting Fixtures:

Exit	43	EA	324.20	13,941
G\$ - gym	80	EA	837.00	66,960
LC3 - classroom cove	1,927	LF	97.76	188,384
LK24	15	EA	267.00	4,005
LP4	6	EA	452.00	2,712
LP4S - aud	81	EA	775.00	62,775
LP8	6	EA	836.40	5,018
LR2 - typical	763	EA	402.00	306,726
LRD 5 - bathroom	12	EA	1,119.00	13,428
LRS - corridor	104	EA	783.60	81,494
LS2	2	EA	332.00	664
LS4	53	EA	362.00	19,186

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
LS8	17	EA	526.40	8,949
LWS - bathroom cove	647	LF	84.10	54,413
RC-1	92	EA	267.00	24,564
RSH	1	EA	282.00	282
SC - commons	40	EA	888.00	35,520
SL4 - exterior	19	EA	507.80	9,648
UC (as shown only)	66	LF	50.40	3,326
Branch Wiring	136,000	SF	1.25	170,000
Lighting Control System	136,000	SF	2.00	272,000
Mechanical:				
VAV 20A 1 frac	89	EA	182.20	16,216
WH 20A 1 1a	3	EA	182.20	547
WH 30A-3P-250v	1	EA	344.00	344
GB 30A-3P-250v	2	EA	611.00	1,222
J\$M	3	EA	182.20	547
Meters & flows & solen \$M WP	14	EA	182.20	2,551
MC-14/2 W/G	1,500	LF	1.69	2,529
MC-12/2 W/G	1,900	LF	1.71	3,241
MC-12/3 W/G	1,400	LF	2.14	2,996
MC-12/4 W/G	1,180	LF	2.56	3,026
MC-10/4 W/G	400	LF	4.56	1,825
UH	21	EA	182.20	3,826
EMT 3/4"C-3#12	2,800	LF	5.34	14,952
VFD FBO I&W	17	EA	216.00	3,672
25 - 100/100A/3/480v	4	EA	466.00	1,864
EMT-1 1/2"C-4#2 & 1#8	500	LF	15.76	7,880
GFI WP roof	22	EA	97.00	2,134
Roof stonco	10	EA	228.00	2,280
WP roof Switch	10	EA	87.00	870
EMT-3/"C-3#12 (roof)	3,450	LF	5.32	18,354
EMT-3/"C-4#12 (roof)	3,100	LF	5.80	17,980
CP-1	11	EA	182.20	2,004
MC-12/2 W/G	700	LF	1.71	1,194
JB 8x8x4	11	EA	68.20	750
480v 3 30A	11	EA	706.00	7,766
480v 3 40A	2	EA	938.00	1,876
EUH 250v 1 30A/2P	3	EA	416.00	1,248
ECU 208v 1 15A	11	EA	182.20	2,004
DCU J 208v 1 30A	11	EA	436.00	4,796
EMT-3/4"C-4#10	1,200	LF	6.38	7,656
ET 120v 1	8	EA	182.20	1,458
MAU-1 60/40A/3/480v	1	EA	391.00	391
EMT-1"C - 4#8 & 1#10	70	LF	7.14	500
Mechanical (cont):				
Boiler 20A - 1 30A/2P	3	EA	513.00	1,539
Boiler pumps 20A 2P 208v	3	EA	366.00	1,098

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Chiller 480v 600/600A/3	2	EA	2,148.00	4,296
EMT-3"C - 3#250 mcm & 1#4	260	LF	32.56	8,466
EMT-3/4"C 4\$8 & 1#10	140	LF	8.39	1,175
SEF 100/100A/3/480v	4	EA	650.00	2,600
#2 MI cable	1,600	LF	19.32	30,912
#2 MI terms (quick)	32	EA	116.00	3,712
RTU - 400/250A/3/3R	4	EA	971.00	3,884
RTU - 200/150A/3/3R	2	EA	613.00	1,226
RTU - 100/70A/3/3R	1	EA	486.00	486
RTU - 60/50A/3/3R	1	EA	391.00	391
EMT-3"C-4#250 & 1#4	520	LF	40.38	20,998
EMT-2"C-4#1/0 & 1#6	325	LF	21.96	7,137
EMT-1 1/4"C-4#4 & 1#8	150	LF	12.62	1,893
EMT-1"C-4#6 & 10	150	LF	10.25	1,538
Wiring Devices & Scoreboard Work:				
Duplex	388	EA	58.84	22,830
GFI duplex	109	EA	61.84	6,741
WP GFI	8	EA	94.00	752
Surf double duplex	37	EA	124.00	4,588
Switched rec w/IO module	24	EA	240.00	5,760
NEMA L14-20R	27	EA	107.00	2,889
LS limit switch	3	EA	107.00	321
CP cont pnl - wire only	8	EA	144.00	1,152
TML mtr conn	8	EA	83.80	670
J 4" sq w/cover	6	EA	41.00	246
ISO grd out shot clock	2	EA	87.00	174
Wire only scoreboard	1	EA	144.00	144
30/20A/3240v	2	EA	269.00	538
EMT-3/4"C-4#12	1,800	LF	5.79	10,422
Double duplex - color	216	EA	101.40	21,902
Tw loc @ tray	11	EA	102.00	1,122
Cable tray 24" c12'0"	6	EA	309.00	1,854
Poke thru	2	EA	666.00	1,332
Key sw	1	EA	64.00	64
MOM conn cw	6	EA	70.00	420
CP bleacher pwr	7	EA	366.00	2,562
MC-12/2 w/G	39,500	LF	1.71	67,387
MC-12/3 w/G	2,000	LF	2.14	4,280
EMT-3/4"C - 3#12	1,900	LF	5.32	10,108
Emergency Generator & ATS:				
300kw 277/480v Natural Gas Generator	1	EA	159,320.00	159,320
Enclosure	1	EA	432.00	432

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
400A/3P output c/b	1	EA	144.00	144
150A/3P output c/b	1	EA	144.00	144
Interior panel	1	EA	288.00	288
Receive rig & set	1	EA	11,152.00	11,152
Unit mtd EPO	1	EA	638.00	638
Bldg mtd EPO	1	EA	907.00	907
Annunciator	1	EA	576.00	576
ATS-OS 400A 4P	1	EA	432.00	432
ATS-LS 150A 4P	1	EA	576.00	576
PVC-1"C-4#10 & 1#10	150	LF	4.01	602
PVC-1"C-14#13	150	LF	5.60	840
EMT-3/4"C-2#14	280	LF	5.12	1,434
EMT-3/4"C-5#14	120	LF	6.09	731
MI - 4#1/0	140	LF	107.36	15,030
MI - quick terms	8	LF	133.20	1,066
WIC 4#500 & 1#3	130	LF	45.84	5,959
EMT-4"C-4#500 & 1#3	140	LF	67.24	9,414
EMT-2"C-4#10 & 1#6	150	LF	21.96	3,294
Fire Alarm System:				
Material	1	LS	219,942.00	219,942
Bi-directional antenna sys	1	LS	4,752.00	4,752
Elevator shaft & machine rm fitout	1	LS	3,456.00	3,456
Floor plan under glass	3	LS	144.00	432
Sprinkler bell I&W only	1	LS	216.00	216
DK drill key switch	1	LS	72.00	72
FACP flush control pnl	1	LS	4,608.00	4,608
Red beacon	1	LS	216.00	216
As built cabinet	1	LS	144.00	144
FM flush master box	1	LS	360.00	360
K knox box	1	LS	216.00	216
W white strobe	1	LS	144.00	144
LOC local operator control pnl	1	LS	864.00	864
Smoke exhaust graphic plaque w/LED indicator of statud	1	EA	1,152.00	1,152
FATC term cabinet	3	EA	864.00	2,592
ANN annunciator	3	EA	432.00	1,296
VE voice evac pnl	1	EA	2,304.00	2,304
MNS ??	3	EA	288.00	864
LS limit sw	6	EA	72.00	432
BD beam det xmit/rcur	5	EA	180.00	900
MM monitor module	66	EA	72.00	4,752
CM control module	26	EA	72.00	1,872
IM isolation module	3	EA	72.00	216
CO2 det tie in	1	EA	144.00	144
Security tie in	2	EA	144.00	288
Refuge tie in	1	EA	144.00	144
BDA tie in	5	EA	144.00	720

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
CO MM CO2 det w/monitor mod	9	EA	144.00	1,296
Smoke w/base	89	EA	72.00	6,408
Smoke to control atrium smoke	115	EA	72.00	8,280
Strobe only	61	EA	108.00	6,588
A/V unit	0	EA	0.00	0
A/V unit w/ amber alert	270	EA	144.00	38,880
FS TS flow & tampers	42	EA	72.00	3,024
Fire Alarm System ( cont):				
F Pull station	29	EA	61.20	1,775
MAG door holders	6	EA	72.00	432
ST1 stopper II 6500	29	EA	36.00	1,044
J 4" oct j-box	218	EA	33.80	7,368
J 4" sq w/device ring	158	EA	42.00	6,636
BB back box	331	EA	53.20	17,609
Programming & pretest	1	EA	1,728.00	1,728
FFD testing & cert	1	EA	1,728.00	1,728
ir & smoke test	1	EA	576.00	576
Water flow testing	1	EA	576.00	576
EMT-3/4"C-4#14	1,200	LF	5.42	6,504
AFC-#4901-16/2 14/2	13,160	LF	4.46	58,694
MC-4/C#14 red jacket	13,240	LF	2.64	34,954
Induct smoke	40	EA	288.00	11,520
Rem test sat	40	EA	108.00	4,320
Relay modules	40	EA	72.00	2,880
Monitor modules	40	EA	72.00	2,880
Mass notif UL listed computer	1	LS	50,000.00	50,000
Kitchen Power & Conns:				
S clg speaker	9	EA	381.00	3,429
Wall clock	1	EA	247.00	247
Voice outlet	1	EA	225.00	225
Duplex	36	EA	59.84	2,154
J	36	EA	92.00	3,312
TML-3/4"C-3#12	46	EA	50.24	2,311
TML-3/4"C-4#12	2	EA	61.00	122
TML-3/4"C-5#12	3	EA	69.60	209
TML-3/4"C-4#10	2	EA	81.80	164
TML-1 1/4"C-4#4 & 1#/0	2	EA	132.00	264
60/50/3/250v	2	EA	286.00	572
30/20/3/250v	1	EA	228.00	228
30/3P/250v	2	EA	208.00	416
30/2P/250v	4	EA	198.00	792
Ther sw w/OL	9	EA	150.00	1,350

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
EMT-3/4"C-3#12	2,000	LF	5.32	10,640
EMT-3/4"C-4#12	100	LF	5.78	578
EMT-3/4"C-5#12	160	LF	6.24	998
EMT-3/4"C-4#10	100	LF	6.38	638
EMT-1 1/4"C-4#4 & 1#10	100	LF	13.19	1,319
MC-12/2 w/G	1,500	LF	1.85	2,775
CO2 gas solenoid shutdown	1	LS	3,404.00	3,404
Hood/ansul/EP work	1	LS	6,206.00	6,206
Master Lightning Protector Systems & Theatre: Theatrical Itg Rough-in	1	LS	98,780.00	98,780
Heary Bros Lightning Preventer Systems	2	EA	13,820.00	27,640
Window shade installation	1	LS	10,760.00	10,760
Area of refuge system	1	LS	16,676.00	16,676
Integrated Electronic Security: Material - Turnkey:	1	LS	342,000.00	342,000
Includes:				
DSC Main cont pnl	1	EA		
12v 7 AH batteries	2	EA		
Xfmrs	2	EA		
Key lock w/relay mod	1	EA		
8 Zone expansion mod	1	EA		
16 Zone expansion mod	1	EA		
Addr. point modules	12	EA		
Touchscreen keypad	4	EA		
Wireless panic statin	6	EA		
Wireless received mod	1	EA		
Wall motions	35	EA		
Clg motions	38	EA		
Interface printer	1	EA		
Fargo photo badging	1	EA		
Flush door contacts	50	EA		
OHD sentrol contacts	2	EA		
Cellular communicator	1	EA		
8 Reader controller	11	EA		
DSX proximity readers	18	EA		
Bosch rte motions	14	EA		
DSC lan module/software	1	EA		
160 TB Network video recorder	1	EA		
12MP camera	13	EA		
5 MP ext dome camera	2	EA		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Wall arms	2	EA		
5 MP Interior dome	27	EA		
5 MP indoor 360der dome	29	EA		
Rack w/receivers/mx mmtrs	1	EA		
Axis ect 360 deg camera	3	EA		
A1 phone master video	3	EA		
A1 phone IC-DF video door sta	4	EA		
Strong pole split 20'	3	EA		
43" Smart TV	2	EA		
55" Smart TV	2	EA		
Chief TV wall brkt	4	EA		
24 Port poe & sw	3	EA		
28 Port poe & sw	10	EA		
Programming	1	LS		
Accessories	1	LS		
Supervision & final conn	1	LS		
O&M manuals	1	LS		
Auto Cad dwgs	1	LS		
Owner training	1	LS		
Structured Cabling System:				
Material - turnkey	1	LS	389,939.00	389,939
Includes:				
ACCU tech TS teacher sta	70	EA		
Programming	1	EA		
Supervision & final conn	1	EA		
O&M manuals w/closeout	1	EA		
Auto Cad drawings	1	EA		
Owner training	1	EA		
50 PR 66 blocks	6	EA		
25 PR 66 blocks	6	EA		
50 PR 110 blocks	6	EA		
Belden 2 post rack	8	EA		
Belden rack mt PDU	8	EA		
Belden 4 port face plate	150	EA		
Belden 2 port face plate	250	EA		
Belden F conn insert	70	EA		
Belden CAT6A green insert	400	EA		
Belden CAT6A blue insert	400	EA		
Belden 48 port patch pnl	12	EA		
Belden horiz cable mgr	40	EA		
Belden 10' patch cord	800	EA		
Belden CAT6A plenum blue	100	EA		
Belden CAT6A plenum green	100	EA		
Belden OS2 sm patch cord	100	EA		
Belden OM4 mm patch cord	100	EA		
Belden 4 cassettes hsg	8	EA		
Belden 6 fiber hsg	8	EA		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Belden 18 fiber hsg	8	EA		
Ground bars w/grd cable	1	LS	23,640.00	23,640
Conduit sleeves, cable tray and fiber backbone	1	LS	30,960.00	30,960
Intercom & Clock Systems:				
Material - turnkey	1	LS	119,970.00	119,970
Includes:				
Valcom 9 position back plane	1	EA		
Valcom main power supply	2	EA		
Valcom main VPV	1	EA		
Valcom Rack mount kit	1	EA		
Valcom dual 6A switching	1	EA		
Valcom 2x2 talkback spkr	240	EA		
Valcom call in pushbutton	66	EA		
Valcom GPS master clock	1	EA		
Valcom repeater	2	EA		
Valcom 12" round clocks	84	EA		
Valcom administrative teleph	1	EA		
Valcom 16" clocks/repeater	2	EA		
Valcom wire guard	2	EA		
Valcom power supply	1	EA		
Cowell rack equip	1	LS		
Atlas paging horns	21	EA		
Atlas flush enclosures	21	EA		
Atlas grills	21	EA		
Valcom retro blocks	3	EA		
Valcom power amps	3	EA		
Valcom rack mount kit	3	EA		
Valcom 24 pt talk back	3	EA		
Valcom admin gateway	1	EA		
Valcom volume control	21	EA		
Valcom network port/cards	1	EA		
Programming	1	LS		
Supervisions & final conn	1	LS		
O&M manuals & closeout	1	LS		
Auto cad swgs & submit	1	LS		
System testing	1	LS		
System owner training	1	LS		
A/V Systems:				
FSR	1	EA	951.40	951
Clg proj	1	EA	700.00	700
Duplex	41	EA	60.84	2,494
Data drop	43	EA	250.00	10,750
Hardwired AC pwr	2	EA	97.00	194



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Chief PAC 526	3	EA	741.00	2,223
VI Wall proj IG deep	41	EA	44.00	1,804
SI Wall spkr 1G deep	82	EA	44.00	3,608
RI Rec pnl 2G deep	42	EA	57.80	2,428
BP ?? 2G deep	42	EA	57.80	2,428
J1 12'x12'x4" flush	2	EA	203.00	406
R2 2 gang deep	4	EA	74.00	296
R3 3 gang deep	4	EA	82.00	328
S2 clg loud spkr - b.box	10	EA	74.00	740
S3 clg loud spkr - b.box	8	EA	74.00	592
EMT-1 1/4"C- w/PS	480	LF	7.66	3,677
EMT-1 "C- w/PS	300	LF	6.19	1,857
EMT-3/4"C- w/PS	2,500	LF	4.63	11,575
Section 274100 A/V				
Includes Systems for:				
Classrooms		NIC		
Auditorium		w/equipment		
Auditorium av Rough-in	1	EA	45,000.00	45,000
Switchgear Panels & Transformers:				
45 KVA xfmr	8	EA	5,232.00	41,856
75 KVA xfmr	6	EA	7,540.00	45,240
Xfmr ground	14	EA	394.00	5,516
100A/3P/480v	3	EA	304.00	912
200A/3P/480v	3	EA	372.00	1,116
SFD 2500A @ 480v	1	EA	1,788.00	1,788
SPD panel mounted	39	EA	422.00	16,458
SPD grounds	40	EA	172.00	6,880
Elev controller	1	EA	144.00	144
100/100A/3P/480v	1	EA	339.00	339
30/20A/3P/208v	1	EA	218.00	218
TML 40	1	EA	204.00	204
100A/3/250v	1	EA	274.00	274
UPS system 24 kw	1	EA	24,880.00	24,880
Rigging for UPS	1	EA	2,432.00	2,432
EPO power off setup	1	EA	274.00	274
ST1 6500 guard	1	EA	127.00	127
Main service grounding	1	EA	822.00	822
Meter socket	1	EA	544.00	544
Main swbrd 3000A @ 480v	1	EA	40,896.00	40,896
Feeders	136,000	EA	1.95	265,200
Dist pnl 4DP1B-800A @ 480v	1	EA	7,248.00	7,248
Dist pnl 2DP1C-400A @ 208v	1	EA	5,160.00	5,160
Double tub pnl @ 120/208v	10	EA	3,890.00	38,900

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Single tub pnl @ 120/208v	12	EA	2,752.00	33,024
400A-480v pnl	3	EA	5,072.00	15,216
225A-480v pnl	3	EA	3,052.00	9,156
100A-480v pnl	8	EA	2,688.00	21,504
DENIS VERIFY SECONDARY FEED				
60% CD Adders/Deletes:				
Integrated Electronic Security - 60% Adders/Deducts:				
Turnkey - Includes:	1	EA	27,000.00	27,000
Reader controller - add	1	EA		
Elevator controller - add	3	EA		
CR REX DC DC PS - add	1	EA		
CR DC REX PS - add	3	EA		
Wall motions - add	9	EA		
Ext. wall camera - add	1	EA		
Int. dome camera - add	1	EA		
Int. 180 deg - add	30	EA		
Ext. 180 deg - add	14	EA		
Int. 360 deg - deduct	-29	EA		
Ext. 360 deg - deduct	-9	EA		
VES - add	1	EA		
VMS - deduct	-2	EA		
OHD - DC - add	2	EA		
Structured Cabling - 60% Adders/Deducts:				
Turnkey - Includes:	1	LS	97,000.00	97,000
IDE closets - reduced	-1	EA		
Teachers station - add	1	EA		
TVE - add	4	EA		
AN - add	115	EA		
N2D - delete	-7	EA		
2 Data - add	39	EA		
TVS-48	3	EA		
TVC-96	1	EA		
CAT 6A ports	1,135	EA		
48 Port patch pnls	15	EA		
P.A. & Intercom - 60% CD Adders:				
Turnkey - Includes:	1	LS	20,000.00	20,000
Speakers - add	41	EA		
Volume control - add	6	EA		
12" Clocks - add	8	EA		
Ext. flush horn spkrs - add	2	EA		
#of classrooms - reduced	-9	EA		
IDF closets - reduced	-1	EA		

Fire Alarm & Gear - 60% Adders/Deducts:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
FA - A/V w/ amber alert	7	EA	419.00	2,933
S - smoke w/base	3	EA	162.00	486
W WP - A/V - WP	1	EA	271.00	271
BB backbox	7	EA	53.20	372
BB WP backbox WP	1	EA	63.40	63
J - 4" oct	3	EA	33.80	101
AFC - #4901 cable	300	LF	4.46	1,338
MC - 14/4C red jacket	50	LF	2.64	132
Dist. pnl 2 DP1A - 600A @ 480	1	EA	7,248.00	7,248
Dist. pnl 2 DP1B - 600A @ 480	1	EA	7,248.00	7,248
Upsize ATS-LS from 150 to 200A	1	EA	1,144.00	1,144
Upsize ATS-OS from 400 to 600A	1	EA	3,216.00	3,216
Upsize G/S from 250kw to 300 kw	1	EA	5,500.00	5,500
Upsize G/S output d/b from 400 to 600A	1	EA	2,000.00	2,000
ESL storm sw w/feeder tie	1	EA	6,830.00	6,830
Power Wiring Devices - 60% Adders/Deducts:				
Duplex	105	EA	58.84	6,178
GFI duplex	23	EA	62.84	1,445
WP GFI duplex	18	EA	94.00	1,692
NEMA CIS 3OR	1	EA	107.00	107
20A GFI - color	28	EA	71.84	2,012
Double duplex	42	EA	113.20	4,754
MC-10/3	60	LF	2.83	170
\$MC	2	EA	70.00	140
\$DW disc sw - DW	1	EA	82.00	82
J - dishwasher	1	EA	96.20	96
J - fume hood	1	EA	117.00	117
EF	2	EA	182.20	364
SEF	2	EA	182.20	364
KEF	1	EA	344.00	344
FEF	1	EA	344.00	344
DCU	2	EA	436.00	872
CPJ - bleacher power	1	EA	366.00	366
Scoreboard powe & cont.	1	EA	463.00	463
Turnkey - area of refuge AKA				
2 way communication	1	LS	14,953.00	14,953
OH&P - 10%	1	LS	448,472.04	448,472
DJE	1	LS	150,000.00	150,000
				-----
				5,083,192
<b>TOTAL D50 - ELECTRICAL</b>				<b>5,083,192</b>
	\$37.21	/sf		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>E. EQUIPMENT &amp; FURNISHINGS</u>				
E10 - EQUIPMENT				
E1010 COMMERCIAL EQUIPMENT				
<u>114000 FOOD SERVICE EQUIPMENT</u>				
Kitchen equipment & casework *Kitchen equipment & casework Quote 7/19/2019	1	LS	415,270.00	415,270
				----- 415,270
E1090 OTHER EQUIPMENT				
<u>113100 APPLIANCES</u>				
Custodian Storage Rm #1216: Stack washer/dryer	1	EA	2,500.00	2,500
Custodian Office/Break Rm (1 EA): Refrigerator -full size	1	EA	1,400.00	1,400
Staff Dinning Rm ( 1 ea): Refrigerator -full size Microwave	1	EA NIC	1,400.00	1,400
Medical Suite: Refrigerator -full size Microwave	1	EA NIC	1,400.00	1,400
SPED Classroom 1260 (12/A410): Range Refrigerator Washer Range hood Dryer Dishwasher	1 1 1	EA EA EA NIC NIC NIC	750.00 1,400.00 1,500.00	750 1,400 1,500
Kitchen washer and dryer				W / Kitchen Equipment
Science rm appliance				W / Science Equipment
<u>116600 ATHLETIC &amp; SPORTS EQUIPMENT</u>				

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Main Gym:				
Basketball backstops - electric	6	EA	9,500.00	57,000
Wall padding	861	SF	17.00	14,637
Motor op divider curtain (51'x24')-allow	1,224	SF	16.00	19,584
Volley ball court equip.	2	PR	700.00	1,400
Scoreboard (2 EA Spec 116643)		W / Electrical		
Wall Mtd Motor op Bleacher (qty noted)	650	SEAT	85.00	55,250
Batting cage RFI #16 - allow	1	EA	10,000.00	10,000

\*Includes Sections 116623 - 116653

#### 116143 THEATRICAL EQUIPMENT(No Spec)

Auditorium (6/28/2019 Quote 420 Seat)- Allow:

Theatrical Rigging	1	LS	158,300.00	158,300
Theatrical Draperies	1	LS	33,854.00	33,854
Theatrical Lighting Instruments & Access.	1	LS	129,018.00	129,018
Theatrical Lighting Control System	1	LS	95,749.00	95,749

Techonolgy and Local Sound:

Gym	1	EA	120,000.00	120,000
Café	1	LS	50,000.00	50,000
Aud Audio Visual System	1	LS	200,000.00	200,000
Band and Chorus Class	1	LS	60,000.00	60,000
Drama Class	1	LS	20,000.00	20,000

#### 129000 MISC FURNISHINGS

Auditorium fixed seat	321	EA	295.00	94,695
Removable auditorium seat	46	EA	125.00	5,750
Stackable auditorium seat	48	EA	125.00	6,000

\*Includes Section 126100

#### 115213 PROJECTION SCREENS

Projection Screen - Elec Op. - Allow:

18' auditorium (spec)	1	EA	15,000.00	15,000
18' Café/Learning commons (clg plan)	1	EA	15,000.00	15,000
18' Gym (A453)	1	EA	15,000.00	15,000
Media center (spec)	2	EA	10,000.00	20,000

#### 119000 MISC. EQUIPMENT

Allow -Science Lab Classroom Equipment ( 6 EA):

Safety glasses monitor case	6	EA	1,000.00	6,000
Glassware pegboards ( 1/RM) - allow	6	EA	350.00	2,100
Sgl sided fume hood #2210	1	EA	7,200.00	7,200

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Dbl sided fume hood #2214	1	EA	9,500.00	9,500
First aid kit - allow	6	EA	300.00	1,800
OH track - equip support - allow		NIC		
Safety SHW		w/ plumbing		
Fire blanket	6	EA	500.00	3,000
Fire ext & cab ( 1/RM)	6	EA	425.00	2,550
Misc equipment	6	RM	500.00	3,000
Science Shared Prep Room Equipment ( 3 EA):				
Refrigerator - full size	3	EA	750.00	2,250
Dishwasher undercounter -allow	3	EA	1,100.00	3,300
Glassware pegboards (1 RM) - allow	1	EA	350.00	350
Misc equipment	3	RM	500.00	1,500
*Includes Sections 115300 - 115313				
Allow:				
Loading dock bumpers	1	LS	3,500.00	3,500
Kiln (11.38)	1	EA	4,000.00	4,000
Metal storage shelving		NIC		
Library equipment		NIC		
Power op changing table- Hoyer lift		NIC		
Vocational shop equipment(spec 115700)	1	LS	25,000.00	25,000
A420 Exhaust hood Tech Lab		W/Vocational allowance		
*Includes Sections 113100 & 115700				
				-----
				1,281,637
<b>TOTAL E10 - EQUIPMENT</b>				<b>1,696,907</b>

## E20 - FURNISHINGS

## E 2010 FIXED FURNISHINGS

122413 WINDOW TREATMENT

Exterior Manual op Window Shade	8,000	SF	8.00	64,000
Interior Roller Shade (4/A690):				
Int borrowed ligh	3,304	SF	6.50	21,476
Door Manuel Shade				
Single Door	50	EA	150.00	7,500
Interior Specialty Shade corr window(7'w x 8' Hx2"):				
(10/A600)MDF bifold panel w/ writable surface		deleted		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
A312 Int panel grilles (Rulon)		W / C1030		
*Includes Sections 122400 - 122414				
<u>123550 CASEWORK</u>				
Utility & closet shelving	1	LS	10,000.00	10,000
Solid surface lav ctr	243	LF	265.00	64,395
Display Case ( 6/A401)	18	LF	1,000.00	18,000
Art recess corridor #2000	1	LS	15,000.00	15,000
Classroom Entry:				
Corridor custom built-in bench (10/A621 5'w - 43 EA	215	LF	400.00	86,000
Corridor Locker Enclosure (nic mtl locker) - allow (7/A650):				
Freestanding	315	LF	320.00	100,800
Freestanding -guardrail	735	LF	320.00	235,200
Main Office 2nd Floor:				
Radial Reception counters	20	deleted		
Radial work island /work table	38	deleted		
Reception work ctr	10	deleted		
Tall storage unit 4'	3	deleted		
Mail unit wall cab	16	deleted		
Mail area work ctr	16	deleted		
Mobile storage cab (36"x27"h)	4	deleted		
Copier area work ctr	16	deleted		
Large conf base cab w/ctr	15	deleted		
Work space work ctr	16	deleted		
Library / Media Center (1 EA):				
Circulation desk - radial	11	LF	1,200.00	13,200
Book shelving sys - free standing		NIC		
8'6" Book shelving sys-perim fixed unit	55	LF	500.00	27,500
P. lam work ctr	27	LF	175.00	4,725
Mobile storage cab (36"x27"h)	6	EA	1,200.00	7,200
Science Lab Classroom ( 6 EA):				
Sink		w/ plumbing		
24" Epoxy ctr (no base cab (48.5LF/RM)	291	LF	295.00	85,845
24"H Epoxy backsplash ( 48.5 LF/RM)	582	SF	95.00	55,290
Mobile storage cab (36"wx27"h 8/RM)	48	EA	1,200.00	57,600
P lam Wall cab (10 LF/RM)	60	LF	210.00	12,600
Teachers demo table		NIC		
Student table		NIC		
Science Shared Prep Room ( 3 EA):				
Sink		w/ plumbing		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
24" Epoxy ctr (no base cab )	54	LF	295.00	15,930
24"H Epoxy backsplash	109	SF	95.00	10,355
P lam Wall cab	30	LF	210.00	6,300
Mobile storage cab (36"wx27"h)	8	EA	1,200.00	9,600
Tech-Makerspace ( 1 EA):				
P. lam counter w/backsplash(no base cab)	39.5	LF	230.00	9,085
Mobile storage cab (36"x27"h)	7	EA	1,200.00	8,400
12" Adj. wall shelving	74	LF	42.00	3,108
Fab-lab ( 1 EA):				
P.lam Counter	40	LF	230.00	9,200
Mobile storage cab (36"x27"h)	6	EA	1,200.00	7,200
4 Tier shelving unit	10	LF	400.00	4,000
(6.81) Shadow relief 3D mdo	4	EA	450.00	1,800
Art Class Room ( 1 EA):				
3' Tall storage cab	4	EA	1,550.00	6,200
Epoxy ctr (no base cab)	20.5	LF	295.00	6,048
24"H Epoxy backsplash	41	SF	95.00	3,895
Mobile storage cab (36"wx27"h)	1	EA	1,200.00	1,200
Class Closet ( 34 EA):				
12" MDO lowest Shelf w/ framing (4'6"/LOC)	153	LF	45.00	6,885
12" Shelving (4 tier- 18'/loc)	612	LF	42.00	25,704
Teacher Prep Room (24 EA):				
P Lam ctr w/ wd edge ( 11'/loc)	264		delted	
12" MDO lowest Shelf w/ framing (9' LOC)	216	LF	45.00	9,720
12" Shelving (4 tier- 36'/loc)	864	LF	42.00	36,288
Typ, SPED & ELL Classroom (32 EA - A410):				
30" P Lam ctr w/ wd edge ( 12' 6"/loc)	400	LF	275.00	110,000
30" P Lam flip top ctr w/ wd edge ( 3'/loc)	96	LF	325.00	31,200
Mobile storage cab (36"wx27"h 3/RM)	96	EA	1,200.00	115,200
4 tier shelving unit (10' /loc)	320	LF	400.00	128,000
(6.81) Shadow relief 3D mdo (3/rm)	96	EA	450.00	43,200
Music Classroom ( 2 EA):				
30" P Lam ctr w/ wd edge (16'/loc)	32	LF	275.00	8,800
Mobile storage cab (36"wx27"h 2/RM)	4	EA	1,200.00	4,800
Ext wall 4 tier shelving unit 8'6" - (1/loc)	17	LF	400.00	6,800
(6.81) Shadow relief 3D mdo (2/rm)	4	EA	450.00	1,800
Drama Classroom ( 1 EA):				
30" P Lam ctr w/ wd edge	15	LF	275.00	4,125
24" P.lam backsplash	30	LF	250.00	7,500
Mobile storage cab (36"wx27"h)	2	EA	1,200.00	2,400



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SPED Classroom #1260 ( Additional casework 1 EA):				
Sink ctr w/skirt	6	LF	300.00	1,800
24" P.lam backsplash	17	SF	25.00	425
SPED Classroom #2260 ( Additional casework 1 EA):				
42" Wall cab	15	LF	225.00	3,375
Sink ctr w/skirt	15	LF	300.00	4,500
20" P.lam backsplash	25	SF	25.00	625
Staff Lunch Room ( 1 EA):				
Base cab w/p.lam ctr	7.5	LF	425.00	3,188
Custodian Office (1 EA):				
Work ctr	9	LF	165.00	1,485
Medical Suite (A425):				
Work ctr	15	LF	165.00	2,475
Wall cab	8	LF	200.00	1,600
Open wall cab	7	LF	225.00	1,575
Microwave shelf	3	LF	225.00	675
Aud Dressing room (2 EA):				
P.lam counter w/ backsplash(no base cab)	38	LF	225.00	8,550
Auditorium:				
P.lam AV ctr	8.5	LF	165.00	1,403
P.lam projector support	1	LOC	1,500.00	1,500
P lam low wall @ seating complete	89	LF	475.00	42,275
Guidance Suite (3 Loc):				
Base cab w/ctr	8	LF	350.00	2,625
Wall cab	15	LF	210.00	3,150
Misc. Casework Allowance:				
Misc Display Cases (19/A621)	1	LS	20,000.00	20,000
Trash/ recycle ctr	1	EA	10,000.00	10,000
Custom P lam radial bench - Corr #2000	38	SF	100.00	3,800
*Counter tops include manufactures wall brackets				

### 129000 MISCELLANEOUS FURNISHING

Choral classroom risers	W/FFE
Band classroom risers	W/FFE
Stage risers	W/FFE

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1,646,099

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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E2020 MOVABLE FURNISHINGS		NIC		----- 0
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<b>TOTAL E20 - FURNISHINGS</b>				<b>1,646,099</b>
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F. SPECIAL CONSTRUCTION & DEMOLITION

F10 - SPECIAL CONSTRUCTION

F1010 SPECIAL STRUCTURES		N/A		----- 0
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<b>TOTAL F10 - SPECIAL CONSTRUCTION</b>				<b>0</b>
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F20 - SELECTIVE BUILDING DEMOLITION

F2010 BUILDING ELEMENTS DEMOLITION		See Grand Summary		----- 0
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F2020 HAZARDOUS COMPONENTS ABATEMENT		See Grand Summary		----- 0
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<b>TOTAL F20 - SELECTIVE BUILDING DEMOLITION</b>				<b>0</b>
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G. BUILDING SITEWORK

G10 - SITE PREPARATION

G1010 SITE CLEARING

311000 SITE PREPARATION & CLEARING		w/ Early Site Package #1		
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DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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0

## G1020 SITE DEMOLITION &amp; RELOCATIONS

Building Removal SEE GRAND SUMMARY

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0

## G1030 SITE EARTHWORK

310000 EARTHWORK

12" Soil @ plant bed ( 9,400 sf )	348	CY	52.00	18,096
3" Planting bed mulch	88	CY	60.00	5,280
6" Loam - Lawn ( 289,233 sf )	5,356	CY	53.00	283,868
8" Loam - Athletic Field ( 261,628 sf )	6,453	CY	53.00	342,009
Credit to amend existing soil	-5,900	CY	35.00	-206,500

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442,753

## G1040 HAZARDOUS WASTE REMEDIATION

NIC

-----  
0**TOTAL G10 - SITE PREPARATION****442,753**

## G20 - SITE IMPROVEMENTS

## G2010 ROADWAYS

321000 PAVING AND CURBING-----  
0

## G2020 PARKING LOTS

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
*Included with G2010				----- 0
G2030 PEDESTRIAN PAVING				
<u>033000 CAST IN PLACE CONCRETE</u>				
Site Pavement:				
Entry Stoop	200	SF	22.00	4,400
Concrete sidewalk	23,634	SF	8.30	196,162
Plaza Paving	2,879	SF	20.00	57,580
<u>321000 PAVING AND CURBING</u>				
Site Pavement:				
HC tactile paver	10	EA	365.00	3,650
				----- 261,792
G2040 SITE DEVELOPMENT				
<u>051200 STRUCTURAL STEEL</u>				
HD Color Galv HSS/ C Channel Band Shell	3.40	TONS	10,000.00	34,000
<u>080002 GLASS &amp; GLAZING</u>				
Band Shell (A500):				
9/16 " Temp. lam glazing - roof	132	SF	175.00	23,100
9/16 " Temp. lam glazing - wall	254	SF	175.00	44,450
<u>033000 CAST IN PLACE CONCRETE</u>				
Amphitheater Seating:				
Amphitheater stair foundation	10	CY	1,100.00	11,000
Amphitheater stair tread	192	LF	135.00	25,920
Ramp and Planter Walls:				
Wall Footing	22	CY	475.00	10,450
12" Foundation Wall	75	CY	1,100.00	82,500
Ramp Slab	325	SF	12.00	3,900
Sandblast finish	1	LS	10,000.00	10,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Site Stair:				
Site stair foundation	25	CY	1,100.00	27,500
Site stair tread	296	LF	110.00	32,560
Bike Conc Pad	426	SF	25.00	10,650
Basketball court	1	LS	63,000.00	63,000
<u>050001 MISCELLANEOUS &amp; ORNAMENTAL IRON*</u>				
Amphitheater Seating:				
Ampitheater stair rail	16	LF	300.00	4,800
Ramp and Planter Walls:				
Railings	171	LF	250.00	42,750
Site Stair:				
Site stair railing	86	LF	250.00	21,500
Decorative bollard - Entry #6/L3.0	103	EA	2,200.00	226,600
<u>323100 SITE IMPROVEMENTS</u>				
Gateway and Bandstand	carried w/ building cost			
<u>323100 SITE IMPROVEMENTS</u>				
Amphitheater Seating:				
Amphitheater earthwork	1	LS	15,000.00	15,000
Site Benches:				
Precast bench - wood top	40	LF	550.00	22,000
Bike loop	20	EA	675.00	13,500
8" Gravel Base	11	CY	45.00	495
Versa loc Block - avg 10' high ??	3,500	SF	42.00	147,000
Filter Fabric	8,500	SF	1.10	9,350
Allowance:				
Trash/recycle receptacle	10	EA	2,000.00	20,000
Entry sign	1	LS	30,000.00	30,000
Electronic school zone signals		NIC		
Flag pole w/base	1	EA	7,200.00	7,200

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
				939,225
G2050 LANDSCAPING				
<u>329000 PLANTING</u>				
Trees:				
Sheet L2.0:				
AL Allegheny Serviceberry (2.5-3" cal)	12	EA	775.00	9,300
CK American Yellowwood (3-3.5" cal)	19	EA	900.00	17,100
FG American Beech (3-3.5" cal)	11	EA	900.00	9,900
NS Black Tupelo (3-3.5" cal)	8	EA	900.00	7,200
OA Sourwood (2.5-3" cal)	3	EA	775.00	2,325
PA London Plane Tree (3-3.5" cal)	24	EA	900.00	21,600
QP Pin Oak (3-3.5" cal)	7	EA	900.00	6,300
QR Red Oak (3-3.5" cal)	7	EA	900.00	6,300
Sheet L2.1:				
AC Shadblow Serviceberry (2.5-3" cal)	1	EA	775.00	775
AR Red Maple (3-3.5" cal)	6	EA	900.00	5,400
CK American Yellowwood (3-3.5" cal)	9	EA	900.00	8,100
LT Tulip Tree (3-3.5" cal)	8	EA	900.00	7,200
NS Black Tupelo (3-3.5" cal)	8	EA	900.00	7,200
Shrubs:				
CA Sweet Pepperbush (3.5-4' ht)	28	EA	215.00	6,020
HQ Oak Leaf Hydrangea (3-3.5' ht)	48	EA	200.00	9,600
HV Witch Hazel (7-8' B&B)	3	EA	450.00	1,350
IG Inkberry (4-4.5' ht)	62	EA	265.00	16,430
IV Winterberry (2.2.5' ht)	58	EA	185.00	10,730
JC Common Juniper (24" spd)	7	EA	85.00	595
JH Creeping Juniper (15-24" spd)	69	EA	50.00	3,450
JV Easter Red Cedar (7-8' ht)	26	EA	450.00	11,700
MG Sweetgale (3.5-4' ht)	40	EA	215.00	8,600
PF Pink Beauty Potentilla (24" spd)	13	EA	65.00	845
RA Grow Low Sumac (2-2.5' spd)	63	EA	80.00	5,040
RT Staghorn Sumac (3 gal)	13	EA	135.00	1,755
RV Virginia Rose (2.5-3' spd)	14	EA	80.00	1,120
VA Lowbush Blueberry (15-24" spd)	31	EA	50.00	1,550
VD Arrowwood (4-4.5' ht)	31	EA	265.00	8,215
VT Dwarf Cranberry Bush (3-3.5' ht)	12	EA	265.00	3,180
Groundcover:				
Sheet L2.0:				
CP Sweet Fern (1 gal)	1,402	EA	36.00	50,472
Sheet L2.1:				
CP Sweet Fern (1 gal)	970	EA	36.00	34,920

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Sod:				
Sod at Athletic Field	17,000	SF	1.10	18,700
Sod at Ampitheater	24,496	SF	1.10	26,946
Rake , Seed, Fertilze New Lawns:				
Lawn	120,996	SF	0.26	31,459
Meadow Mix	143,741	SF	0.28	40,247
Pea Stone drip edge	996	SF	12.00	11,952
Sports field	244,628	SF	0.30	73,388
Stone Dust - verify if used??	647	SF	4.00	2,588
Irrigate sod	41,496	SF	2.00	82,992
Irrigation System- Repair/Replace	82,800	SF	1.00	82,800
				-----
				655,344
<b>TOTAL G20 - SITE IMPROVEMENTS</b>				<b>1,856,362</b>

## G30 - SITE MECHANICAL UTILITIES

## G3010 WATER SUPPLY

## 330000 UTILITIES

w/ early site package #1

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0

## G3020 SANITARY SEWER

## 330000 UTILITIES

w/ early site package #1

-----  
0

## G3030 STORM SEWER

## 330000 UTILITIES

w/ early site package #1

-----  
0

## G3060 FUEL DISTRIBUTION

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
330000 UTILITIES				
	w/ early site package #1			----- 0
G3090 OTHER SITE MECHANICAL UTILITIES		N/A		----- 0
<b>TOTAL G30 - SITE MECHANICAL UTILITIES</b>				<b>0</b>

## G40 - SITE ELECTRICAL UTILITIES

## G4010 ELECTRICAL DISTRIBUTION

Generator Pad	200	SF	25.00	5,000
Transformer pad	200	SF	25.00	5,000

260001 ELECTRICAL\*

## Sitework:

PRI manhole dressing	1	EA	1,576.00	1,576
Utility pole PRI & FA dressing	1	EA	1,364.00	1,364
Utility pole commun. dressing	1	EA	1,076.00	1,076

Gen/set pad grndg	1	EA	982.00	982
Xfmr pad grndg	1	EA	1,376.00	1,376
Gen/set pad 90 deg. & sleeves	1	EA	566.00	566
Xfmr pad 90 deg. & sleeves	1	EA	688.00	688

## Duct Bank CC:

PVC-4"C - w/PS (120')	600	LF	4.38	2,628
PVC-1"C- w/4#12	480	LF	3.62	1,738

## Duct Bank AA:

PVC-4"C - w/PS (270')	540	LF	4.38	2,365
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## Duct Bank BB:

PVC-4"C - w/PS (110')	770	LF	4.38	3,373
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## Duct Bank FF:

PVC-4"C - w/PS (120')	240	LF	4.38	1,051
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## Duct Bank Fire Alarm:



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
PVC-2"C - w/PS (300')	300	LF	2.06	618
IMSA 20-5 cable	350	LF	3.44	1,204
Duct Bank DD (230'):				
PVC-4"C - w/PS	920	LF	4.38	4,030
Inner duct 1 1/4"C- w/PS	690	LF	2.64	1,822
Ext camera on 20' pole	3	EA	5,470.00	16,410
Fiber optic w/PVC	1,000	LF	5.88	5,880
Pole foundation	3	EA	1,326.00	3,978
Electrical Manhole	2	EA	8,500.00	17,000
OH&P - 10%	1	LS	6,972.38	6,972
DJE	1	LS	20,000.00	20,000
				-----
				106,696

## G4020 SITE LIGHTING

330000 UTILITIES

Site light trenching	10,500	LF	18.50	194,250
Trench, Backfill and Concrete:				
Electric Ductbank	1,150	LF	76.00	87,400

260001 ELECTRICAL\*

## Lighting Fixtures:

SL1 - 20' pole	37	EA	2,676.00	99,012
SL3 - poulsen bollard	9	EA	1,812.00	16,308
SL4 - egress perimeter lgt	21	EA	616.00	12,936
SL5 - in ground bega	16	EA	791.00	12,656
SL6 - bega flood w/remote driver	0	EA	0.00	0
SL10 - mini flood	0	EA	0.00	0
SL1A - 20' pole	4	EA	2,676.00	10,704
SL3 - wall mtd area lt - MV	4	EA	544.00	2,176
HH 12x12x12"d in gr p.box	3	EA	638.00	1,914
PB 17"x30"x12"d	12	EA	648.00	7,776
PB-24"x36"x24"d w/divider	2	EA	788.00	1,576
EV charging station - level 2	3	EA	3,754.00	11,262
J 8x8x4 inter j-box	3	EA	74.00	222
T/C 7 dy w/batt pack	1	EA	666.00	666
Pipe into & wire to exist pnl	1	EA	144.00	144
Demo exist pole w/fixt	4	EA	576.00	2,304
Penetrate m bay gym	1	EA	338.00	338

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Relocated emer call box	2	EA	926.00	1,852
Call box base setup	2	EA	241.00	482
MC-12/2 w/G-fished	540	EA	1.99	1,077
PVC-1"C-3#8	9,320	EA	3.99	37,187
Pole base anchor bolts	48	EA	54.00	2,592
Pole base grounding	48	EA	162.00	7,776
Pole base sleeves & 90 deg	48	EA	137.00	6,576
Bollard base setups	42	EA	122.00	5,124
In ground hsg setups	16	EA	112.00	1,792
PVC-2 1 /2"C-w/PS	1,500	EA	3.33	4,989
PVC-2"C-w/PS	620	EA	2.77	1,717
WP pedestal mtd Wayne Tyler CB box	5	EA	1,926.00	9,630
Site - 60% Deducts:				
SL5 - Bega - in ground - delete	-11	EA	791.00	-8,701
SL4 - ext. pak - delete	-6	EA	616.00	-3,696
J WP - wall back box -WP- delete	-6	EA	43.00	-258
SL3 - poulson (bollard ) - delete	-18	EA	1,812.00	-32,616
PVC-1"C-3#8 - delete	-1,080	EA	3.99	-4,309
Bollard base setups - delete	-18	EA	122.00	-2,196
SL10 - in grade tree ltg - add	12	EA	816.00	9,792
Exist. ltg pole to demo - delete	-4	EA	576.00	-2,304
SL1 - 20' pole - delete	-10	EA	2,676.00	-26,760
SL1A - 20' pole - delete	-4	EA	2,676.00	-10,704
SL3 - wall mtd area lt- delete	-4	EA	616.00	-2,464
MC-12/2 - fished - delete	-540	EA	1.99	-1,077
8"x8"x4" interior j.box - delete	-3	EA	74.00	-222
T/C - 7 day w/batt pak - delete	-1	EA	666.00	-666
Penetrate M bay gym - delete	-1	EA	338.00	-338
PVC-1"C-3#8 - delete	-1,400	EA	3.99	-5,586
Pole base anchor bolts - delete	-14	EA	54.00	-756
Pole base grounding - delete	-14	EA	162.00	-2,268
Pole base sleeves & 90 degs - delete	-14	EA	137.00	-1,918
OH&P - 10%	1	LS	26,078.80	26,079
				-----
				471,470
<b>TOTAL G40 - SITE ELECTRICAL UTILITIES</b>				<b>578,166</b>

PROJECT: Fuller Middle School  
 LOCATION: Framingham, MA  
 CLIENT: SMMA Architects  
 DATE: 03-Aug-19

**EARLY SITE PACKAGE**

No.: 16056

**SUMMARY**

	<u>TOTAL</u>	<u>PERCENT OF PROJECT</u>
A. SUBSTRUCTURE		
A10 - FOUNDATIONS		
A1010 STANDARD FOUNDATIONS	1,304,941	15%
A1030 SLAB ON GRADE	80,648	1%
G. BUILDING SITEWORK		
G10 - SITE PREPARATION		
G1010 SITE CLEARING	756,447	9%
G1020 SITE DEMOLITION & RELOCATIONS	0	0%
G1030 SITE EARTHWORK	4,028,360	46%
G1040 HAZARDOUS WASTE REMEDIATION	0	0%
G20 - SITE IMPROVEMENTS		
G2010 ROADWAYS	1,397,932	16%
G2020 PARKING LOTS	0	0%
G2030 PEDESTRIAN PAVING	86,263	1%
G2040 SITE DEVELOPMENT	40,950	0%
G2050 LANDSCAPING	0	0%
G30 - SITE MECHANICAL UTILITIES		
G3010 WATER SUPPLY	136,110	2%
G3020 SANITARY SEWER	95,780	1%
G3030 STORM SEWER	640,443	7%
G3040 HEATING DISTRIBUTION	0	0%
G3050 COOLING DISTRIBUTION	0	0%
G3060 FUEL DISTRIBUTION	17,428	0%
G3090 OTHER SITE MECHANICAL UTILITIES	0	0%
G40 - SITE ELECTRICAL UTILITIES		
G4010 ELECTRICAL DISTRIBUTION	125,750	1%
G4020 SITE LIGHTING	0	0%
G4030 SITE COMMUNICATIONS & SECURITY	0	0%
G4090 OTHER SITE ELECTRICAL UTILITIES	0	0%
G90 - OTHER SITE CONSTRUCTION		
G9010 SERVICE AND PEDESTRIAN TUNNELS	0	0%
G9090 OTHER SITE SYSTEMS	0	0%
	-----	-----
TOTAL DIRECT COST	8,711,050	100%

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
-------------	----------	------	-----------	-------

A. SUBSTRUCTURE

## A10 - FOUNDATIONS

## A1010 STANDARD FOUNDATIONS

310000 EARTHWORK

## Ground Improvements:

Geopiers	74,000	FTP	10.50	777,000
Rigid Inclusion towards RB - 1 and RB - 2	1	LS	50,000.00	50,000

## Foundation Earthwork:

Surcharge Bldg Footprint	1	LS	300,000.00	300,000
Excavate Footings	3,000	CY	15.00	45,000
Backfill Foundation	1,400	CY	15.00	21,000
Slab Fill	2,000	CY	28.00	56,000
Dewatering	1	LS	25,000.00	25,000
Foundation drain (1/S300)	120	LF	38.00	4,560

072100 INSULATION

2" Rigid found. insul - ret. wall	1,360	SF	3.20	4,352
2" Rigid found. insul - frost wall	6,884	SF	3.20	22,029

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1,304,941

## A1030 SLAB ON GRADE

310000 EARTHWORK

12" Gravel base - SOG	2,372	CY	34.00	80,648
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80,648G. BUILDING SITEWORK

## G10 - SITE PREPARATION

## G1010 SITE CLEARING

311000 SITE PREPARATION & CLEARING

## Phase One:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Jersey barriers	1,533	LF	75.00	114,975
Temp pavement	98,683	SF	1.50	148,025
Phase 1 - Grading & Drainage				
Erosion control	701	LF	7.50	5,258
Site prep	101,316	SF	0.20	20,263
Phase 2 - Grading & Drainage:				
Temp erosion basin Eroison control	307	LF	15.00	4,605
Construction entrance	1	EA	7,500.00	7,500
Construction fence	3,200	LF	12.00	38,400
Erosion control	2,500	LF	6.00	15,000
Drain inlet protection	25	EA	50.00	1,250
Erosion control maintenance	1	LS	15,000.00	15,000
Strip & stack top soil - 6"	5,900	CY	9.25	54,575
Selective Clear and Grub	1	LS	20,000.00	20,000
Saw cut walk	25	LF	5.00	125
Saw cut drive	25	LF	5.00	125
Site - Remove Existing:				
Cut and Cap	1	LS	5,000.00	5,000
Sanitary and Drain pipe	1,435	LF	35.00	50,225
Water Line	900	LF	31.00	27,900
Utility structures	10	EA	425.00	4,250
Wood guardrail	300	LF	15.00	4,500
Bit walk	201,786	SF	0.85	171,518
Conc. walk	14,967	SF	1.00	14,967
Bit Walkway	8,874	SF	0.90	7,987
Misc. site demolition	1	LS	25,000.00	25,000
				-----
				756,447

## G1020 SITE DEMOLITION &amp; RELOCATIONS

311000 SITE DEMOLITION AND REMOVAL-----  
0

## G1030 SITE EARTHWORK

310000 EARTHWORK

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Phase 1/2:				
Site Cut	2,847	CY	12.00	34,164
Stockpile cut	2,847	CY	10.00	28,470
Site Fill - supply	15,810	CY	18.00	284,580
Phase 3:				
Site Cut	21,721	CY	10.25	222,640
Site Fill - reuse mat'l	21,721	CY	11.00	238,931
Site Fill - supply	18,000	CY	18.00	324,000
Site Rough Grading	101,781	SY	2.30	234,096
Layout, Mobilization, Supervision	1	LS	250,000.00	250,000
Temp Drainage		N/A		
Dust Control	1	LS	10,000.00	10,000
Street Sweeping	1	LS	10,000.00	10,000
Surcharge Ampitheater	1	LS	200,000.00	200,000
Soils	1	LS	2,118,778.00	2,118,778
Soil Management:				
Dispose of contaminated soil - less than RCS - 1	2,550	TONS	14.00	35,700
Dispose of contaminated soil - unlined	850	TONS	40.00	34,000
Add New Site Fill	4,000	CY	0.75	3,000
				-----
				4,028,360
G1040 HAZARDOUS WASTE REMEDIATION				
		NIC		-----
				0
<b>TOTAL G10 - SITE PREPARATION</b>				<b>4,784,806</b>

## G20 - SITE IMPROVEMENTS

## G2010 ROADWAYS

## Phase 1:

Bit pavement - parking and drive	8,147	SY	27.50	224,043
Raised Road Pavement w/ stamped finish	10,500	SF	15.00	157,500
12" Gravel base	2,715	SY	32.00	86,880
PCC- RAD	320	LF	32.00	10,240
PCC - straight	1,130	LF	26.00	29,380

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SGC - straight	189	LF	39.50	7,466
VGC - RAD	79	LF	46.00	3,634
VGC - straight	365	LF	42.00	15,330
Line Painting	1	LS	5,000.00	5,000
Phase 2:				
Bit pavement	182	SF	30.00	5,460
12" Gravel base	61	SY	35.00	2,135
Base:				
Bit firelane pavement	1,685	SY	27.00	45,495
Bit pavement	14,204	SY	27.00	383,508
12" Gravel base	5,296	CY	32.00	169,472
VGC radial	1,646	LF	46.00	75,716
VGC straight	2,297	LF	42.00	96,474
Line Painting	1	LS	7,500.00	7,500
Street Patch at New Curb	1,154	LF	50.00	57,700
Pavement patch @ utilities	1	LS	15,000.00	15,000
				-----
				1,397,932

## G2020 PARKING LOTS

\*Included with G2010

-----  
0

## G2030 PEDESTRIAN PAVING

321000 PAVING AND CURBING

Phase 1:				
Bit sidewalk	5,718	SF	2.90	16,582
8" Gravel Base	141	CY	34.00	4,794
Base:				
Bit sidewalk	1,056	SY	26.10	27,562
Bit conc sidewalk	9,752	SF	2.90	28,281
8" Gravel Base	266	CY	34.00	9,044
				-----
				86,263

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<b>G2040 SITE DEVELOPMENT</b>				
Vehicular guardrail	420	LF	65.00	27,300
Utility Bollard	13	EA	1,050.00	13,650
				-----
				40,950
<b>G2050 LANDSCAPING</b>				
				-----
				0
<b>TOTAL G20 - SITE IMPROVEMENTS</b>				<b>1,525,145</b>

**G30 - SITE MECHANICAL UTILITIES****G3010 WATER SUPPLY****330000 UTILITIES****Phase 1 - Grading & Drainage**

2" Water	21	LF	70.00	1,470
6" Water	168	LF	92.00	15,456
CTE water	5	EA	3,000.00	15,000
Fire hydrant	3	EA	2,250.00	6,750
6" Gate Valve	4	EA	1,400.00	5600
Misc Valves	4	EA	1,400.00	5600

**Phase 2 - Grading & Drainage:**

2" Water line	147	LF	62.50	9,188
6" Water line	717	LF	88.00	63,096
Fire hydrant	1	EA	2,250.00	2,250
6" Gate Valve	1	EA	1,400.00	1400
Misc Valves	2	EA	1,400.00	2800
Site Connection	1	LOC	7,500.00	7,500

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136,110



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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## G3020 SANITARY SEWER

## 330000 UTILITIES

## Phase 2 - Grading &amp; Drainage:

8" PVC san	606	LF	80.00	48,480
Sewer manhole	3	EA	4,100.00	12,300
EGI-1	1	EA	12,500.00	12,500
Acid Waste tank	1	LS	15,000.00	15,000
Exist. sanitary manhole - site conn.	1	EA	7,500.00	7,500
				-----
				95,780

## G3030 STORM SEWER

## 330000 UTILITIES

## Phase 1 - Grading &amp; Drainage

12" HDPE	33	LF	76.00	2,508
18" HDPE	531	LF	94.00	49,914
24" HDPE	63	LF	145.00	9,135
30" HDPE	10	LF	210.00	2,100
6" PVC	45	LF	62.50	2,813
Catch Basin	6	EA	2,100.00	12,600
CTE drainage	1	EA	4,000.00	4,000
Cut & patch existing parking lot	431	LF	50.00	21,550
Drain man hole	3	EA	4,100.00	12,300
Head wall	1	LS	6,500.00	6,500
STC 6000	1	EA	60,000.00	60,000
STC 3600	1	EA	30,000.00	30,000
STC 450i	2	EA	11,500.00	23,000

## Phase 2 - Grading &amp; Drainage:

12" HDPE	154	LF	76.00	11,704
Catch Basin	2	EA	4,100.00	8,200
Temp drain line	282	LF	100.00	28,200

## Phase 3 ( per revised plane 4 /17/19):

12" HDPE	262	LF	76.00	19,912
15" HDPE	665	LF	84.00	55,860
18" HDPE	152	LF	94.00	14,288
24" HDPE	305	LF	145.00	44,225
30" HDPE	537	LF	182.00	97,734
Catch Basin	10	EA	4,100.00	41,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
CB Conversion	1	EA	1,200.00	1,200
Drain Manhole	9	EA	4,100.00	36,900
Head Wall	1	EA	7,500.00	7,500
Outfall wier construction	1	LS	5,000.00	5,000
Infiltration field	1,292	SF	25.00	32,300
*EXCLUDES WORK SOUTH OF FLAGG DRIVE				
				-----
				640,443

## G3060 FUEL DISTRIBUTION

## 330000 UTILITIES

## Phase 2 - Grading &amp; Drainage:

Gas trench	311	LF	48.00	14,928
Gas Pipe		By utility		
Service Meter Pad	1	EA	2,500.00	2,500
				-----
				17,428

TOTAL G30 - SITE MECHANICAL UTILITIES	889,760
---------------------------------------	---------

## G40 - SITE ELECTRICAL UTILITIES

## G4010 ELECTRICAL DISTRIBUTION

330000 UTILITIES330000 UTILITIES

Light Pole base - 12' Precast	37	EA	1,350.00	49,950
Temporary Electrical Service	1	LS	75,800.00	75,800
				-----
				125,750

	Consigli Final DD Estimate 5/13/19		Consigli Final 60% CD Estimate 8/5/19		Delta from Final DD Estimate	Myakoda Final 60% CD Estimate 8/5/19		Delta from Final DD Estimate	Fogarty Final 60% CD Estimate 8/3/19		Delta from Final DD Estimate
SF	136,790		136,790			136,790			136,790		
<b>Building</b>											
Foundations	\$ 2,038,949		\$ 1,024,842		\$ (1,014,107)	\$ 1,119,012		\$ (919,937)	\$ 1,014,343		\$ (1,024,606)
Slab on Grade	\$ 1,089,922		\$ 609,967		\$ (479,955)	\$ 594,006		\$ (495,916)	\$ 579,262		\$ (510,660)
Floor Structure	\$ 2,932,947		\$ 3,035,768		\$ 102,821	\$ 2,721,067		\$ (211,880)	\$ 3,063,684		\$ 130,737
Roof Structure	\$ 2,529,286		\$ 2,383,964		\$ (145,322)	\$ 2,333,165		\$ (196,121)	\$ 2,044,901		\$ (484,385)
Exterior Walls	\$ 4,410,611		\$ 4,491,061		\$ 80,450	\$ 4,646,002		\$ 235,391	\$ 4,581,555		\$ 170,944
Exterior Windows	\$ 2,162,880		\$ 1,848,658		\$ (314,222)	\$ 1,942,628		\$ (220,252)	\$ 1,897,387		\$ (265,493)
Exterior Doors	\$ 141,120		\$ 184,624		\$ 43,504	\$ 213,200		\$ 72,080	\$ 193,692		\$ 52,572
Roofing	\$ 2,081,748		\$ 2,390,170		\$ 308,422	\$ 2,265,314		\$ 183,566	\$ 2,337,589		\$ 255,841
Interior Partitions	\$ 3,738,270		\$ 4,415,159		\$ 676,889	\$ 4,412,924		\$ 674,654	\$ 4,355,925		\$ 617,655
Interior Doors	\$ 801,030		\$ 887,623		\$ 86,593	\$ 895,898		\$ 94,868	\$ 797,773		\$ (3,257)
Interior Fittings	\$ 1,128,524		\$ 1,026,878		\$ (101,646)	\$ 915,361		\$ (213,163)	\$ 1,001,500		\$ (127,024)
Stairs	\$ 517,094		\$ 488,120		\$ (28,974)	\$ 590,570		\$ 73,476	\$ 424,865		\$ (92,229)
Interior Wall Finishes	\$ 1,578,436		\$ 1,541,035		\$ (37,401)	\$ 1,767,241		\$ 188,805	\$ 1,730,495		\$ 152,059
Interior Floor Finishes	\$ 1,144,785		\$ 1,418,350		\$ 273,565	\$ 1,288,200		\$ 143,415	\$ 1,260,201		\$ 115,416
Interior Ceiling Finishes	\$ 1,774,200		\$ 1,986,928		\$ 212,728	\$ 1,858,543		\$ 84,343	\$ 2,053,480		\$ 279,280
Conveying Systems	\$ 220,450		\$ 220,450		\$ -	\$ 213,400		\$ (7,050)	\$ 218,037		\$ (2,413)
Plumbing	\$ 1,923,288	\$14	\$ 2,257,270	\$17	\$ 333,982	\$ 2,126,673		\$ 203,385	\$ 2,212,119	\$16	\$ 288,831
HVAC	\$ 8,143,186	\$60	\$ 7,906,183	\$58	\$ (237,003)	\$ 7,842,369		\$ 57	\$ (300,817)	\$59	\$ (49,128)
Fire Protection	\$ 788,684	\$6	\$ 791,653	\$6	\$ 2,969	\$ 852,994		\$ 64,310	\$ 848,755	\$6	\$ 60,071
Electrical	\$ 5,149,789	\$38	\$ 5,210,064	\$38	\$ 60,275	\$ 5,110,258		\$ 37	\$ (39,531)	\$37	\$ (66,597)
Equipment	\$ 1,638,726		\$ 1,673,789		\$ 35,063	\$ 1,644,448		\$ 5,722	\$ 1,696,907		\$ 58,181
Furnishings	\$ 1,656,900		\$ 1,812,200		\$ 155,300	\$ 1,609,546		\$ (47,354)	\$ 1,646,099		\$ (10,801)
		\$ 47,590,825 \$348		\$ 47,604,756 \$348	\$ 13,931		\$ 46,962,819 \$343	-\$628,006		\$ 47,135,819 \$345	-\$455,006
Building HazMat	\$ 1,246,580		\$ 1,602,280		\$ 355,700	\$ 1,384,630		\$ 138,050	\$ 1,384,630		\$ 138,050
Building Demolition	\$ 1,465,500		\$ 1,270,100		-\$195,400	\$ 1,465,500		\$ 0	\$ 1,470,000		\$ 4,500
Building Trade Cost	\$ 2,712,080 \$20		\$ 2,872,380 \$21		\$ 160,300	\$ 2,850,130 \$21		\$ 138,050	\$ 2,854,630 \$21		\$ 142,550
	\$ 50,302,905 \$368		\$ 50,477,136 \$369			\$ 49,812,949 \$364			\$ 49,990,449 \$365		
<b>Sitework</b>											
Site Development											
Site Preparation	\$ 3,758,369		\$ 420,700		-\$3,337,669	\$ 281,158		-\$3,477,211	\$ 442,753		-\$3,315,616
Site Improvements	\$ 3,497,366		\$ 1,718,657		-\$1,778,709	\$ 2,029,104		-\$1,468,262	\$ 1,856,361		-\$1,641,005
Mechanical Utilities	\$ 822,705		\$ -		-\$822,705	\$ -		-\$822,705	\$ -		-\$822,705
Electrical Utilities	\$ 826,219		\$ 453,337		-\$372,882	\$ 476,743		-\$349,476	\$ 578,166		-\$248,053
Site Trade Cost	\$ 8,904,659		\$ 2,592,694		-\$6,311,965	\$ 2,787,005		-\$6,117,654	\$ 2,877,280		-\$6,027,379
Total Trade Cost	\$ 59,207,564		\$ 53,069,830		-\$6,137,734	\$ 52,599,954			\$ 52,867,729		
General Conditions	\$ 3,988,224		\$ 3,401,447		-\$586,777	\$ 3,401,447		-\$586,777	\$ 3,401,447		-\$586,777
General Requirements	\$ 2,936,369		\$ 2,652,482		-\$283,887	\$ 2,652,483		-\$283,886	\$ 2,652,483		-\$283,886
Insurance	\$ 780,000		\$ 668,571		-\$111,429	\$ 668,571		-\$111,429	\$ 668,571		-\$111,429
Bonds	\$ 436,800		\$ -		-\$436,800	\$ -		-\$436,800	\$ -		-\$436,800
Sub Bonds	\$ 828,906		\$ 742,977		-\$85,929	\$ 770,000		-\$58,906	\$ 774,307		-\$54,599
Builders Risk	\$ 115,218		\$ -		-\$115,218	\$ -		-\$115,218	\$ -		-\$115,218
Permit	\$ -		\$ -		\$ 0	\$ -		\$ 0	\$ -		\$ 0
Fee	\$ 1,560,000		\$ 1,337,143		-\$222,857	\$ 1,337,143		-\$222,857	\$ 1,337,143		-\$222,857
Design Contingency	\$ 4,144,529		\$ 2,653,491		-\$1,491,038	\$ 2,629,998		-\$1,514,531	\$ 2,643,386		-\$1,501,143
GMP Contingency	\$ 1,652,039		\$ 1,432,554		-\$219,485	\$ 1,401,460		-\$250,579	\$ 1,387,778		-\$264,261
Escalation	\$ 1,900,563		\$ 835,850		-\$1,064,713	\$ 828,449		-\$1,072,114	\$ 853,483		-\$1,047,080
	\$ 18,342,648		\$ 13,724,515		-\$4,618,133	\$ 13,689,551		-\$4,653,097	\$ 13,718,598		-\$4,624,050
Early Site Package			\$ 10,957,843		\$ 10,957,843	\$ 10,957,843		\$ 10,957,843	\$ 10,957,843		\$ 10,957,843
Total Construction Cost	\$ 77,550,212 \$567		\$ 77,752,188 \$568		\$ 201,976	\$ 77,247,348 \$565		-\$302,864	\$ 77,544,170 \$567		-\$6,042
Budget	\$ 77,935,429		\$ (183,241)			\$ (688,081)			\$ (391,259)		



### 2.3.3 Reconciled Cost Estimate - CMR

Attached is the reconciled CMR Cost Estimate.



# 60% CD Reconciled Estimate



**CONSIGLI**  
*Est. 1905*



Town of Framingham  
Fuller Middle School  
Framingham, MA  
August 5, 2019

SUBMITTED BY:  
Consigli Construction Co., Inc.  
72 Sumner Street  
Milford, MA 01757



CONSIGLI  
*Est. 1905*

# TABLE OF CONTENTS

Fuller Middle School



## The Right Choice

Consigli Construction Co., Inc. is a fourth-generation family owned organization that can offer the resources and experience of one of the strongest construction management firms in the Northeast with the creativity and flexibility of a start-up.

1. Uniformat Summary
2. Uniformat Detail
3. CSI Summary
4. CSI Detail
5. Assumptions & Qualifications
6. Constructability Review





CONSIGLI  
*Est. 1905*

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>A Substructure</b>			
<b>A10 Foundations</b>			
A1010 Standard Foundations	136,600 sf	7.50 /sf	1,024,842
A1030 Slab on Grade	136,600 sf	4.47 /sf	609,967
<b>A10 Foundations</b>	<b>136,600 sf</b>	<b>11.97 /sf</b>	<b>1,634,808</b>
<b>A Substructure</b>	<b>136,600 sf</b>	<b>11.97 /sf</b>	<b>1,634,808</b>
<b>B Shell</b>			
<b>B10 Superstructure</b>			
B1010 Floor Construction	136,600 sf	22.22 /sf	3,035,768
B1020 Roof Construction	136,600 sf	17.45 /sf	2,383,964
<b>B10 Superstructure</b>	<b>136,600 sf</b>	<b>39.68 /sf</b>	<b>5,419,733</b>
<b>B20 Exterior Enclosure</b>			
B2010 Exterior Walls	136,600 sf	32.88 /sf	4,491,061
B2020 Exterior Windows	136,600 sf	13.53 /sf	1,848,658
B2030 Exterior Doors	136,600 sf	1.35 /sf	184,624
<b>B20 Exterior Enclosure</b>	<b>136,600 sf</b>	<b>47.76 /sf</b>	<b>6,524,343</b>
<b>B30 Roofing</b>			
B3010 Roof Coverings	136,600 sf	12.49 /sf	1,706,170
B3020 Roof Openings	136,600 sf	5.01 /sf	684,000
<b>B30 Roofing</b>	<b>136,600 sf</b>	<b>17.50 /sf</b>	<b>2,390,170</b>
<b>B Shell</b>	<b>136,600 sf</b>	<b>104.94 /sf</b>	<b>14,334,245</b>
<b>C Interiors</b>			
<b>C10 Interior Construction</b>			
C1010 Partitions	136,600 sf	32.32 /sf	4,415,159
C1020 Interior Doors	136,600 sf	6.50 /sf	887,623
C1030 Specialties/Millwork	136,600 sf	7.52 /sf	1,026,878
<b>C10 Interior Construction</b>	<b>136,600 sf</b>	<b>46.34 /sf</b>	<b>6,329,660</b>
<b>C20 Stairs</b>			
C2010 Stair Construction	136,600 sf	3.40 /sf	464,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C2020 Stair Finishes</b>	<b>136,600 sf</b>	<b>0.18 /sf</b>	<b>24,120</b>
<b>C20 Stairs</b>	<b>136,600 sf</b>	<b>3.57 /sf</b>	<b>488,120</b>
<b>C30 Interior Finishes</b>			
<b>C3010 Wall Finishes</b>	<b>136,600 sf</b>	<b>11.28 /sf</b>	<b>1,541,035</b>
<b>C3020 Floor Finishes</b>	<b>136,600 sf</b>	<b>10.38 /sf</b>	<b>1,418,350</b>
<b>C3030 Ceiling Finishes</b>	<b>136,600 sf</b>	<b>14.55 /sf</b>	<b>1,986,928</b>
<b>C30 Interior Finishes</b>	<b>136,600 sf</b>	<b>36.21 /sf</b>	<b>4,946,313</b>
<b>C Interiors</b>	<b>136,600 sf</b>	<b>86.12 /sf</b>	<b>11,764,093</b>
<b>D Services</b>			
<b>D10 Conveying Systems</b>			
<b>D1010 Elevators &amp; Lifts</b>	<b>136,600 sf</b>	<b>1.61 /sf</b>	<b>220,450</b>
<b>D10 Conveying Systems</b>	<b>136,600 sf</b>	<b>1.61 /sf</b>	<b>220,450</b>
<b>D20 Plumbing</b>			
<b>D2010 Plumbing</b>	<b>136,600 sf</b>	<b>4.05 /sf</b>	<b>552,558</b>
<b>D2020 Domestic Water Distribution</b>	<b>136,600 sf</b>	<b>3.21 /sf</b>	<b>438,646</b>
<b>D2030 Sanitary Waste</b>	<b>136,600 sf</b>	<b>2.82 /sf</b>	<b>385,755</b>
<b>D2040 Rain Water Drainage</b>	<b>136,600 sf</b>	<b>2.04 /sf</b>	<b>278,952</b>
<b>D2090 Other Plumbing Systems</b>	<b>136,600 sf</b>	<b>4.40 /sf</b>	<b>601,359</b>
<b>D20 Plumbing</b>	<b>136,600 sf</b>	<b>16.53 /sf</b>	<b>2,257,270</b>
<b>D30 Heating, Ventilating, and Air Conditioning (HVAC)</b>			
<b>D3010 Energy Supply</b>	<b>136,600 sf</b>	<b>11.29 /sf</b>	<b>1,542,169</b>
<b>D3020 HVAC</b>	<b>136,600 sf</b>	<b>1.20 /sf</b>	<b>163,945</b>
<b>D3030 Cooling Generating Systems</b>	<b>136,600 sf</b>	<b>2.85 /sf</b>	<b>389,905</b>
<b>D3040 HVAC Distribution</b>	<b>136,600 sf</b>	<b>16.90 /sf</b>	<b>2,308,471</b>
<b>D3050 Terminal &amp; Package Units</b>	<b>136,600 sf</b>	<b>16.54 /sf</b>	<b>2,259,774</b>
<b>D3060 HVAC Instrumentation &amp; Controls</b>	<b>136,600 sf</b>	<b>5.13 /sf</b>	<b>701,110</b>
<b>D3070 Testing, Adjusting &amp; Balancing</b>	<b>136,600 sf</b>	<b>0.65 /sf</b>	<b>88,790</b>
<b>D3090 Other HVAC Systems &amp; Equipment</b>	<b>136,600 sf</b>	<b>3.31 /sf</b>	<b>452,019</b>
<b>D30 Heating, Ventilating, and Air Conditioning (HVAC)</b>	<b>136,600 sf</b>	<b>57.88 /sf</b>	<b>7,906,183</b>
<b>D40 Fire Protection Systems</b>			

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D4010 Sprinklers</b>	136,600 sf	5.25 /sf	717,610
<b>D4020 Standpipes</b>	136,600 sf	0.14 /sf	19,152
<b>D4030 Fire Protection Specialties</b>	136,600 sf	0.18 /sf	25,195
<b>D4090 Other Fire Protection Systems</b>	136,600 sf	0.22 /sf	29,696
<b>D40 Fire Protection Systems</b>	136,600 sf	5.80 /sf	791,653
<b>D50 Electrical Systems</b>			
<b>D5010 Gear &amp; Distribution</b>	136,600 sf	8.10 /sf	1,106,708
<b>D5020 Lighting &amp; Branch Wiring</b>	136,600 sf	13.38 /sf	1,827,875
<b>D5030 Communications &amp; Security</b>	136,600 sf	12.96 /sf	1,770,926
<b>D5090 Other Electrical Systems</b>	136,600 sf	3.69 /sf	504,555
<b>D50 Electrical Systems</b>	136,600 sf	38.14 /sf	5,210,064
<b>D Services</b>	136,600 sf	119.95 /sf	16,385,620
<b>E Equipment &amp; Furnishings</b>			
<b>E10 Equipment</b>			
<b>E1020 Institutional Equipment</b>	136,600 sf	12.08 /sf	1,650,389
<b>E1090 Other Equipment</b>	136,600 sf	0.17 /sf	23,400
<b>E10 Equipment</b>	136,600 sf	12.25 /sf	1,673,789
<b>E20 Furnishings</b>			
<b>E2010 Fixed Furnishings</b>	136,600 sf	13.27 /sf	1,812,200
<b>E20 Furnishings</b>	136,600 sf	13.27 /sf	1,812,200
<b>E Equipment &amp; Furnishings</b>	136,600 sf	25.52 /sf	3,485,989
<b>F Special Construction &amp; Demolition</b>			
<b>F20 Demolition</b>			
<b>F2010 Building Elements Demolition</b>	194,500 sf	6.53 /sf	1,270,100
<b>F2020 Hazardous Component Abatement</b>	194,500 sf	8.24 /sf	1,602,280
<b>F20 Demolition</b>	194,500 sf	14.77 /sf	2,872,380
<b>F Special Construction &amp; Demolition</b>	194,500 sf	14.77 /sf	2,872,380
<b>G Sitework</b>			
<b>G10 Site Preparation</b>			



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G1010 Site Clearing</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G1020 Site Demolition &amp; Relocations</b>	<b>136,600 sf</b>	<b>0.07 /sf</b>	<b>9,000</b>
<b>G1030 Site Earthwork</b>	<b>136,600 sf</b>	<b>3.01 /sf</b>	<b>411,700</b>
<b>G10 Site Preparation</b>	<b>136,600 sf</b>	<b>3.08 /sf</b>	<b>420,700</b>
<b>G20 Site Improvements</b>			
<b>G2010 Roadways</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G2020 Parking Lots</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G2030 Pedestrian Paving</b>	<b>136,600 sf</b>	<b>1.78 /sf</b>	<b>242,545</b>
<b>G2040 Site Development</b>	<b>136,600 sf</b>	<b>5.36 /sf</b>	<b>732,047</b>
<b>G2050 Landscaping</b>	<b>136,600 sf</b>	<b>5.45 /sf</b>	<b>744,065</b>
<b>G20 Site Improvements</b>	<b>136,600 sf</b>	<b>12.58 /sf</b>	<b>1,718,657</b>
<b>G30 Site Civil/Mechanical Utilites</b>			
<b>G3010 Water Supply</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G3020 Sanitary Sewer</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G3030 Storm Drainage</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G3060 Fuel Distribution</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G40 Site Electrical Utilities</b>			
<b>G4010 Electrical Distribution</b>	<b>136,600 sf</b>	<b>1.04 /sf</b>	<b>141,861</b>
<b>G4020 Site Lighting</b>	<b>136,600 sf</b>	<b>1.86 /sf</b>	<b>253,715</b>
<b>G4030 Site Communications &amp; Security</b>	<b>136,600 sf</b>	<b>0.42 /sf</b>	<b>57,761</b>
<b>G40 Site Electrical Utilities</b>	<b>136,600 sf</b>	<b>3.32 /sf</b>	<b>453,336</b>
<b>G Sitework</b>	<b>136,600 sf</b>	<b>18.98 /sf</b>	<b>2,592,693</b>

**Estimate Totals**

<b>Description</b>	<b>Amount</b>	<b>Totals</b>	<b>Rate</b>	<b>Cost per Unit</b>
<b>Subtotal</b>	<b>53,069,827</b>	<b>53,069,827</b>		<b>388.51 /sf</b>
Design/Estimate Contingency	2,653,491		5.000 %	19.43 /sf
Escalation	835,850		1.500 %	6.12 /sf
<b>Subtotal</b>	<b>3,489,341</b>	<b>56,559,168</b>		<b>414.05 /sf</b>
SDI (Non-Trade Contracts)	352,133		1.400 %	2.58 /sf
Sub Bonds (Trade Contracts)	390,844		1.400 %	2.86 /sf
Contractor's Contingency	1,432,554		2.500 %	10.49 /sf
General Conditions	3,401,447			24.90 /sf
General Requirements	2,652,482			19.42 /sf
<b>Subtotal</b>	<b>8,229,460</b>	<b>64,788,628</b>		<b>474.29 /sf</b>
Builder's Risk Insurance - BP1				
General Liability Insurance	668,571			4.89 /sf
Building Permit - NIC				
Performance & Payment Bond				
<b>Subtotal</b>	<b>668,571</b>	<b>65,457,199</b>		<b>479.19 /sf</b>
Fee	1,337,143			9.79 /sf
Amendment #1 - Sitework	10,957,843			80.22 /sf
<b>Total</b>		<b>77,752,185</b>		<b>569.20 /sf</b>



CONSIGLI  
*Est. 1905*

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>A Substructure</b>			
<b>A10 Foundations</b>			
<b>A1010 Standard Foundations</b>			
Lull, laborer for cleanup by Consigli (Concrete)	-1 ls	116,000.00 /ls	(116,000)
Trade support - lull, laborer for cleanup (Concrete)	1 ls	116,000.00 /ls	116,000
Elevator pit	1 ea	15,000.00 /ea	15,000
F3 spread footings	3 cy	1,565.14 /cy	4,695
F4 spread footings	2 cy	1,067.03 /cy	2,134
F5 spread footings	37 cy	868.30 /cy	32,127
F6 spread footings	43 cy	641.06 /cy	27,566
F7 spread footings	38 cy	517.77 /cy	19,675
F7 spread footings - VM-S05	-7 ea	1,880.15 /ea	(13,161)
F8 spread footings	50 cy	483.12 /cy	24,156
F9 spread footings	102 cy	419.45 /cy	42,784
F10 spread footings	33 cy	530.98 /cy	17,522
F11 spread footings	78 cy	463.04 /cy	36,117
F12 spread footings	59 cy	428.05 /cy	25,255
Continuous footings - 3'x12"	175 cy	813.35 /cy	142,336
Continuous footings - 4'x12"	18 cy	920.53 /cy	16,570
Continuous footings - 5'x12" @ Bandshell	8 cy	657.44 /cy	5,260
Foundation walls - 16"	239 cy	1,012.78 /cy	242,054
Foundation walls - 16" @ Bandshell	9 cy	1,012.78 /cy	9,115
Foundation walls - 21"	110 cy	884.47 /cy	97,292
Retaining walls - 16"	61 cy	1,197.62 /cy	73,055
Concrete walls @ Auditorium	185 lf	175.00 /lf	32,375
Piers - 24"x24"	36 cy	1,404.42 /cy	50,559
Grade beam 1	30 cy	1,285.48 /cy	38,564
Grade beam 2	24 cy	1,111.93 /cy	26,686
Foundation wall insulation	6,045 sf	3.00 /sf	18,135
Dampproofing at foundation wall	7,770 sf	3.00 /sf	23,310
Foundation wall waterproofing - membrane w/ drainage board	1,240 sf	9.00 /sf	11,160
Elevator pit waterproofing - cementitious	1 ea	4,500.00 /ea	4,500
Site cuts to site fills	BP#1	/BP#1	
Excavation @ foundations	BP#1	/BP#1	
Fill to subgrade @ building footprint - import (structural fill)	BP#1	/BP#1	
Crushed stone base beneath column & wall footings	BP#1	/BP#1	
Excavate for elevator pits	BP#1	/BP#1	
Dewatering	BP#1	/BP#1	
Additional dewatering - Allowance	BP#1	/BP#1	
Site surcharge/rigid inclusion	BP#1	/BP#1	
Rammed aggregate piers	BP#1	/BP#1	





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>A1010 Standard Foundations</b>			
<i>Rigid inclusions Gym and Auditorium</i>			
	BP#1	/BP#1	
<b>A1010 Standard Foundations</b>	<b>136,600 sf</b>	<b>7.50 /sf</b>	<b>1,024,842</b>
<b>A1030 Slab on Grade</b>			
Slab depressions	680 lf	65.00 /lf	44,201
Slab on grade - 5"	66,175 sf	8.12 /sf	537,341
<i>Ramps on grade - premium - VM-S03</i>	sf	/sf	
<i>Steps on grade - premium - VM-S03</i>	lf	/lf	
Power trowel/seal concrete @ Auditorium	2,875 sf	3.00 /sf	8,625
Underslab insulation (perimeter only)	6,600 sf	3.00 /sf	19,800
<i>Crushed stone base beneath S.O.G</i>	BP#1	/BP#1	
<i>Fine grade under building</i>	BP#1	/BP#1	
<i>Excavate/backfill utilities under SOG by machine</i>	BP#1	/BP#1	
<b>A1030 Slab on Grade</b>	<b>136,600 sf</b>	<b>4.47 /sf</b>	<b>609,967</b>
<b>A10 Foundations</b>	<b>136,600 sf</b>	<b>11.97 /sf</b>	<b>1,634,808</b>
<b>A Substructure</b>	<b>136,600 sf</b>	<b>11.97 /sf</b>	<b>1,634,808</b>

**B Shell**

**B10 Superstructure**

**B1010 Floor Construction**

Place & finish slabs - 3-1/4" on 3" deck @ floor (LW)	64,235 sf	8.48 /sf	544,713
Topping slab @ Breakout LGMF floors	1,310 sf	8.05 /sf	10,546
Moment connections @ floor	148 ea	650.00 /ea	96,200
Steel @ floors	439 ton	3,900.00 /ton	1,711,710
Steel hangers - AESS	2 ton	5,800.00 /ton	12,180
Steel @ floors - VM-S05	-20 ea	3,307.50 /ea	(66,150)
Steel @ Canopy - AESS	6 ton	5,800.00 /ton	31,900
Relieving angles @ brick veneer	1,125 lf	150.00 /lf	168,750
Shoring @ Learning Commons	1 ls	50,000.00 /ls	50,000
Metal floor decking - galvanized (3" 18g)	64,740 sf	4.00 /sf	258,960
Metal floor decking @ Breakout room LGMF floors	1,310 sf	4.00 /sf	5,240
Sprayed fireproofing - steel beams and columns @ floor structure	64,740 sf	3.00 /sf	194,220
Patch Sprayed fireproofing - floor structure	5 days	3,500.00 /days	17,500
<i>Intumescent fireproofing @ Learning Commons - not required</i>	0 ls	0.00 /ls	0
<b>B1010 Floor Construction</b>	<b>136,600 sf</b>	<b>22.22 /sf</b>	<b>3,035,768</b>

**B1020 Roof Construction**

Place & finish slabs - 2-1/2" on 3" deck @ roof	29,675 sf	7.00 /sf	207,725
Place & finish slabs - 3-1/4" on 3" deck @ roof	7,585 sf	8.05 /sf	61,059



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>B1020 Roof Construction</b>			
Moment connections @ roof	83 ea	650.00 /ea	53,950
Steel @ screen wall - galvanized	7 ton	4,300.00 /ton	30,530
Steel @ roof	340 ton	3,900.00 /ton	1,325,610
Steel dunnage - RTU & chiller	5 ton	6,000.00 /ton	30,000
Open web joists, bridging	55 ton	3,200.00 /ton	176,000
Metal roof decking - acoustical (3" 18/16g)	7,610 sf	8.00 /sf	60,880
Metal roof decking - galvanized (1-1/2" 20g)	740 sf	3.00 /sf	2,220
Metal roof decking - acoustical (1-1/2" 20g)	8,855 sf	7.00 /sf	61,985
Metal roof decking - galvanized (3" 18g)	45,945 sf	4.00 /sf	183,780
Sprayed fireproofing - steel beams and columns @ roof structure below 20'	33,575 sf	3.00 /sf	100,725
Patch Sprayed fireproofing - roof structure	5 days	3,500.00 /days	17,500
Intumescent fireproofing @ Learning Commons - Allowance	1 ls	75,000.00 /ls	75,000
Intumescent fireproofing @ Learning Commons -VM-S01 credit	-1 ls	3,000.00 /ls	(3,000)
<b>B1020 Roof Construction</b>	<b>136,600 sf</b>	<b>17.45 /sf</b>	<b>2,383,964</b>
<b>B10 Superstructure</b>	<b>136,600 sf</b>	<b>39.68 /sf</b>	<b>5,419,733</b>
<b>B20 Exterior Enclosure</b>			
<b>B2010 Exterior Walls</b>			
Exterior wall mockup - Masonry, Allowance	1 allw	7,500.00 /allw	7,500
Exterior wall mockup - Steel, Allowance	1 allw	20,000.00 /allw	20,000
Exterior wall mockup - Siding, Allowance	1 allw	10,000.00 /allw	10,000
Exterior wall mockup - Waterproofing, Allowance	1 allw	5,000.00 /allw	5,000
Exterior wall mockup - Roofing, Allowance	1 allw	2,500.00 /allw	2,500
Exterior wall mockup - Drywall, Allowance	1 allw	10,000.00 /allw	10,000
Exterior staging	39,645 sf	2.50 /sf	99,113
Lull, laborer for cleanup by Consigli (Masonry)	-1 ls	77,000.00 /ls	(77,000)
Lull, laborer for cleanup by Consigli (Waterproofing)	-1 ls	29,000.00 /ls	(29,000)
Lull, laborer for cleanup by Consigli (Siding)	-1 ls	48,000.00 /ls	(48,000)
Trade support - lull, laborer for cleanup (Masonry)	1 ls	77,000.00 /ls	77,000
Trade support - lull, laborer for cleanup (Waterproofing)	1 ls	29,000.00 /ls	29,000
Trade support - lull, laborer for cleanup (Siding)	1 ls	48,000.00 /ls	48,000
Precast planters	50 lf	750.00 /lf	37,500
Install loose lintels (< 8")	21 ea	150.00 /ea	3,150
4x4x12 iron spot brick veneer, scored	1,990 sf	36.00 /sf	71,640
4x8x8 iron spot brick veneer, scored	6,950 sf	36.00 /sf	250,200
Brick veneer, precast cap @ entry wall per A102A	25 lf	285.00 /lf	7,125
4x4x12 scored ground faced CMU veneer	7,540 sf	27.00 /sf	203,580
4x8x16 scored ground faced CMU veneer	21,345 sf	29.00 /sf	619,005



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>B2010 Exterior Walls</b>			
CMU - 12" exterior wall	15,790 sf	25.00 /sf	394,750
CMU - ground face premium - VM-I22	sf	/sf	
4x4x1/8" galvanized sill angle expansion	285 lf	50.00 /lf	14,250
Loose lintels - Furnish	130 lf	25.00 /lf	3,250
Guardrails - 42" galvanized perforated @ exterior	60 lf	500.00 /lf	30,000
Guardrails - 42" galvanized perforated @ terrace	30 lf	500.00 /lf	15,000
Misc. caulking & sealants @ exterior	73,825 sf	0.75 /sf	55,369
Mineral wool insulation at brick veneer	38,060 sf	3.50 /sf	133,210
Air and vapor barrier @ exterior walls	54,960 sf	7.50 /sf	412,200
Air and vapor barrier @ soffits	1,245 sf	7.50 /sf	9,338
Air and vapor barrier @ phenolic fins per A102A, A315	675 sf	7.50 /sf	5,063
Corrugated, perforated metal siding @ screen walls	1,100 sf	45.00 /sf	49,500
Corrugated metal panel siding	5,520 sf	45.00 /sf	248,400
Composite metal panel siding	2,665 sf	75.00 /sf	199,875
Phenolic panel siding	8,410 sf	80.00 /sf	672,800
Metal louver	660 sf	85.00 /sf	56,100
Exterior walls - 10" studs, 1/2" sheathing, 5/8" GWB, insulation	42,285 sf	18.50 /sf	782,273
Framing @ phenolic fins per A102A, A315	675 sf	6.00 /sf	4,050
Exterior soffit framing, sheathing, insulation	1,245 sf	18.00 /sf	22,410
Misc. exterior painting	73,825 sf	0.50 /sf	36,913
<b>B2010 Exterior Walls</b>	<b>136,600 sf</b>	<b>32.88 /sf</b>	<b>4,491,061</b>
<b>B2020 Exterior Windows</b>			
Exterior wall mockup - Windows, Allowance	1 allw	20,000.00 /allw	20,000
Lull, laborer for cleanup by Consigli (Windows)	-1 ls	73,000.00 /ls	(73,000)
Trade support - lull, laborer for cleanup (Windows)	1 ls	73,000.00 /ls	73,000
Window blocking	7,945 lf	10.00 /lf	79,450
Door blocking - exterior	265 lf	10.90 /lf	2,888
Caulking @ storefront/curtainwall	8,005 lf	4.00 /lf	32,020
Window transitions	8,005 lf	10.00 /lf	80,050
Aluminum storefront/windows	13,178 sf	100.00 /sf	1,317,800
Aluminum storefront - School Guard	545 sf	140.00 /sf	76,300
Extruded aluminum perimeter angles	8,005 lf	30.00 /lf	240,150
<b>B2020 Exterior Windows</b>	<b>136,600 sf</b>	<b>13.53 /sf</b>	<b>1,848,658</b>
<b>B2030 Exterior Doors</b>			
Install exterior door, HW	14 ea	300.00 /ea	4,200
HM doors - exterior flush	23 lvs	565.00 /lvs	12,995
HM frames - exterior single	5 ea	230.00 /ea	1,150

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>B2030 Exterior Doors</b>			
HM frames - exterior double	9 ea	395.00 /ea	3,555
Overhead coiling door	1 ea	7,500.00 /ea	7,500
Aluminum entrance doors, HW - exterior	7 lvs	6,000.00 /lvs	42,000
Aluminum entrance doors, HW - exterior, School Guard	10 lvs	7,000.00 /lvs	70,000
Hardware sets - exterior door/panic	14 set	2,482.00 /set	34,748
Hardware sets - auto operators	1 set	4,500.02 /set	4,500
Install HM door frames - exterior single	5 ea	57.50 /ea	288
Install HM door frames - exterior double	9 ea	92.00 /ea	828
Paint HM doors - exterior	23 lvs	90.00 /lvs	2,070
Paint HM frames - exterior, single	5 ea	50.00 /ea	250
Paint HM frames - exterior, double	9 ea	60.00 /ea	540
<b>B2030 Exterior Doors</b>	<b>136,600 sf</b>	<b>1.35 /sf</b>	<b>184,624</b>
<b>B20 Exterior Enclosure</b>	<b>136,600 sf</b>	<b>47.76 /sf</b>	<b>6,524,343</b>
<b>B30 Roofing</b>			
<b>B3010 Roof Coverings</b>			
Roof blocking	10,520 lf	25.00 /lf	263,000
PVC membrane roof w/insulation, underlayment, cover board, vapor barrier	62,685 sf	18.25 /sf	1,144,001
PVC membrane @ walls	2,740 sf	20.25 /sf	55,485
Reinforced walkway pads	714 sf	7.50 /sf	5,355
Pavers - terrace	330 sf	35.00 /sf	11,550
Pavers - main entrance	1,165 sf	35.00 /sf	40,775
Roof accessories	62,685 sf	0.35 /sf	21,940
Roof vents & hatches	1 ls	25,000.00 /ls	25,000
Metal roof fascia	2,630 lf	35.00 /lf	92,050
Additional flashing, scuppers	62,685 sf	0.75 /sf	47,014
Polycarbonate canopy	sf	/sf	
<b>B3010 Roof Coverings</b>	<b>136,600 sf</b>	<b>12.49 /sf</b>	<b>1,706,170</b>
<b>B3020 Roof Openings</b>			
Metal-framed skylights (8:12)	4,128 sf	150.00 /sf	619,200
Metal-framed skylights gable ends	432 sf	150.00 /sf	64,800
<b>B3020 Roof Openings</b>	<b>136,600 sf</b>	<b>5.01 /sf</b>	<b>684,000</b>
<b>B30 Roofing</b>	<b>136,600 sf</b>	<b>17.50 /sf</b>	<b>2,390,170</b>
<b>B Shell</b>	<b>136,600 sf</b>	<b>104.94 /sf</b>	<b>14,334,245</b>

**C Interiors**



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C10 Interior Construction</b>			
<b>C1010 Partitions</b>			
Lull, laborer for cleanup by Consigli (Drywall)	-1 ls	188,000.00 /ls	(188,000)
Trade support - lull, laborer for cleanup (Drywall)	1 ls	188,000.00 /ls	188,000
CMU - 12" interior wall	7,515 sf	25.00 /sf	187,875
CMU - ground face premium	7,515 sf	4.50 /sf	33,818
CMU - acoustical block premium	976 sf	5.00 /sf	4,880
Light gage metal framing @ Breakout floors	1,310 sf	25.00 /sf	32,750
Light gage metal framing @ Breakout walls	16,820 sf	10.00 /sf	168,200
Misc. metal fabrications	136,600 sf	1.00 /sf	136,600
Seismic clips - 4' OC, each side	270 ea	60.00 /ea	16,200
Steel angles/stantions @ locker guardrail	1,005 lf	150.00 /lf	150,750
Handrail @ steps/ramps	50 lf	295.00 /lf	14,750
Cane rails	120 lf	200.00 /lf	24,000
In-wall blocking	12,265 lf	10.00 /lf	122,650
Miscellaneous rough carpentry - Allowance	136,600 sf	0.50 /sf	68,300
Caulking & sealants @ interior	136,600 sf	0.90 /sf	122,940
Firestopping @ rated walls	5,115 lf	16.20 /lf	82,863
Miscellaneous firestopping	136,600 sf	0.10 /sf	13,660
Aluminum storefront - interior, School Guard	340 sf	140.00 /sf	47,600
Aluminum windows - interior, School Guard	2 ea	12,000.00 /ea	24,000
Misc. interior glass & glazing	136,600 sf	0.25 /sf	34,150
Glazed partition	5,575 sf	60.00 /sf	334,500
Glazed partition - double acoustic	835 sf	110.00 /sf	91,850
Glazed partition @ sidelights	335 sf	75.00 /sf	25,125
Glass walls @ Breakout	1,465 sf	120.00 /sf	175,800
Glass roof @ Breakout	70 sf	150.00 /sf	10,500
<i>Glazed partition - translucent/etched @ bathrooms - VM-117</i>	<i>sf</i>	<i>/sf</i>	
Glass lights @ Breakout D - VM-120	320 sf	120.00 /sf	38,400
Graduated glass film	3,675 sf	5.00 /sf	18,375
3M Safety and Security Window Film @ glass walls	3,775 sf	15.00 /sf	56,625
3M Safety and Security Window Film @ doors	67 lvs	450.00 /lvs	30,150
Level 5 finish - Allowance	25,000 sf	2.00 /sf	50,000
Interior wall framing - 3-5/8"/4"	100,900 sf	4.50 /sf	454,050
Interior wall framing - 6"	4,415 sf	6.00 /sf	26,490
Interior wall framing - 8"	21,965 sf	8.00 /sf	175,720
Interior wall framing - 10"	555 sf	9.50 /sf	5,273
GWB - 5/8", level 4	214,870 sf	3.25 /sf	698,328
GWB - 5/8", additional layer	94,155 sf	2.75 /sf	258,926
GWB - high impact	1 ls	50,000.00 /ls	50,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C1010 Partitions</b>			
Shaft liner - 1"	2,045 sf	3.25 /sf	6,646
Sound batt insulation	133,845 sf	1.25 /sf	167,306
Half height walls @ Auditorium	400 sf	18.00 /sf	7,200
LGMF framing @ locker guardrail	4,020 sf	4.00 /sf	16,080
GWB - 5/8", level 5 @ locker guardrail	4,020 sf	5.25 /sf	21,105
GWB Wall - Breakout D - VM-I20	1,280 sf	30.00 /sf	38,400
Curved walls - premium	6,030 sf	5.00 /sf	30,150
Patch GWB	136,600 sf	0.50 /sf	68,300
Operable partitions	955 sf	60.00 /sf	57,300
Operable partitions w/writeable surface on one side	325 sf	80.00 /sf	26,000
Operable partitions w/writeable surface on both sides	1,815 sf	105.00 /sf	190,575
<b>C1010 Partitions</b>	<b>136,600 sf</b>	<b>32.32 /sf</b>	<b>4,415,159</b>
<b>C1020 Interior Doors</b>			
Door blocking - interior	4,960 lf	10.90 /lf	54,060
<i>Swing Panels - Auditorium - VM-I26</i>	<i>ea</i>	<i>/ea</i>	
Install interior door, HW	299 ea	300.00 /ea	89,700
HM doors - interior - flush	67 lvs	280.00 /lvs	18,760
HM frames - interior single	260 ea	280.00 /ea	72,800
HM frames - interior double	27 ea	345.00 /ea	9,315
Wood door - interior flush	271 lvs	350.00 /lvs	94,850
Fire rated wood doors - premium	40 lvs	350.00 /lvs	14,000
Acoustical doors (STC 45) - premium	1 ls	15,000.00 /ls	15,000
Access panels	1 ls	15,000.00 /ls	15,000
Coiling security screen - 4' high, manual	85 sf	70.00 /sf	5,950
Coiling security screen - 8' high, manual	690 sf	70.00 /sf	48,300
Custom security gate @ Learning Commons	2 lvs	6,000.00 /lvs	12,000
Aluminum entrance doors, HW - interior	1 lvs	6,000.00 /lvs	6,000
Aluminum entrance doors, HW - interior, School Guard	8 lvs	7,000.00 /lvs	56,000
Hardware sets - standard interior	299 set	916.00 /set	273,884
Automatic operators	1 pair	4,400.00 /pair	4,400
Door glazing - full	151 ea	400.00 /ea	60,400
Door glazing - narrow	2 ea	100.00 /ea	200
Install HM door frames - interior single	260 ea	57.50 /ea	14,950
Install HM door frames - interior double	27 ea	92.00 /ea	2,484
Paint HM doors - interior	55 lvs	90.00 /lvs	4,950
Paint HM frames - interior, single	260 ea	50.00 /ea	13,000
Paint HM frames - interior, double	27 ea	60.00 /ea	1,620



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C1020 Interior Doors</b>	<b>136,600 sf</b>	<b>6.50 /sf</b>	<b>887,623</b>
<b>C1030 Specialties/Millwork</b>			
Guardrails @ Atrium	485 lf	500.00 /lf	242,500
Pipe @ bathroom partitions per 13/A600 - VM-I17	ea	/ea	
Window sills - P-lam	1,180 lf	25.00 /lf	29,500
Wood louvered shades - Rulon panel grille	450 lf	150.00 /lf	67,500
Translucent glass floor @ Breakout - Deleted/Recon	sf	/sf	
Mirrors - unframed restroom	1,375 sf	35.00 /sf	48,125
Interior signage	136,600 sf	0.35 /sf	47,810
Toilet partition	23 ea	1,020.00 /ea	23,460
Toilet partition - handicap	16 ea	1,650.00 /ea	26,400
Urinal screens - wall-hung	15 ea	433.00 /ea	6,495
Cubicle curtains	45 lf	40.00 /lf	1,800
Cubicle curtain track	45 lf	11.50 /lf	518
Corner guards	1 ls	20,000.00 /ls	20,000
Toilet paper dispenser	53 ea	105.17 /ea	5,574
Grab bar	60 ea	141.38 /ea	8,483
Soap dispenser - surface mounted	58 ea	87.64 /ea	5,083
Paper towel dispenser - recessed	30 ea	136.79 /ea	4,104
Framed mirrors	14 ea	171.00 /ea	2,394
Sanitary napkin disposal	45 ea	274.00 /ea	12,330
Shower curtains, hooks & rod	3 ea	125.00 /ea	375
Shower seat	2 ea	668.00 /ea	1,336
Mop rack	3 ea	230.67 /ea	692
Fire extinguisher cabinet - fully recessed	27 ea	350.00 /ea	9,450
Student lockers - phenolic	660 ea	600.00 /ea	396,000
Athletic lockers	80 ea	350.00 /ea	28,000
Staff lockers	12 ea	400.00 /ea	4,800
Misc. specialties - Allowance	136,600 sf	0.25 /sf	34,150
<b>C1030 Specialties/Millwork</b>	<b>136,600 sf</b>	<b>7.52 /sf</b>	<b>1,026,878</b>
<b>C10 Interior Construction</b>	<b>136,600 sf</b>	<b>46.34 /sf</b>	<b>6,329,660</b>

**C20 Stairs**

**C2010 Stair Construction**

Place & finish stair treads/landings	5 flts	1,800.00 /flts	9,000
Ornamental stairs - In Structural Steel	-	/-	
Egress stair	5 flt	20,000.00 /flt	100,000
Ornamental stairs - excluding rails	4 flt	60,000.00 /flt	240,000
Guardrails @ Atrium stairs	230 lf	500.00 /lf	115,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C2010 Stair Construction</b>	<b>136,600 sf</b>	<b>3.40 /sf</b>	<b>464,000</b>
<b>C2020 Stair Finishes</b>			
Rubber flooring @ ornamental stairs	765 sf	8.00 /sf	6,120
Paint stairs	9 flt	2,000.00 /flt	18,000
<b>C2020 Stair Finishes</b>	<b>136,600 sf</b>	<b>0.18 /sf</b>	<b>24,120</b>
<b>C20 Stairs</b>	<b>136,600 sf</b>	<b>3.57 /sf</b>	<b>488,120</b>
<b>C30 Interior Finishes</b>			
<b>C3010 Wall Finishes</b>			
Lull, laborer for cleanup by Consigli (Tile)	-1 ls	7,000.00 /ls	(7,000)
Trade support - lull, laborer for cleanup (Tile)	1 ls	7,000.00 /ls	7,000
Brick veneer - interior - N/A	-	/-	
Miscellaneous wood base/trim	136,600 sf	0.50 /sf	68,300
Trims at Breakout D (at glass lights) - VM-I20	320 sf	25.00 /sf	8,000
P-lam panel	1,440 sf	45.00 /sf	64,800
P-lam panel backsplash	35 sf	45.00 /sf	1,575
Marker tray - bamboo	1,660 lf	30.00 /lf	49,800
MDF bumper rail	3,480 lf	25.00 /lf	87,000
P-lam wall panels - sound reflecting at auditorium	2,925 sf	45.00 /sf	131,625
P-lam wall panels - vestibules	400 sf	45.00 /sf	18,000
P-lam projector enclosure	1 ls	2,500.00 /ls	2,500
Ceramic wall tile	3,725 sf	18.00 /sf	67,050
Quarry tile base	280 lf	20.00 /lf	5,600
Linoleum tile base w/trim	19,465 lf	9.00 /lf	175,185
Rubber base	1,830 lf	3.50 /lf	6,405
Vented base @ Gym	380 lf	8.00 /lf	3,040
Fiberglass reinforced panels (FRP) - wall panels	2,240 sf	8.00 /sf	17,920
Fabric wrapped acoustical panels	15,270 sf	20.00 /sf	305,400
Tectum wall panels	5,225 sf	18.00 /sf	94,050
Mural panorama wall covering	1,485 sf	1.50 /sf	2,228
Paint GWB partitions	228,115 sf	0.80 /sf	182,492
Paint CMU - interior, N/A	-	/-	
Epoxy wall paint	13,985 sf	2.30 /sf	32,166
Touchup	136,600 sf	0.50 /sf	68,300
Magnetic writeable wall covering	6,800 sf	22.00 /sf	149,600
<b>C3010 Wall Finishes</b>	<b>136,600 sf</b>	<b>11.28 /sf</b>	<b>1,541,035</b>
<b>C3020 Floor Finishes</b>			
Lull, laborer for cleanup by Consigli (Resilient)	-1 ls	48,000.00 /ls	(48,000)





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C3020 Floor Finishes</b>			
Trade support - lull, laborer for cleanup (Resilient)	1 ls	48,000.00 /ls	48,000
Wood base	100 lf	25.00 /lf	2,500
Porcelain floor tile	5,511 sf	25.00 /sf	137,775
<i>Porcelain floor tile - VM-I01</i>	<i>sf</i>	<i>/sf</i>	
Quarry floor tile	1,770 sf	20.00 /sf	35,400
Underlayment at 2nd and 3rd floor linoleum (Forbo NR99) (exclude corridors)	53,265 sf	4.00 /sf	213,060
<i>Moisture mitigation - Excluded</i>	-	-	
Hardwood stage assembly	1,610 sf	25.00 /sf	40,250
Wood athletic flooring	8,570 sf	20.00 /sf	171,400
Linoleum tile	80,000 sf	6.00 /sf	480,000
Linoleum plank	26,000 sf	8.00 /sf	208,000
<i>Linoleum plank - VM-I01</i>	<i>sf</i>	<i>/sf</i>	
Epoxy flooring/base	6,325 sf	14.00 /sf	88,550
Carpet @ Auditorium	235 sy	45.00 /sy	10,575
Seal concrete floor	6,720 sf	2.00 /sf	13,440
Entry mats - recessed	435 sf	40.00 /sf	17,400
<b>C3020 Floor Finishes</b>	<b>136,600 sf</b>	<b>10.38 /sf</b>	<b>1,418,350</b>
<b>C3030 Ceiling Finishes</b>			
Dance floor at auditorium - multi-trade	1 ls	75,000.00 /ls	75,000
Lull, laborer for cleanup by Consigli (Finish Carpentry)	-1 ls	72,000.00 /ls	(72,000)
Lull, laborer for cleanup by Consigli (Ceilings)	-1 ls	49,000.00 /ls	(49,000)
Trade support - lull, laborer for cleanup (Finish Carpentry)	1 ls	72,000.00 /ls	72,000
Trade support - lull, laborer for cleanup (Ceilings)	1 ls	49,000.00 /ls	49,000
P-lam panel on Z-clips @ Breakout	325 sf	45.00 /sf	14,625
P-lam panel ceiling	419 sf	45.00 /sf	18,855
Suspended P-lam clouds @ Auditorium	85 ea	2,000.00 /ea	170,000
Gypsum board ceilings	24,452 sf	12.00 /sf	293,424
Gypsum board ceilings - 1 hr	655 sf	15.00 /sf	9,825
Stucco soffit	1,245 sf	8.95 /sf	11,143
Gypsum board soffits	30,490 sf	20.00 /sf	609,800
Gypsum board soffits @ Learning Commons	6,225 sf	20.00 /sf	124,500
Gypsum board soffits @ Skylights	1,570 sf	20.00 /sf	31,400
A1 - Armstrong Ultima #1911, random running bond pattern	23,323 sf	9.00 /sf	209,907
A1 - Armstrong Ultima #1911 @ Learning Commons	10,925 sf	9.00 /sf	98,325
A1 - Armstrong Ultima #1911 @ Auditorium vestibules	431 sf	9.00 /sf	3,879
A2 - Armstrong Calla #2824	18,115 sf	8.00 /sf	144,920
A3 - USG Geometrix 3 Dimensional	810 sf	35.00 /sf	28,350
A4 - Armstrong Healthzone Ultima	1,735 sf	7.00 /sf	12,145

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C3030 Ceiling Finishes</b>			
Paint GWB ceilings	27,620 sf	1.00 /sf	27,620
Paint GWB soffits	38,285 sf	1.00 /sf	38,285
Paint exposed ceilings	29,000 sf	1.50 /sf	43,500
Paint exposed ceilings - gym	8,570 sf	2.50 /sf	21,425
<b>C3030 Ceiling Finishes</b>	<b>136,600 sf</b>	<b>14.55 /sf</b>	<b>1,986,928</b>
<b>C30 Interior Finishes</b>	<b>136,600 sf</b>	<b>36.21 /sf</b>	<b>4,946,313</b>
<b>C Interiors</b>	<b>136,600 sf</b>	<b>86.12 /sf</b>	<b>11,764,093</b>

## D Services

### D10 Conveying Systems

#### D1010 Elevators & Lifts

Elevator pit ladders	1 ea	450.00 /ea	450
Passenger elevators - cab, equipment	1 ls	40,000.00 /ls	40,000
Passenger elevators - stops	4 stop	45,000.00 /stop	180,000

**D1010 Elevators & Lifts** **136,600 sf** **1.61 /sf** **220,450**

**D10 Conveying Systems** **136,600 sf** **1.61 /sf** **220,450**

### D20 Plumbing

#### D2010 Plumbing

Lull, laborer for cleanup by Consigli (Plumbing)	-1 ls	83,000.00 /ls	(83,000)
Trade support - lull, laborer for cleanup (Plumbing)	1 ls	83,000.00 /ls	83,000
Water closet/wall mnt./carrier/flush valve P-1	23 ea	1,265.42 /ea	29,105
Water closet/wall mnt./carrier/flush valve/ADA P-1A	31 ea	1,299.42 /ea	40,282
Urinal/wall mnt./carrier/flush valve P-2	15 ea	1,140.35 /ea	17,105
Urinal/wall mnt./carrier/flush valve/ADA P-2A	7 ea	1,175.35 /ea	8,227
Lavatory/lay-in/std 1-lever faucet/ADA P3-A	14 ea	517.44 /ea	7,244
Lavatory/undermount/std 1-lever faucet P-3	50 ea	501.44 /ea	25,072
Lavatory/wall hung/std 1-lever faucet/carrier/ADA P-3A	17 ea	1,083.05 /ea	18,412
Mixing valve/single lav. (Leonard #170)	93 ea	328.84 /ea	30,582
Sink/lay-in/1-bowl 22"x19"/std faucet/ADA P-8,P-8A	7 ea	1,065.75 /ea	7,460
Sink/lay-in/1-bowl 20"x22"/sensor faucet/ADA Art P-9, P-9A	4 ea	1,303.82 /ea	5,215
Sink/lay-in/1-bowl 20"x22"/sensor faucet/ADA	1 ea	1,303.82 /ea	1,304
Sink/acid waste/std 2-lever wrist blade faucet/st. steel P-7	42 ea	2,545.42 /ea	106,908
- Solids interceptors (Art Room sinks)	4 ea	521.14 /ea	2,085
Mop sink/floor mnt - 24"x24" P-5	5 ea	1,261.51 /ea	6,308
Shower stall/std valve & access./6'x3' gelcoat/ADA P-6	4 ea	3,854.17 /ea	15,417
Emergency eye wash station/mixing valve/sink mount with drench P-10A	42 ea	1,034.21 /ea	43,437



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D2010 Plumbing</b>			
Emergency shower/eye wash sta./mixing valve/cabinet mount P-10	3 ea	3,265.35 /ea	9,796
Water cooler/remote condenser/bi-level/ADA	11 ea	10,436.84 /ea	114,805
- Plumbing fixtures offload & distribution	276 ea	103.07 /ea	28,447
- Plumbing fixtures rough-in	276 ea	128.07 /ea	35,347
<b>D2010 Plumbing</b>	<b>136,600 sf</b>	<b>4.05 /sf</b>	<b>552,558</b>
<b>D2020 Domestic Water Distribution</b>			
Insulation/copper pipe/fiberglass	9,635 lf	7.67 /lf	73,925
Water meter w/remote readout - 4"	1 ea	2,285.75 /ea	2,286
Water sub-meter - 1"	1 ea	275.84 /ea	276
Water sub-meter - 2"	1 ea	492.30 /ea	492
Backflow preventer/RPZ-BFP - 4"	1 ea	1,960.75 /ea	1,961
Backflow preventer/boiler make-up - 1"	1 ea	201.54 /ea	202
Backflow preventer/irrigation - 1"	1 ea	201.54 /ea	202
Backflow preventer/Tempered - 1"	1 ea	201.54 /ea	202
Backflow preventer/Non Potable - 1" Sci Class 2214, 1110	3 ea	201.54 /ea	605
Recirculation pump/bronze - avg. size Tempered	1 ea	684.14 /ea	684
Recirculation pump/bronze - avg. size Non Potable	1 ea	684.14 /ea	684
Recirculation pump/bronze/20 gpm - 1/6 hp (Grundfos Magna)	1 ea	1,406.14 /ea	1,406
Expansion tank/ASME/ non-potable - 3.2 gal (B&G #PTA-12)	1 ea	1,062.61 /ea	1,063
Expansion tank/ASME/potable - 34.5 gal (B&G #PTA-80V)	1 ea	1,940.14 /ea	1,940
TMV - 1/2"x3/4" - 10 gpm (Leonard #TM-15-E)	2 ea	677.14 /ea	1,354
TMV - 3/4"x3/4" - 37 gpm (Leonard #TM-30-E) Non Potable	1 ea	785.14 /ea	785
TMV/Digital Mixing Valve	1 ea	20,824.56 /ea	20,825
TMV/master/hi-lo temp. Kitchen	1 ea	2,759.21 /ea	2,759
Hose bibbs w/vac. breaker - interior	17 ea	202.30 /ea	3,439
Trap primers/electronic - 6 outlet (PPP #PT-6)	6 ea	1,294.14 /ea	7,765
Shock absorbers/12 - 33 fixture units (Shoktrol #200)	10 ea	269.77 /ea	2,698
Domestic water entrance UG/ductile iron - 6"	25 lf	408.13 /lf	10,203
Domestic water AG/type "L" copper/press fit ftgs. - avg. size	1,620 lf	21.19 /lf	34,322
Domestic water AG/type "L" copper/press fit ftgs. - avg. size Non Potable	1,650 lf	21.19 /lf	34,957
Domestic water AG/type "L" copper/press fit ftgs. - avg. size Non Potable	520 lf	21.19 /lf	11,017
Domestic water AG/type "L" copper/press fit - 1/2" TP	1,400 lf	11.83 /lf	16,565
Domestic water AG/type "L" copper/press fit - 1/2"	1,460 lf	11.83 /lf	17,274
Domestic water AG/type "L" copper/press fit - 3/4"	450 lf	14.33 /lf	6,446
Tempered water AG/type "L" copper/press fit - 1"	210 lf	18.70 /lf	3,926
Domestic water AG/type "L" copper/press fit - 1"	660 lf	18.70 /lf	12,339

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D2020 Domestic Water Distribution</b>			
Tempered water AG/type "L" copper/press fit - 1-1/4"	40 lf	22.94 /lf	918
Domestic water AG/type "L" copper/press fit - 1-1/4"	800 lf	22.94 /lf	18,352
Domestic water AG/type "L" copper/press fit - 1-1/2"	260 lf	27.56 /lf	7,165
Domestic water AG/type "L" copper/press fit - 2"	260 lf	37.42 /lf	9,729
Domestic water AG/type "L" copper/press fit - 2-1/2"	320 lf	60.35 /lf	19,311
Domestic water AG/type "L" copper/press fit - 3"	85 lf	77.19 /lf	6,562
Domestic water AG/type "L" copper/press fit - 4"	150 lf	105.45 /lf	15,818
- Domestic water piping accessories	9,885 lf	2.52 /lf	24,942
- Domestic water clean & test piping system	1 ls	3,324.56 /ls	3,325
- Domestic water valve tags & charts	250 ea	8.18 /ea	2,046
- Domestic water pipe & equipment I.D.	9,885 lf	1.38 /lf	13,625
DWH/gas fired/500 mbh - (Lochinvar #AWN-501PM)	2 ea	18,618.42 /ea	37,237
HWH/electric - 40 gals (Brad. Wht. #M-2-40S10DS) Non Potable	ea	/ea	
HWH/electric - 40 gals (Brad. Wht. #M-2-40S10DS) Tempered	ea	/ea	
DHW Storage Tank 318 Gallon	1 ea	7,018.42 /ea	7,018
<b>D2020 Domestic Water Distribution</b>	<b>136,600 sf</b>	<b>3.21 /sf</b>	<b>438,646</b>
<b>D2030 Sanitary Waste</b>			
Floor drain - 3" (#ZN415-6B)	12 ea	294.07 /ea	3,529
Floor drain - 4" (#ZN415-8B)	14 ea	353.07 /ea	4,943
Floor drain/heavy duty - 3" (#ZN415-6B-HD)	6 ea	394.07 /ea	2,364
- Funnel add - 3" (#Z326)	6 ea	119.77 /ea	719
Floor sink/12x12 - 3" (#Z1900)	8 ea	2,555.37 /ea	20,443
Floor cleanouts - 4" (#ZN1400)	50 ea	291.07 /ea	14,554
Grease interceptor Labor to Connect to Exterior Site Structure	1 ea	824.56 /ea	825
Grease interceptor/interior Kitchen	1 ea	4,291.56 /ea	4,292
Oil interceptor - Labor to Connect to site structure	1 ea	1,236.84 /ea	1,237
Elevator sump pump/oil minder	1 ea	3,812.28 /ea	3,812
Backwater valve - 4" (#Z1095)	1 ea	738.14 /ea	738
Backwater valve - 6" (#Z1095)	2 ea	973.14 /ea	1,946
Sanitary UG/cast iron single hub pipe & ftgs. - 2"	200 lf	31.98 /lf	6,396
Sanitary UG/cast iron single hub pipe & ftgs. - 3"	531 lf	36.45 /lf	19,354
Sanitary UG/cast iron single hub pipe & ftgs. - 4"	550 lf	44.78 /lf	24,628
Sanitary UG/cast iron single hub pipe & ftgs. - 5"	330 lf	64.12 /lf	21,159
Sanitary UG/cast iron single hub pipe & ftgs. - 6"	50 lf	74.82 /lf	3,741
Sanitary AG/cast iron no hub pipe & ftgs. - avg. size Fixture runouts	2,500 lf	47.33 /lf	118,315
Sanitary AG/cast iron no hub pipe & ftgs. - avg. size FD runouts	280 lf	47.33 /lf	13,251
Sanitary AG/cast iron no hub pipe & ftgs. - 1-1/2"	40 lf	33.82 /lf	1,353
Sanitary AG/cast iron no hub pipe & ftgs. - 2"	1,220 lf	34.83 /lf	42,487

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D2030 Sanitary Waste</b>			
Sanitary AG/cast iron no hub pipe & ftgs. - 3"	605 lf	44.36 /lf	26,835
Sanitary AG/cast iron no hub pipe & ftgs. - 4"	270 lf	52.52 /lf	14,181
Sanitary AG/cast iron no hub pipe & ftgs. - 5"	10 lf	68.67 /lf	687
Grease waste UG/cast iron single hub pipe & ftgs. - 2"	40 lf	31.98 /lf	1,279
Grease waste UG/cast iron single hub pipe & ftgs. - 3"	152 lf	36.45 /lf	5,540
Grease waste UG/cast iron single hub pipe & ftgs. - 4"	325 lf	44.78 /lf	14,553
- Sanitary waste & vent piping accessories	7,103 lf	1.77 /lf	12,595
<b>D2030 Sanitary Waste</b>	<b>136,600 sf</b>	<b>2.82 /sf</b>	<b>385,755</b>
<b>D2040 Rain Water Drainage</b>			
Insulation/rainleader pipe/fiberglass/PVC jacketed/horiz. & vert.	1,868 lf	12.93 /lf	24,153
Roof drain/#ZC100 - 4"	7 ea	298.07 /ea	2,086
Roof drain/#ZC100 - 5"	3 ea	387.84 /ea	1,164
Roof drain/#ZC100 - 6"	9 ea	387.84 /ea	3,491
Roof drain/#ZC100 - 8"	2 ea	477.61 /ea	955
Rainleader UG/cast iron single hub pipe & ftgs. - 4"	60 lf	44.77 /lf	2,686
Rainleader UG/cast iron single hub pipe & ftgs. - 6"	140 lf	74.82 /lf	10,475
Rainleader UG/cast iron single hub pipe & ftgs. - 8"	150 lf	103.25 /lf	15,488
Rainleader UG/cast iron single hub pipe & ftgs. - 10"	203 lf	141.04 /lf	28,631
Rainleader UG/cast iron single hub pipe & ftgs. - 12"	20 lf	186.99 /lf	3,740
Rainleader AG/cast iron no hub pipe & ftgs. - 4"	275 lf	52.53 /lf	14,445
Rainleader AG/cast iron no hub pipe & ftgs. - 6"	700 lf	81.16 /lf	56,810
Perimeter PVC foundation drain piping below grade	1,600 lf	45.00 /lf	72,000
<i>Perforated PVC piping below slab - assume 25' oc</i>	0 lf	/lf	
Rainleader AG/cast iron no hub pipe & ftgs. - 8"	320 lf	133.84 /lf	42,828
<b>D2040 Rain Water Drainage</b>	<b>136,600 sf</b>	<b>2.04 /sf</b>	<b>278,952</b>
<b>D2090 Other Plumbing Systems</b>			
General requirements (management, permits, as-builts, coring, fire stopping)	136,600 sf	1.50 /sf	204,900
3D/BIM coordination	1 ls	4,000.00 /ls	4,000
Commissioning support/day	5 day	824.56 /day	4,123
Emergency gas shut off/cabinet w/1-1/2" solenoid & UL ball valve Kitchen	1 ea	6,293.42 /ea	6,293
- Remote panic buttons	2 ea	328.07 /ea	656
Gas piping/sch 40 black steel CW t&c - 1-1/4"	240 lf	34.14 /lf	8,194
Gas piping/sch 40 black steel CW t&c - 2"	20 lf	42.28 /lf	846
Gas piping/sch 40 blk stl ERW weld - 2-1/2"	165 lf	45.73 /lf	7,546
Gas piping/sch 40 blk stl ERW weld - 4"	40 lf	75.73 /lf	3,029

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D2090 Other Plumbing Systems</b>			
Gas piping/sch 40 blk stl ERW weld - 6"	100 lf	124.72 /lf	12,472
- Gas piping accessories	565 lf	2.52 /lf	1,426
Gas piping to (1) lab	1 ls	30,003.26 /ls	30,003
Gas piping connection to generator	1 ls	24,999.69 /ls	25,000
Acid neut. system w/monitor/200 gal. tank	1 ea	42,442.98 /ea	42,443
Acid neut. system w/monitor/200 gal. tank - VM-P01e	ea	/ea	
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 2"	77 lf	45.56 /lf	3,508
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 2" - VM-P01e	lf	/lf	
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 4"	423 lf	68.91 /lf	29,149
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 4" - VM-P01e	0 lf	0.00 /lf	0
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 2"	944 lf	51.44 /lf	48,562
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 3"	275 lf	65.67 /lf	18,060
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 4"	616 lf	77.44 /lf	47,701
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 4" - VM-P01e	lf	/lf	
- Acid waste & vent piping accessories	2,335 lf	2.02 /lf	4,724
- Acid waste & vent piping accessories - VM-P01e	lf	/lf	
Wiring for Acid Waste Systems	1 ls	12,000.00 /ls	12,000
Pumps/chamber	1 ls	25,000.00 /ls	25,000
Pumps/chamber	ls	/ls	
Local chip tanks - VM-P01e - VM-P01e	ea	/ea	
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 ea	122.47 /ea	980
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 ea	122.47 /ea	980
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 lf	122.47 /lf	980
<b>D2090 Other Plumbing Systems</b>	<b>136,600 sf</b>	<b>4.40 /sf</b>	<b>601,359</b>
<b>D20 Plumbing</b>	<b>136,600 sf</b>	<b>16.53 /sf</b>	<b>2,257,270</b>

**D30 Heating, Ventilating, and Air Conditioning (HVAC)**

**D3010 Energy Supply**

Insulation/pipe/copper	11,020 lf	7.09 /lf	78,155
Insulation/pipe/copper - reconciliation adjust	-3,000 lf	7.09 /lf	(21,276)
Insulation/pipe/weld	9,500 lf	10.10 /lf	95,956
Hot water s&r/type "L" copper solder - avg. size (take-off)	8,770 lf	24.48 /lf	214,723
Hot water s&r/type "L" copper solder - avg. size - recon adjust	-6,000 lf	24.48 /lf	(146,903)



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D3010 Energy Supply</b>			
Hot water s&r/type "L" copper solder - avg. size (misc.)	1,000 lf	24.48 /lf	24,484
Hot water s&r/sch 40 blk stl ERW weld - avg. size (shown)	7,450 lf	94.20 /lf	701,762
Glycol Chilled water s&r/type "L" copper solder - avg. size (misc.)	1,250 lf	24.48 /lf	30,605
Glycol Chilled water s&r/sch 40 blk stl ERW weld - avg. size	2,050 lf	94.20 /lf	193,102
- Hydronic piping accessories	17,520 lf	2.53 /lf	44,359
Pump/base mount/790 gpm (HW)	2 ea	8,167.68 /ea	16,335
Chilled water pump house (pumps & accesories, enclosure, piping, unit heater	1 ls	226,667.68 /ls	226,668
- Suction diffusers	2 ea	1,460.58 /ea	2,921
- Flex connector/HVAC pumps	4 ea	556.35 /ea	2,225
- Triple duty valves	2 ea	2,312.69 /ea	4,625
Air separators	1 ea	4,333.84 /ea	4,334
Expansion tanks/ASME	2 ea	7,167.68 /ea	14,335
Chemical treatment (lump sum)	1 ls	20,000.00 /ls	20,000
Glycol feed/50 gal. tank w/pump (Neptune #G-50-1)	2 ea	5,272.92 /ea	10,546
- Glycol solution/40% propylene	1,000 gal	25.21 /gal	25,212
	<b>136,600 sf</b>	<b>11.29 /sf</b>	<b>1,542,169</b>
<b>D3020 HVAC</b>			
Boiler/HW/gas/high eff. cond. - 4,000 mbh Riello AR 4000	2 ea	57,501.52 /ea	115,003
Boiler circulator pump	2 ea	1,708.46 /ea	3,417
Boiler combustion air/galvanized steel 10"	200 lf	38.00 /lf	7,600
Flue piping/double wall/stainless steel 10"	205 lf	185.00 /lf	37,925
	<b>136,600 sf</b>	<b>1.20 /sf</b>	<b>163,945</b>
<b>D3030 Cooling Generating Systems</b>			
Chiller/air cooled - 370 tons	1 ea	381,153.80 /ea	381,154
Buffer tanks/Lochinvar - 300 gals.	1 ea	8,750.76 /ea	8,751
	<b>136,600 sf</b>	<b>2.85 /sf</b>	<b>389,905</b>
<b>D3040 HVAC Distribution</b>			
Lull, laborer for cleanup by Consigli (HVAC)	-1 ls	343,000.00 /ls	(343,000)
Trade support - lull, laborer for cleanup (HVAC)	1 ls	343,000.00 /ls	343,000
Insulation/ductwork/blanket wrap	86,800 sf	3.55 /sf	307,790
Insulation/ductwork/weatherproof exposed	4,500 sf	12.89 /sf	57,986
Sheetmetal & accessories/galvanized	105,500 lb	11.04 /lb	1,164,720
Sheetmetal & accessories/galvanized - reduction for reconcililation	-15,000 lb	11.04 /lb	(165,600)
Directed change to Trade for further recon	-1 ls	210,526.04 /ls	(210,526)
Sheetmetal & accessories/galvanized (perforated)	1,500 lb	14.49 /lb	21,735

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D3040 HVAC Distribution</b>			
Sheetmetal & accessories/galvanized (smoke exhasut)	6,500 lb	11.04 /lb	71,760
Sheetmetal & accessories/galv./rectangular single wall	29,250 lb	11.04 /lb	322,920
Sheetmetal & accessories/galv./flat oval/double wall w/ liner - VM-I24	lb	/lb	
Sheetmetal & accessories/stainless steel (dishwasher)	500 lb	22.28 /lb	11,140
Sheetmetal & accessories/welded stainless steel (kitchen exhaust)	500 lb	29.78 /lb	14,890
Sheetmetal & accessories/welded stainless steel (kiln exhaust)	500 lb	29.78 /lb	14,890
Sheetmetal & accessories/welded stainless steel (3 - fume hoods)	4,500 lb	29.78 /lb	134,009
Sheetmetal & accessories/fabric/1-row cable (DuctSox) - 24"	305 lf	81.29 /lf	24,792
Duct enclosure (roof)	1 ea	5,424.10 /ea	5,424
SM - Diffusers, registers & grilles	136,600 sf	0.20 /sf	27,320
SM - Linear slot diffusers (supply)	6 ea	465.39 /ea	2,792
SM - Linear slot diffusers (exhaust) - architectural	lf	/lf	
SM - Displ. Diffuser/Floor Mnt.	156 ea	1,289.88 /ea	201,221
SM - Combination fire/smoke dampers/louver type/UL	20 ea	776.53 /ea	15,530
SM - Motorized damper	14 ea	1,107.92 /ea	15,511
SM - Smoke detectors/duct mount	40 ea	747.47 /ea	29,899
SM - Sound attenuators/in-line/std. gauge	239,000 cfm	0.55 /cfm	131,341
SM - Kitchen exhaust hood/st. steel/install only (by KES)	1 ea	2,339.28 /ea	2,339
SM - Dishwasher exhaust hood/st. steel/install only (by KES)	1 ea	1,559.52 /ea	1,560
SEF-1-4	4 ea	17,339.28 /ea	69,357
EF-3&4 /centrifugal downblast/roof/direct drive - 500 cfm	2 ea	1,069.31 /ea	2,139
EF-1&2 /centrifugal downblast/roof/direct drive - 2,500 cfm	2 ea	1,771.24 /ea	3,542
KEF-1/centrifugal upblast/roof - 4,170 cfm	1 ea	2,734.82 /ea	2,735
FEF-1,2,3 Lab exhaust fan/roof - 1,200 cfm	3 ea	9,084.82 /ea	27,254
<b>D3040 HVAC Distribution</b>	<b>136,600 sf</b>	<b>16.90 /sf</b>	<b>2,308,471</b>
<b>D3050 Terminal &amp; Package Units</b>			
Variable air volume box - small	12 ea	533.15 /ea	6,398
Variable air volume box - medium	143 ea	668.62 /ea	95,612
RTU-1-4 Classrooms (service enclosure, HW&CHW coils, energy recovery)	88,000 cfm	14.90 /cfm	1,311,200
RTU-5 Gymnasium (service enclosure, HW&CHW coils, energy recovery)	15,000 cfm	14.90 /cfm	223,500
RTU-6 Auditorium (service enclosure, HW&CHW coils, energy recovery)	12,000 cfm	14.90 /cfm	178,800
RTU-7 Lockers (service enclosure, HW&CHW coils, energy recovery)	2,000 cfm	14.90 /cfm	29,800
MAU-1 Make-up air unit/HW&CHW coil/	5,000 cfm	7.00 /cfm	35,000
Mini-split AC system/1-zone/wall mnt./cool only - 12 mbh	1 ea	2,072.92 /ea	2,073
Mini-split AC system/1-zone/wall mnt./cool only - 18 mbh	5 ea	2,681.66 /ea	13,408





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D3050 Terminal &amp; Package Units</b>			
Mini-split AC system/1-zone/wall mnt./cool only - 24 mbh	2 ea	2,956.03 /ea	5,912
Mini-split refrigeration line set/6-12 mbh - 50'	2 ea	584.88 /ea	1,170
Mini-split refrigeration line set/15-18 mbh - 50'	10 ea	599.88 /ea	5,999
Mini-split refrigeration line set/24-30 mbh - 50'	4 ea	614.88 /ea	2,460
Mini-split condensate drains/type"L" copper	450 lf	19.43 /lf	8,744
A/C cond. pump	8 ea	253.74 /ea	2,030
INS - Mini-split Insulation/copper pipe	450 lf	6.87 /lf	3,090
ATC - Mini-split condensing units (w/factory controls)	8 ea	879.76 /ea	7,038
ATC - Mini-split indoor units (w/factory controls)	8 ea	587.35 /ea	4,699
Terminal equipment	136,600 sf	0.10 /sf	13,660
Radiant ceiling panels/24" wide - ft.	1,280 lf	115.00 /lf	147,200
Finned-tube radiation pedestal mount (gym)	295 lf	194.24 /lf	57,301
Finned-tube radiation pedestal mount	20 lf	250.00 /lf	5,000
Finned-tube radiation bare - VM-M02	650 lf	41.00 /lf	26,650
Cabinet unit heater/hot water/wall mount/recessed - avg. size	4 ea	1,573.62 /ea	6,294
Cabinet unit heater/hot water/ceiling mount - avg. size	10 ea	1,749.51 /ea	17,495
Unit heater/hot water/horiz./propeller - avg. size	2 ea	1,092.41 /ea	2,185
Misc. VFD's	1 ls	35,000.00 /ls	35,000
VFD w/keypad/disconnect/bypass/NEMA 1 - HW pumps	2 ea	6,028.47 /ea	12,057
VFD w/keypad/disconnect/bypass/NEMA 1 - CHW pumps w/ pump house	ea	/ea	
<b>D3050 Terminal &amp; Package Units</b>	<b>136,600 sf</b>	<b>16.54 /sf</b>	<b>2,259,774</b>
<b>D3060 HVAC Instrumentation &amp; Controls</b>			
Automatic temperature controls/cost per sq. ft.	136,790 sf	0.25 /sf	34,198
ATC - Air valve/hood exhaust/HEX	3 ea	3,971.15 /ea	11,913
ATC - Air valves/no coil control wiring - 3 pts./fume hood	9 pnt	413.75 /pnt	3,724
ATC - RTU's/custom - 30 pts.	240 pnt	1,233.84 /pnt	296,122
ATC - MUA units - 10 pts.	10 pnt	719.04 /pnt	7,190
ATC - Exhaust fans - 3 pts.	15 pnt	673.27 /pnt	10,099
ATC - Life safty fans - 8 pts.	32 pnt	725.38 /pnt	23,212
ATC - Lab exhaust fans - 5 pts./fan	15 pnt	725.38 /pnt	10,881
ATC - Boilers/modular - 10 pts.	20 pnt	777.50 /pnt	15,550
ATC - Pumps - 4 pts.	16 pnt	725.38 /pnt	11,606
ATC - VFD wiring for pumps (remote mount) - 4 pts.	16 pnt	723.27 /pnt	11,572
ATC - Circulators - 2 pts.	4 pnt	462.69 /pnt	1,851
ATC - Chillers - 15 pts.	15 pnt	1,233.84 /pnt	18,508
ATC - VAV box/no coil (ATC furn./factory install controls) 2 pts.	310 pnt	386.63 /pnt	119,856
ATC - Fintube radiation zones - 2 pts.	20 pnt	361.63 /pnt	7,233
ATC - Cabinet unit heaters - 3 pts.	42 pnt	361.63 /pnt	15,189

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D3060 HVAC Instrumentation &amp; Controls</b>			
ATC - Unit heaters - 3 pts.	6 pnt	361.63 /pnt	2,170
ATC - Radiant ceiling panel zones - 2 pts.	246 pnt	361.63 /pnt	88,962
ATC - Plumbing points - 10 pts.	10 pnt	563.82 /pnt	5,638
ATC - Elctrical points - 10 pts.	10 pnt	563.82 /pnt	5,638
<b>D3060 HVAC Instrumentation &amp; Controls</b>	<b>136,600 sf</b>	<b>5.13 /sf</b>	<b>701,110</b>
<b>D3070 Testing, Adjusting &amp; Balancing</b>			
Testing & balancing/cost per sq. ft.	136,600 sf	0.65 /sf	88,790
<b>D3070 Testing, Adjusting &amp; Balancing</b>	<b>136,600 sf</b>	<b>0.65 /sf</b>	<b>88,790</b>
<b>D3090 Other HVAC Systems &amp; Equipment</b>			
General requirements (sq. ft.)	136,600 sf	1.15 /sf	157,090
3D/BIM coordination	1 ls	100,000.00 /ls	100,000
Commissioning support/lump sum	1 ls	15,000.00 /ls	15,000
Dust collection system	1 ea	17,339.28 /ea	17,339
Kiln exhaust	1 ls	5,500.00 /ls	5,500
Equipment hoisting/rigging/setting/start-up	136,600 sf	1.15 /sf	157,090
<b>D3090 Other HVAC Systems &amp; Equipment</b>	<b>136,600 sf</b>	<b>3.31 /sf</b>	<b>452,019</b>
<b>D30 Heating, Ventilating, and Air Conditioning (HVAC)</b>	<b>136,600 sf</b>	<b>57.88 /sf</b>	<b>7,906,183</b>
<b>D40 Fire Protection Systems</b>			
<b>D4010 Sprinklers</b>			
Lull, laborer for cleanup by Consigli (Fire Protection)	-1 ls	31,000.00 /ls	(31,000)
Trade support - lull, laborer for cleanup (Fire Protection)	1 ls	31,000.00 /ls	31,000
General requirements (management/design, permits, as-builts, coring, fire stopping)	136,600 sf	0.50 /sf	68,300
Fire dept. inlet connection - 2-1/2" polished brass - 3 -way	1 ea	1,863.93 /ea	1,864
Fire main - sch 40 black steel piping w/ fittings - 6"	40 lf	99.13 /lf	3,965
<i>Sprinkler head - wet - recessed pendant</i>	<i>ea</i>	<i>/ea</i>	
Sprinkler head - wet - semi-recessed pendant	1,000 ea	115.00 /ea	115,000
Sprinkler head - wet - pendant or upright	150 ea	77.23 /ea	11,584
Sprinkler head - wet - sidewall	100 ea	87.51 /ea	8,751
Sprinkler head - wet - sidewall Window Sprinklers	40 ea	87.51 /ea	3,500
Sprinkler head - quick response pendant or upright	60 ea	87.23 /ea	5,234
Sprinkler branch piping black steel sch. 40 w/ fittings (avg. size)	8,000 lf	27.77 /lf	222,136
Sprinkler main piping black steel sch. 40 w/ fittings 3" Drain	150 lf	49.66 /lf	7,449
Sprinkler main piping black steel sch. 10 w/ fittings (avg. size)	4,570 lf	43.18 /lf	197,352
Sprinkler main piping black steel sch. 10 w/ fittings 4"	500 lf	39.66 /lf	19,831
Sprinkler main piping black steel sch. 10 w/ fittings 6"	110 lf	69.39 /lf	7,633

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D4010 Sprinklers</b>			
Wet alarm valve - 6"	1 ea	3,656.71 /ea	3,657
Double check valve (BFP) assembly - 6"	1 ea	8,244.56 /ea	8,245
Pressure reducing valve - 4"	1 ea	2,416.71 /ea	2,417
Butterfly valve - 4"	1 ea	1,301.71 /ea	1,302
Butterfly valve - 4"	2 ea	1,301.71 /ea	2,603
Butterfly valve - 6"	2 ea	1,566.71 /ea	3,133
Zone flow control valve- 2-1/2"	7 ea	1,868.93 /ea	13,082
Waterflow switch	9 ea	421.96 /ea	3,798
Tamper switch	12 ea	356.96 /ea	4,284
Test port/test header	1 ea	381.96 /ea	382
Water motor gong bell	1 ea	628.36 /ea	628
Sprinkler head - dry - sidewall	16 ea	92.51 /ea	1,480
<b>D4010 Sprinklers</b>	<b>136,600 sf</b>	<b>5.25 /sf</b>	<b>717,610</b>
<b>D4020 Standpipes</b>			
Standpipe - sch 40 black steel piping w/ fittings - 4"	30 lf	59.68 /lf	1,790
Standpipe - sch 40 black steel piping w/ fittings - 6"	105 lf	99.13 /lf	10,409
Drain riser - sch 40 black steel piping w/ fittings - 3"	140 lf	49.66 /lf	6,953
<b>D4020 Standpipes</b>	<b>136,600 sf</b>	<b>0.14 /sf</b>	<b>19,152</b>
<b>D4030 Fire Protection Specialties</b>			
Fire hose cabinet - stainless steel - surface	10 ea	2,519.50 /ea	25,195
<b>D4030 Fire Protection Specialties</b>	<b>136,600 sf</b>	<b>0.18 /sf</b>	<b>25,195</b>
<b>D4090 Other Fire Protection Systems</b>			
Hydraulic calculation & shop drawings	1 ls	4,000.00 /ls	4,000
Coordination & management	1 ls	16,000.00 /ls	16,000
Seismic restraints	1 sf	0.08 /sf	0
Permits & fees	1 ls	1,500.00 /ls	1,500
Off-load & distribution	136,600 sf	0.06 /sf	8,196
<b>D4090 Other Fire Protection Systems</b>	<b>136,600 sf</b>	<b>0.22 /sf</b>	<b>29,696</b>
<b>D40 Fire Protection Systems</b>	<b>136,600 sf</b>	<b>5.80 /sf</b>	<b>791,653</b>
<b>D50 Electrical Systems</b>			
<b>D5010 Gear &amp; Distribution</b>			
M.I. Cable - 4-1/c #3/0 - 200A [generator]	135 lf	126.97 /lf	17,140
Quick term kit - #3/0 4-1/c	2 ea	734.64 /ea	1,469
Brass plate (per hole)	2 ea	92.10 /ea	184
Feeder (PVC/CU) - 600A [generator]	135 lf	82.00 /lf	11,069

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5010 Gear &amp; Distribution</b>			
Furnish & install Fairplay Electronic scoreboards & shot clocks - allowance (l.s.)	1 allw	37,600.00 /allw	37,600
Gas solenoid shutdown wiring	1 allw	11,750.00 /allw	11,750
Kitchen shutdown EPO wiring	1 allw	9,400.00 /allw	9,400
Feeder (MC) - 20A (kitchen equipment - x39)	1,950 lf	5.75 /lf	11,211
Feeder (MC) - 40A (kitchen equipment - x1)	125 lf	5.87 /lf	733
1" PVC - 30A (3#8 & #10G)	250 lf	10.29 /lf	2,573
Feeder (MC) - 50A (kitchen equipment - x1)	100 lf	8.19 /lf	819
Feeder (MC) - 60A (kitchen equipment - x1)	100 lf	10.55 /lf	1,055
Power (120V) for ATC panels	8 ea	460.91 /ea	3,687
Service switch: 20A, 120V, NEMA-1 [dish washer]	1 ea	107.43 /ea	107
Fused Disco: 20AF, 240V/3P, NEMA-1 [kitchen equipment]	5 ea	310.94 /ea	1,555
Fused Disco: 20AF, 240V/1P, NEMA-1 [kitchen equipment]	1 ea	310.93 /ea	311
Fused Disco's: 600V/3P, NEMA-1 [riser diagram]	10 ea	1,462.06 /ea	14,621
Non-Fused Disco: 20A, 240V/3P, NEMA-1 [kitchen equipment]	9 ea	292.64 /ea	2,634
Wire gymnasium equipment SMC control stations (furnished by others)	8 ea	1,058.23 /ea	8,466
Wire elevator controller and elevator motor (40HP)	2 ea	821.28 /ea	1,643
Wire misc. motors	13 ea	471.74 /ea	6,133
Acid neutralizer - circuit / service switch / connection	1 ea	631.49 /ea	631
Kitchen equipment final connections (includes flexible whip)	20 ea	72.36 /ea	1,447
Mount & wire VFD's (furnished by Div. 23)	10 ea	646.55 /ea	6,465
MAU (5000cfm) - circuit / disconnect (3R) / connection	1 ea	2,503.41 /ea	2,503
RTU's - circuit / disconnect (3R) / connection (small)	4 ea	4,736.19 /ea	18,945
RTU's - circuit / disconnect (3R) / connection (large)	4 ea	7,010.29 /ea	28,041
VAV's - circuit / disconnect / connection	76 ea	374.95 /ea	28,497
Mini-split systems (indoor/outdoor) - circuits / disconnects (3R) / connections	8 ea	3,225.23 /ea	25,802
Chiller (370T) - circuit / disconnect (3R) / connection	1 ea	25,825.56 /ea	25,826
Smoke exhaust fans - circuit / disconnect / connection (100A)	4 ea	2,400.01 /ea	9,600
Kitchen exhaust fan - circuit / disconnect / connection	1 ea	1,420.90 /ea	1,421
Kiln exhaust system - circuit / disconnect / connection	1 ea	3,364.26 /ea	3,364
Dust collectors - circuit / disconnect / connection (40A)	2 ea	2,719.61 /ea	5,439
Fume hood exhaust fans - circuit / disconnect / connection	3 ea	1,214.10 /ea	3,642
Exhaust fans - circuit / disconnect / connection	4 ea	1,214.11 /ea	4,856
Power to electronic trap primers - 120V	10 ea	100.19 /ea	1,002
Power to sensor faucets / flush valves - 120V	142 ea	43.04 /ea	6,112
Hot water pumps - circuit / disconnect / connection	2 ea	1,673.87 /ea	3,348
Boilers - circuit / disconnect / connection	2 ea	1,204.71 /ea	2,409
Chilled water pump - circuit / disconnect / connection	1 ea	1,673.87 /ea	1,674

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5010 Gear &amp; Distribution</b>			
Hot water heaters - circuit / service switch / connection	4 ea	591.53 /ea	2,366
Cabinet unit heaters - circuit / service switch / connection	14 ea	868.28 /ea	12,156
Unit heaters - circuit / service switch / connection	2 ea	868.28 /ea	1,737
Elevator sump pump - circuit / disconnect (3R) / connection	1 ea	1,247.28 /ea	1,247
Duplex gas booster pumps - circuit / disconnect (3R) / connection	2 ea	1,247.28 /ea	2,495
Recirculation pumps - circuit / disconnect / connection	2 ea	997.87 /ea	1,996
Glycol feed pumps - circuit / disconnect / connection	2 ea	997.87 /ea	1,996
Boiler circulation pumps - circuit / disconnect / connection	2 ea	997.87 /ea	1,996
VAV's - circuit / disconnect / connection	155 ea	298.83 /ea	46,318
<i>Circuit breaker - 20A, 277/480V (panel)</i>	<i>BP#1</i>	<i>/BP#1</i>	
Switchboard: 3000A bus, 2500A rated MCB (100%), 480/277V, 3PH, 65kAIC	1 ea	45,417.04 /ea	45,417
Panelboard - 100A, 42-circuit	15 ea	2,550.41 /ea	38,256
Panelboard - 225A, 42-circuit	10 ea	3,420.66 /ea	34,207
Panelboard - 225A, 84-circuit	9 ea	4,338.66 /ea	39,048
Panelboard - 400A, 42-circuit	3 ea	5,435.74 /ea	16,307
Panelboard - 400A, 84-circuit	1 ea	10,724.46 /ea	10,724
Distribution panel - 600A	2 ea	9,886.92 /ea	19,774
Distribution panel - 800A	2 ea	12,443.25 /ea	24,887
Transformer: floor/wall - 45kVA, 480V:208V	2 ea	2,721.58 /ea	5,443
K-13 Transformer: floor/wall - 150kVA, 480V:208V	1 ea	9,134.64 /ea	9,135
K-13 Transformer: floor - 225kVA, 480V:208V	1 ea	11,438.39 /ea	11,438
Engineered Services - Training (Manufacturer)	1 ea	4,165.70 /ea	4,166
Engineered Services - Start-Up Assistance (Manufacturer)	1 ea	3,519.08 /ea	3,519
Empty conduit (PVC) - (2) 2.5" [future P.V.]	880 lf	35.04 /lf	30,837
Feeder (EMT/CU) - 20A [BMS to utility meter]	200 lf	7.43 /lf	1,486
Feeder (EMT/CU) - 20A [EP1A to Elevator Controller]	125 lf	7.43 /lf	929
Feeder (EMT/CU) - 60A [MSB to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 60A [2DP1A to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 60A [2DP1B to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 60A [2DP1C to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 60A [4DP1B to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 90A [MSB to KPP1A via T-5]	50 lf	15.96 /lf	798
Feeder (EMT/CU) - 100A [MSB to LP1A]	40 lf	20.74 /lf	830
Feeder (EMT/CU) - 100A [4DP1B to LP1B]	50 lf	20.74 /lf	1,037
Feeder (EMT/CU) - 100A [MSB to LP1C]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [4DP1B to LP2B]	50 lf	20.74 /lf	1,037
Feeder (EMT/CU) - 100A [MSB to LP2C]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [4DP1B to LP3B]	150 lf	20.74 /lf	3,111
Feeder (EMT/CU) - 100A [MSB to LP3C]	200 lf	20.74 /lf	4,148

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5010 Gear &amp; Distribution</b>			
Feeder (EMT/CU) - 100A [MSB to LP1D]	150 lf	20.74 /lf	3,111
Feeder (EMT/CU) - 100A [EHP1A to Elevator Controller]	125 lf	20.74 /lf	2,592
Feeder (EMT/CU) - 100A [TEP1A to TEP2B]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [TEP1A to TEP2C]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [TEP1A to TEP1D]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [TEP1A to UPS]	50 lf	20.74 /lf	1,037
Feeder (EMT/CU) - 100A [2DP1A to MP1A]	50 lf	20.74 /lf	1,037
Feeder (EMT/CU) - 125A [UPS to EP1A]	150 lf	20.99 /lf	3,149
Feeder (EMT/CU) - 150A [2DP1B to MP1B]	50 lf	26.82 /lf	1,341
Feeder (EMT/CU) - 150A [2DP1C to MSB]	200 lf	26.82 /lf	5,365
Feeder (EMT/CU) - 150A [2DP1C to MP3C]	250 lf	26.82 /lf	6,706
Feeder (EMT/CU) - 150A [2DP1B to PP2B]	60 lf	26.82 /lf	1,609
Feeder (EMT/CU) - 150A [2DP1C to PP2C]	100 lf	26.82 /lf	2,682
Feeder (EMT/CU) - 150A [2DP1B to PP1B]	50 lf	26.82 /lf	1,341
Feeder (EMT/CU) - 150A [2DP1C to MP1C]	40 lf	26.83 /lf	1,073
Feeder (EMT/CU) - 150A [2DP1C to PP2C]	125 lf	26.82 /lf	3,353
Feeder (EMT/CU) - 150A [2DP1C to PP3C]	150 lf	26.82 /lf	4,024
Feeder (EMT/CU) - 150A [4DP1C to PP3B]	165 lf	26.82 /lf	4,426
Feeder (EMT/CU) - 150A [2DP1C to PP1C]	50 lf	26.82 /lf	1,341
Feeder (EMT/CU) - 150A [2DP1A to PP1D]	100 lf	26.82 /lf	2,682
Feeder (EMT/CU) - 200A [MSB to ATS-LS]	100 lf	32.13 /lf	3,213
Feeder (EMT/CU) - 200A [ATS-LS to ELP1A]	40 lf	32.13 /lf	1,285
Feeder (EMT/CU) - 200A [2DP1A to PP1A]	50 lf	32.13 /lf	1,607
Feeder (EMT/CU) - 225A [MSB to Dimming Rack HDP]	250 lf	46.72 /lf	11,679
Feeder (EMT/CU) - 225A [2DP1A to Dimming Rack SDP]	200 lf	46.72 /lf	9,344
Feeder (EMT/CU) - 225A [ATS-OS to EHP3C]	250 lf	46.72 /lf	11,679
Feeder (EMT/CU) - 225A [MP3C to PP3C]	45 lf	46.72 /lf	2,102
Feeder (EMT/CU) - 225A [2DP1B to MP3B]	100 lf	46.72 /lf	4,672
Feeder (EMT/CU) - 400A [MSB to MHP1A]	50 lf	73.75 /lf	3,688
Feeder (EMT/CU) - 400A [MSB to MHP3C]	200 lf	73.75 /lf	14,750
Feeder (EMT/CU) - 400A [EHP1C to EHP1A]	100 lf	73.75 /lf	7,375
Feeder (EMT/CU) - 600A [ATS-OS to EHP1A]	200 lf	108.91 /lf	21,782
Feeder (EMT/CU) - 600A [MSB to ATS-OS]	75 lf	108.91 /lf	8,168
Feeder (EMT/CU) - 600A [MSB to 4DP1B]	200 lf	108.91 /lf	21,782
Feeder (EMT/CU) - 600A [MSB to 2DP1A]	70 lf	108.91 /lf	7,624
Feeder (EMT/CU) - 800A [MSB to 2DP1C]	125 lf	138.78 /lf	17,348
Feeder (EMT/CU) - 800A [MSB to 4DP1C]	200 lf	138.78 /lf	27,757
Empty conduit (EMT) - 3/4" [utility meter to switchboard]	75 lf	6.28 /lf	471
Feeder (MC) - 80A [45kVA]	60 lf	7.95 /lf	477



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5010 Gear &amp; Distribution</b>			
Feeder (MC) - 150A [45kVA]	120 lf	18.50 /lf	2,220
Feeder (MC) - 300A [150kVA]	30 lf	52.90 /lf	1,587
Feeder (MC) - 400A [225kVA]	30 lf	59.32 /lf	1,780
Feeder (MC) - 500A [150kVA]	30 lf	83.84 /lf	2,515
Feeder (MC) - 800A [225kVA]	30 lf	111.65 /lf	3,349
M.I. Cable - 4-1/c #6 [ELP1B to ELP3A]	150 lf	36.15 /lf	5,422
M.I. Cable - 4-1/c #3 [EP1A to EP3C]	150 lf	65.42 /lf	9,813
M.I. Cable - 4-1/c #3 [ELP1A to EDP]	125 lf	65.42 /lf	8,178
M.I. Cable - 4-1/c #3 [ELP1A to EP1C]	125 lf	65.42 /lf	8,178
M.I. Cable - 4-1/c #2 [EPL1A to ELP1B]	150 lf	72.60 /lf	10,890
Quick term kit - #6 4-1/c	2 ea	359.96 /ea	720
Quick term kit - #3 4-1/c	6 ea	710.21 /ea	4,261
Quick term kit - #2 4-1/c	2 ea	734.64 /ea	1,469
Brass plate (per hole)	10 ea	92.10 /ea	921
Provisions for future P.V. (conduits, breakers, disconnects, grounding & bonding)	136,600 sf	0.47 /sf	64,202
ATS-LS: 200A, 277/480V, no iso by-pass - open trans	1 ea	6,347.73 /ea	6,348
ATS-OS: 600A, 277/480V, no iso by-pass - open trans w/ (4) N.O. & (4) N.C. contacts	1 ea	12,190.86 /ea	12,191
Power junction w/feed (EMT) - 20A	1 ea	337.91 /ea	338
Empty conduit (EMT) - 3/4"	2,000 lf	5.11 /lf	10,218
<b>D5010 Gear &amp; Distribution</b>	<b>136,600 sf</b>	<b>8.10 /sf</b>	<b>1,106,708</b>
<b>D5020 Lighting &amp; Branch Wiring</b>			
Lull, laborer for cleanup by Consigli (Electrical)	-1 ls	230,000.00 /ls	(230,000)
Trade support - lull, laborer for cleanup (Electrical)	1 ls	230,000.00 /ls	230,000
On-site programming & startup (manufacturer)	1 ls	3,913.41 /ls	3,913
Single pole switch (120/277V)	9 ea	65.04 /ea	585
Key op switch (120/277V)	2 ea	72.44 /ea	145
Ceiling PIR occupancy sensor (24VDC)	314 ea	247.23 /ea	77,629
Occupancy sensor power pack (120V)	ea	/ea	
Wall dimmer switch (0-10V)	220 ea	131.04 /ea	28,828
Photocells (daylight harvesting)	82 ea	265.06 /ea	21,735
Universal dimming room controller, 1-channel	50 ea	536.88 /ea	26,844
Plug load controllers (20A/120V)	50 ea	300.80 /ea	15,040
Emergency lighting transfer (bypass relay) - non-dimming	30 ea	236.81 /ea	7,104
Astronomical time clock	1 ea	919.97 /ea	920
Time clock - 7 day digital w/ battery backup (Intermatic ET1100)	BP#1	/BP#1	
Dimming rack HDP - in Theater Equipment	-	/-	
Dimming rack SDP - in Theater Equipment	-	/-	



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5020 Lighting &amp; Branch Wiring</b>			
Rough in for Theater Lighting - Allowance	1 allw	9,400.01 /allw	9,400
Power for Theater Lighting - Allowance	1 allw	28,199.87 /allw	28,200
Sub lighting control panels	3 ea	2,394.56 /ea	7,184
Master lighting control panel	1 ea	4,383.41 /ea	4,383
Energy control unit	1 ea	2,157.58 /ea	2,158
System server unit	1 ea	1,316.75 /ea	1,317
Network Ethernet switch	1 ea	2,270.85 /ea	2,271
MC Cable (12/2) - 20A	13,950 lf	3.45 /lf	48,128
MC Cable (12/3) - 20A	5,000 lf	3.87 /lf	19,344
PVC (12/2) - 20A	BP#1	/BP#1	
EMT (12/2) - 20A	2,500 lf	6.70 /lf	16,755
RJ45 Cable, 25LF (plenum-rated)	396 ea	72.10 /ea	28,551
RJ45 Cable, 50LF (plenum rated)	220 ea	111.05 /ea	24,430
MC Cable (12/2) - 20A	10,190 lf	3.45 /lf	35,156
MC Cable (10/2) - 30A	5,900 lf	4.36 /lf	25,746
MC Cable (10/3) - 30A	1,800 lf	4.86 /lf	8,751
EMT (12/2) - 20A	3,850 lf	6.70 /lf	25,802
PVC (10/2) - 20A	400 lf	6.68 /lf	2,673
EMT (10/2) - 30A	BP#1	/BP#1	
Duplex receptacle - 20A - tamper resistant	458 ea	78.60 /ea	36,000
Duplex receptacle - 20A - switched with IO module	9 ea	67.78 /ea	610
Simplex receptacle - 20A [scoreboard control]	2 ea	70.18 /ea	140
Duplex receptacle - 20A - GFCI	153 ea	92.44 /ea	14,143
Duplex receptacle - 20A - GFCI - W.P.	23 ea	129.27 /ea	2,973
Duplex receptacle - 20A [kitchen equipment] - circuitry in Equipment Wiring]	26 ea	67.79 /ea	1,763
Duplex receptacle - 20A [A/V]	5 ea	67.79 /ea	339
Exterior pedestal receptacle, GFI type, Wayne Tyler, Inc. #CB-BOX	5 ea	1,292.26 /ea	6,461
Quadruplex receptacle - 20A	283 ea	93.78 /ea	26,541
Quadruplex receptacle - 20A - switched with IO module	8 ea	93.79 /ea	750
Specialty receptacle - 20A - L5-20R	11 ea	101.01 /ea	1,111
Specialty receptacle - 20A - L14-20R	2 ea	104.82 /ea	210
Specialty receptacle - 30A - L5-30R	16 ea	111.69 /ea	1,787
Quadruplex receptacle - 20A - GFCI	2 ea	143.12 /ea	286
Power for motorized shades - allowance (ea.)	25 allw	398.83 /allw	9,971
Floor boxes and poke-thru's - allowance (ea.)	50 allw	1,155.26 /allw	57,763
Hardwired A/C junction (MC) - 20A [A/V]	2 ea	318.93 /ea	638
Power junction w/feed (MC) - 20A [water coolers/bottle fillers]	15 ea	221.21 /ea	3,318
Power junction w/feed (MC) - 20A	20 ea	221.21 /ea	4,424
Trash compactor feed & connection	2 ea	2,243.92 /ea	4,488





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5020 Lighting &amp; Branch Wiring</b>			
Overhead door power & connection	3 ea	1,223.50 /ea	3,671
Dock leveler feed & connection	1 ea	3,532.90 /ea	3,533
Emergency power offs (EPO)	5 ea	295.11 /ea	1,476
Wiremold receptacles - G4 - allowance (ea.)	600 allw	31.05 /allw	18,630
G4000 dual-channel wiremold - 24" spacing - allowance (l.f.)	1,000 allw	63.39 /allw	63,387
Exterior junction boxes: 8"x8"x4", NEMA-3R	BP#1	/BP#1	
LB fitting	BP#1	/BP#1	
LK24: 2'x2' Lay-In Fixture	24 ea	364.96 /ea	8,759
LR2 (emerg): 2' Linear 2" aperature recessed luminaire	153 ea	217.37 /ea	33,258
LR2: 2' Linear 2" aperature recessed luminaire	565 ea	217.37 /ea	122,814
G4: Cree 4' Linear rugged low profile 360 deg adj floor type luminaire	80 ea	288.16 /ea	23,053
LS4: 4' utility fixtre with frosted acrylic diffuser	18 ea	338.16 /ea	6,087
LS4 (emerg): 4' utility fixture with frosted acrylic diffuser	11 ea	338.16 /ea	3,720
LS8: 8' utility fixtre with frosted acrylic diffuser	8 ea	479.94 /ea	3,840
LS4A (emerg): 4' utility fixtre with frosted acrylic diffuser	12 ea	479.94 /ea	5,759
LS4A: 4' utility fixtre with frosted acrylic diffuser	12 ea	479.94 /ea	5,759
LP8 (emerg): Axis 8' LED Fixture	6 ea	639.94 /ea	3,840
LS8 (emerg): 8' utility fixtre with frosted acrylic diffuser	9 ea	479.94 /ea	4,319
LS4B: 4' utility fixtre with frosted acrylic diffuser	15 ea	295.86 /ea	4,438
PC3: 6" down light fixture with dead-front gasketed trim	189 ea	378.16 /ea	71,472
LRD5 (emerg): 60" dia recessed luminaire	12 ea	1,032.90 /ea	12,395
PC1: 4" down light fixture, 0-10V dimming capable	65 ea	373.16 /ea	24,255
RC1: 6" Downlight fixture	50 ea	439.54 /ea	21,977
RC1 (emerg): 6" Downlight fixture	18 ea	439.54 /ea	7,912
LS2 (emerg): 2' utility fixture	2 ea	655.14 /ea	1,310
LSV4: 4' Linear utility fixture with prismatic polcarbonate lens	4 ea	1,037.90 /ea	4,152
RC2: 4" down light fixture, 0-10V dimming	53 ea	348.56 /ea	18,473
LR4: 4' linear 2" aperature recessed luminaire w/ frosted lens	5 ea	376.45 /ea	1,882
LWS (emerg): 4" aperature LED wall wash fixture	705 lf	202.98 /lf	143,097
LC3 - Linear cove Xeleum lighting	1,992 lf	136.99 /lf	272,879
LR4 (emerg): 4' linear 2" aperature recessed luminaire w/ frosted lens	3 ea	376.45 /ea	1,129
RSH: 6" down light fixture with dead-front gasketed trim	1 ea	519.54 /ea	520
LC2: linear cove fixture with frosted diffuser	84 lf	178.23 /lf	14,971
PC2: 6" down light fixture with dead-front gasketed trim	20 ea	378.16 /ea	7,563
SP1: LED flood light, 0-10V dimming	82 ea	602.90 /ea	49,438
UC: Vode Task lighting	18 lf	176.98 /lf	3,186
Exit Sign, Ceiling Mounted, Double Sided	36 ea	313.16 /ea	11,274
Exit Sign, Ceiling Mounted, Single Sided	16 ea	313.16 /ea	5,011

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5020 Lighting &amp; Branch Wiring</b>			
Exit Sign, Wall Mounted	18 ea	313.16 /ea	5,637
Exit Sign, Ceiling Mounted, Single Sided - Handicap	2 ea	413.16 /ea	826
Emergency battery units, dual-head (supplemental)	20 ea	343.16 /ea	6,863
MC Cable (12/2) - 20A (concealed branch)	15,090 lf	3.67 /lf	55,384
MC Cable (10/2) - 20A (concealed homeruns)	9,500 lf	4.64 /lf	44,102
EMT (12/2) - 20A (exposed branch)	4,200 lf	7.13 /lf	29,944
EMT (10/2) - 20A (exposed homeruns)	4,150 lf	8.58 /lf	35,603
SL4: LED egress / perimeter lighting fixture	20 ea	458.36 /ea	9,167
MC Cable (12/2) - 20A	600 lf	3.67 /lf	2,202
MC Cable (12/2) - 20A	600 lf	3.67 /lf	2,202
<b>D5020 Lighting &amp; Branch Wiring</b>	<b>136,600 sf</b>	<b>13.38 /sf</b>	<b>1,827,875</b>
<b>D5030 Communications &amp; Security</b>			
Externally mounted SPD's	5 ea	3,131.70 /ea	15,659
Tel/data J-hook system (plenum)	136,600 sf	0.19 /sf	25,681
Backbox (2-gang) w/ 1" EMT above ceiling	344 ea	105.98 /ea	36,458
Cable tray - 18" wide extruded aluminum	500 lf	75.55 /lf	37,774
Empty conduit (EMT) - 2"	700 lf	11.19 /lf	7,831
Copper ground bar w/isolators - 2"x1/4"	4 ea	280.03 /ea	1,120
Conduit sleeve w/ fireproofing - 4"	20 ea	201.11 /ea	4,022
Data outlet - (1) CAT-6A cable	23 ea	264.84 /ea	6,091
Data outlet - (2) CAT-6A cables	112 ea	466.16 /ea	52,210
Tel/data outlet - (3) CAT-6A cables	89 ea	652.82 /ea	58,101
Floor box tel/data outlet - (3) CAT-6A cables	2 ea	652.83 /ea	1,306
Data outlet - (4) CAT-6A cables	1 ea	839.49 /ea	839
Voice outlet - (1) CAT-6A cable (WAP's by Owner)	59 ea	263.70 /ea	15,558
Wireless access point - (1) CAT-6A cable (WAP's by Owner)	150 ea	263.70 /ea	39,555
TVE - Video outlet	58 ea	838.75 /ea	48,647
TVC - Video outlet	2 ea	838.77 /ea	1,678
Double gang. two jbox, with (4) 1" C	55 ea	482.68 /ea	26,548
FO - 12 strand SM	BP#1	/BP#1	
FO - 12 strand SM	1,500 lf	5.27 /lf	7,907
FO - 12 strand SM	250 lf	5.27 /lf	1,318
FO - 12 strand MM	1,500 lf	7.10 /lf	10,642
4-Post Full Height Rack	10 ea	1,170.17 /ea	11,702
Vertical cable wire manager	20 ea	314.09 /ea	6,282
Horizontal cable wire manager	10 ea	80.25 /ea	803
Copper patch panel - 96 port	15 ea	1,244.28 /ea	18,664
Fiber optic patch panel - 24 port	6 ea	570.06 /ea	3,420

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5030 Communications &amp; Security</b>			
Fiber enclosure (rack mtd.)	6 ea	485.85 /ea	2,915
Network switch - 24 port	2 ea	5,390.24 /ea	10,780
S1: wall mounted loudspeaker - 1 gang metal box w/ cover	3 ea	228.33 /ea	685
S2: ceiling loud speaker - custom backbox	120 ea	308.23 /ea	36,987
S3: ceiling loud speaker - custom backbox	16 ea	308.23 /ea	4,932
S4: ceiling loud speaker - 4" SQ metal box w/ cover	2 ea	251.94 /ea	504
S5: Wall loud speaker - 1-gang deep metal box w/ cover	8 ea	245.27 /ea	1,962
D1: display back box, Chief PAC-526	54 ea	371.35 /ea	20,053
F1: floor box, FSR FL-500P-6 floor box w/ finished cover	1 ea	469.58 /ea	470
V1: wall mounted video projector - 1 gang metal box w/ cover	1 ea	179.47 /ea	179
VP: ceiling mounted video projector, FSR CB-22P	1 ea	1,150.28 /ea	1,150
R1: receptacle panel - 2 gang metal box w/ cover	44 ea	242.43 /ea	10,667
R2: receptacle panel - 2 gang metal box w/ cover	2 ea	242.43 /ea	485
R3: receptacle panel - 2 gang metal box w/ cover	4 ea	242.43 /ea	970
R4: receptacle panel - 08"x08"x4" NEMA-1 enclosure w/ oversized flush	1 ea	377.74 /ea	378
R5: receptacle panel - 2 gang metal box w/ cover	2 ea	242.43 /ea	485
R6: receptacle panel - 12"x12"x4" NEMA-1 enclosure w/ oversized flush	2 ea	405.94 /ea	812
BP: wall mounted button panel - 1 gang metal box w/ cover	44 ea	221.77 /ea	9,758
J1: junction box - type 1 - 12"x12"x4" NEMA-1 enclosure w/ oversized flush	2 ea	723.57 /ea	1,447
J2: junction box - type 2 - 18"x18"x4" NEMA-1 enclosure w/ oversized flush	1 ea	844.78 /ea	845
A1: Wall mounted antenna - 1 gang deep metal box w/ cover	4 ea	159.74 /ea	639
A2: Wall mounted antenna - 1 gang deep metal box w/ cover	2 ea	159.74 /ea	319
A3: Ceiling mounted antenna - 4" SQ metal box w/ cover	2 ea	138.32 /ea	277
A4: Ceiling mounted antenna - 4" SQ metal box w/ cover	1 ea	138.31 /ea	138
PS: Production communication speaker station - 4 gang deep metal box w/ cov	5 ea	385.28 /ea	1,926
PC: Production communication - 1 gang deep metal box w/ cover	1 ea	134.38 /ea	134
T1: Wall mounted touch panel - 3 gang metal box w/ cover	2 ea	249.04 /ea	498
VC: Wall mounted audio volume control - 1 gang deep metal box	2 ea	134.39 /ea	269
MC: Motor controller - 4" SQ metal box w/ cover	2 ea	86.46 /ea	173
C1: Wall mounted camera - 2 gang deep metal box w/ cover	1 ea	193.57 /ea	194
A/V Equipment Rack	2 ea	1,001.85 /ea	2,004
M1: Ceiling mounted microphone - 1 gang deep metal box w/ cover	1 ea	134.38 /ea	134
Mass notification - allowance (l.s.)	1 allw	17,860.00 /allw	17,860
Intercom sub-stations	4 ea	1,009.28 /ea	4,037
Intercom master-stations	2 ea	3,327.13 /ea	6,654

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5030 Communications &amp; Security</b>			
Speaker - ceiling mouted	268 ea	433.46 /ea	116,166
Speaker - wall mounted	20 ea	954.85 /ea	19,097
Volume control	27 ea	143.41 /ea	3,872
Power supply (80) units - speakers 24V DC	4 ea	2,661.71 /ea	10,647
PA console	1 ea	14,251.90 /ea	14,252
PA equipment power connection - 120V	1 ea	256.53 /ea	257
AM/FM/CD/DVD tuner	1 ea	694.40 /ea	694
Speaker system testing	1 ea	1,986.71 /ea	1,987
Two way communication call box (recessed)	20 ea	799.75 /ea	15,995
Power supply w/battery back up	1 ea	1,714.28 /ea	1,714
Two way communication base station (28 zone)	1 ea	5,980.66 /ea	5,981
Tel/data outlet - (1) CAT-6A cable	20 ea	264.84 /ea	5,297
Tel/data outlet - (2) CAT-6A cables	1 ea	466.16 /ea	466
System testing	1 ea	1,016.70 /ea	1,017
Clock, wall mounted - 12" round	85 ea	350.96 /ea	29,831
Master clock w/ roof mounted antenna	1 ea	3,778.57 /ea	3,779
Wireless clock repeater	1 ea	647.06 /ea	647
Wireless clock transciever	1 ea	647.06 /ea	647
Program unit	1 ea	991.96 /ea	992
Speaker baffle, clock back box	74 ea	202.78 /ea	15,006
Wire guard	20 ea	57.70 /ea	1,154
Clock wiring (EMT)	700 lf	7.03 /lf	4,923
Clock wiring (RS-485 plenum)	500 lf	3.08 /lf	1,540
System testing	1 ls	33.83 /ls	34
Card readers	17 ea	1,686.94 /ea	28,678
Card readers - W.P.	2 ea	2,368.57 /ea	4,737
Electro-magnetic lock	4 ea	657.91 /ea	2,632
Request to exit motion sensor	22 ea	322.33 /ea	7,091
Electric strike	36 ea	400.49 /ea	14,418
Thermal disconnecting means	18 ea	427.58 /ea	7,696
24V power supply	18 ea	295.11 /ea	5,312
Junction box - 6"x6"x4"	18 ea	130.61 /ea	2,351
Power transfer hinge	18 ea	377.68 /ea	6,798
Intrusion digital keypads	3 ea	984.97 /ea	2,955
Dual tech motion detectors	77 ea	595.80 /ea	45,876
Door contacts	57 ea	465.74 /ea	26,547
Access control panel	1 ea	8,222.56 /ea	8,223
Tie in to lighting control system	1 ea	402.23 /ea	402
Security wiring - cable	6,750 lf	3.80 /lf	25,674



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5030 Communications &amp; Security</b>			
Security wiring (EMT)	1,800 lf	8.53 /lf	15,345
Power junctions - 120V/20A	2 ea	193.20 /ea	386
Connect to CCTV system	1 ea	665.43 /ea	665
Proximity cards	250 ea	2.35 /ea	588
Software / licenses, programming, testing, startup (manufacturer)	1 ea	13,308.52 /ea	13,309
CCTV color monitors	2 ea	815.52 /ea	1,631
360-degree multi-sensor interior cameras	29 ea	1,659.85 /ea	48,136
Dome I.P. camera - exterior - fixed	16 ea	1,996.28 /ea	31,940
Dome I.P. camera - interior - fixed	29 ea	1,471.85 /ea	42,684
Camera monitoring station	1 ea	1,330.85 /ea	1,331
Video recorders	2 ea	3,131.71 /ea	6,263
Video switchers	2 ea	1,627.71 /ea	3,255
Camera wiring (EMT)	1,920 lf	8.76 /lf	16,819
Camera wiring - cable	6,960 lf	4.04 /lf	28,109
Power junction - 120V/20A	2 ea	193.20 /ea	386
Software / licenses, programming, testing, startup (manufacturer)	1 ea	13,308.52 /ea	13,309
<i>Temporary fire alarm heat detection coverage / stairwell pull stations / temp notification - N/A</i>	-	-	
Fire alarm impairment plan (NFPA-101)	1 ls	9,400.00 /ls	9,400
Elevator fire alarm interfacing	1 ls	4,700.00 /ls	4,700
Manual pull stations	21 ea	202.12 /ea	4,245
Smoke detectors	64 ea	220.39 /ea	14,105
Smoke detector w/ elevator recall	3 ea	373.26 /ea	1,120
Smoke detectors (for Atrium)	89 ea	220.39 /ea	19,615
Smoke detectors w/ elevator recall (for Atrium)	3 ea	373.25 /ea	1,120
Carbon monoxide detector (w/ monitor module)	5 ea	367.16 /ea	1,836
Heat detector	10 ea	215.28 /ea	2,153
Beam detector (receiver & transmitter)	5 ea	416.88 /ea	2,084
Duct smoke detector (furnish & wire)	40 ea	838.91 /ea	33,556
Remote test switch w/ indicating light	40 ea	194.88 /ea	7,795
Control modules	20 ea	265.75 /ea	5,315
Addressable monitor modules	30 ea	160.83 /ea	4,825
Tamper switch connection (via monitor module)	10 ea	560.06 /ea	5,601
Flow switch connection (via monitor module)	10 ea	403.67 /ea	4,037
Flow switch connection (via monitor module) - for eye wash stations	7 ea	403.66 /ea	2,826
Door hold device (magnetic)	5 ea	388.88 /ea	1,944
Wire motorized dampers (120V)	14 ea	407.48 /ea	5,705
Wire combination fire/smoke damper (120V & SLC)	20 ea	608.50 /ea	12,170
Strobe only	41 ea	175.36 /ea	7,190

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5030 Communications &amp; Security</b>			
Speaker/strobes	203 ea	246.56 /ea	50,051
Speaker/strobe - W.P.	1 ea	309.72 /ea	310
Exterior beacon (weatherproof)	1 ea	388.83 /ea	389
Wire 120V sprinkler bell	1 ea	207.67 /ea	208
Fire alarm transponder panels	6 ea	928.51 /ea	5,571
Fire alarm annunciators w/ microphones	3 ea	2,107.39 /ea	6,322
FACP w/ 60-minute battery backup (Notifier NFS640)	1 ea	6,999.66 /ea	7,000
Masterbox (local energy)	1 ea	4,212.70 /ea	4,213
Key (Knox) box	1 ea	806.43 /ea	806
Smoke control panel	1 ea	19,502.56 /ea	19,503
Generator monitoring control panel	1 ea	571.80 /ea	572
Fire pump/jockey pump connection	1 ea	402.23 /ea	402
Fire alarm graphic maps	3 ea	1,454.56 /ea	4,364
Fire alarm comissioning	1 ea	5,459.52 /ea	5,460
Fire alarm testing (manufacturer)	6 ea	1,338.28 /ea	8,030
Fire alarm system programming	1 ls	10,562.78 /ls	10,563
MC Cable (FA) - #14-4/c (concealed)	lf	/lf	
FPLP cable (red) - #14-4/c	15,350 lf	2.23 /lf	34,231
MC Cable (FA) - #16-2/c (concealed)	lf	/lf	
FPLP cable (red) - #16-2/c	9,900 lf	1.83 /lf	18,117
EMT (red) - 3/4"C w/ #16-2/c (exposed)	3,500 lf	7.19 /lf	25,173
EMT (red) - 3/4"C w/ #14-4/c (exposed)	1,500 lf	7.95 /lf	11,918
Circuit integrity cabling (CIC)	1,500 lf	18.31 /lf	27,465
BDA system - parts & smarts (dual-frequency)	136,600 sf	0.47 /sf	64,202
BDA system - installation & minor material (dual-frequency)	136,600 sf	0.19 /sf	25,681
Directional couplers	20 ea	1,150.35 /ea	23,007
In-Line connectors	20 ea	249.01 /ea	4,980
Lightning protection units	5 ea	1,995.53 /ea	9,978
<b>D5030 Communications &amp; Security</b>	<b>136,600 sf</b>	<b>12.96 /sf</b>	<b>1,770,926</b>
<b>D5090 Other Electrical Systems</b>			
General requirements	BP#1	/BP#1	
LEED Silver - premium (T.B.D.)	1 ls	9,400.00 /ls	9,400
Temp light stringers & GFCI power	136,600 sf	0.38 /sf	51,362
Temp 480Y/277V electrical service (400A)	3 ea	18,226.22 /ea	54,679
Material handling / project mgmt.	250 mh	97.71 /mh	24,428
3D/BIM coordination	500 mh	97.71 /mh	48,856
Permit fee - N.I.C.	ls	/ls	
Record drawings / as-builts	1 ea	5,318.52 /ea	5,319
Seismic & testing (panels, generator, lighting control, fire alarm)	1 ls	18,800.00 /ls	18,800

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5090 Other Electrical Systems</b>			
Coring - patching - firestopping	136,600 sf	0.09 /sf	12,840
Project phasing (re-mobilization)	1 ls	9,400.00 /ls	9,400
Hoisting & rigging (generator & switchboard)	2 ls	7,050.00 /ls	14,100
Building grounding & bonding	136,600 sf	0.11 /sf	15,408
Dry-type transformer grounding	4 ea	213.22 /ea	853
SPD grounding	43 ea	120.29 /ea	5,172
Copper ground bar - 2"x1/4" (ea.)	5 ea	280.03 /ea	1,400
Natural gas generator: 300kW / 312.5kVA	1 ea	115,266.09 /ea	115,266
Generator testing & start-up	1 ea	1,863.20 /ea	1,863
Generator setting & rigging	1 ea	7,286.90 /ea	7,287
Generator annunciator panel	1 ea	1,447.40 /ea	1,447
Battery charger circuit (4#10 & 1#10G in 1"C)	140 lf	20.94 /lf	2,932
Jacket heater circuit	140 lf	34.49 /lf	4,828
Oil heater circuit	140 lf	53.66 /lf	7,512
Exterior W.P. sound attenuating enclosure	1 ea	16,598.75 /ea	16,599
Remote status panel circuit	140 lf	9.64 /lf	1,349
Starting circuits - 2#14 MI cable	140 lf	12.76 /lf	1,787
Remote annunciator panel - 16#14 (EMT)	100 lf	15.81 /lf	1,581
Quick connect switch, ESL Storm Switch 3020	1 ea	3,668.10 /ea	3,668
UPS: 480-208/120V, 24kW (static ts, manual by-pass, 8min batt.BU)	1 ea	36,417.67 /ea	36,418
Lightning prevention system subcontractor	1 ls	30,000.00 /ls	30,000
<b>D5090 Other Electrical Systems</b>	<b>136,600 sf</b>	<b>3.69 /sf</b>	<b>504,555</b>
<b>D50 Electrical Systems</b>	<b>136,600 sf</b>	<b>38.14 /sf</b>	<b>5,210,064</b>
<b>D Services</b>	<b>136,600 sf</b>	<b>119.95 /sf</b>	<b>16,385,620</b>

## E Equipment & Furnishings

### E10 Equipment

#### E1020 Institutional Equipment

Loading dock equipment	1 ea	1,000.00 /ea	1,000
Misc. appliances	1 ls	10,000.00 /ls	10,000
Food service equipment - Allowance	1 ls	415,270.00 /ls	415,270
Vocational shop equipment - Allowance	1 ls	25,000.00 /ls	25,000
- Welding booths - In Above	-	-	
- Portable welding fumes extractor - In Above	-	-	
- Paint spray hoods - In Above	-	-	
- Portable wood working equipment dust collector - In HVAC	-	-	
Kiln	1 ls	12,000.00 /ls	12,000
Sound systems @ Auditorium - Allowance	1 allw	200,000.00 /allw	200,000
Sound systems @ Gym - Allowance	1 allw	120,000.00 /allw	120,000

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>E1020 Institutional Equipment</b>			
Sound systems @ Cafeteria - Allowance	1 allw	50,000.00 /allw	50,000
Sound systems @ Band/Chorus - Allowance	2 allw	30,000.00 /allw	60,000
Sound systems @ Drama - Allowance	1 allw	20,000.00 /allw	20,000
Projection screen @ Gym, Cafeteria	2 ea	10,000.00 /ea	20,000
Projection screen	1 ea	5,000.00 /ea	5,000
<i>Orchestra enclosures - FFE</i>	-	-	
Theatrical rigging - Allowance	1 ls	158,300.00 /ls	158,300
Theatrical draperies - Allowance	1 ls	33,854.00 /ls	33,854
Theatrical lighting instruments & accessories - Allowance	1 ls	129,018.00 /ls	129,018
Theatrical lighting controls - Allowance	1 ls	95,749.00 /ls	95,749
Basketball backstop - ceiling-hung	6 ea	6,500.00 /ea	39,000
Gym divider curtain - electric roll up	1,215 sf	20.00 /sf	24,300
Gym wall mats	835 sf	12.50 /sf	10,438
Volleyball system	1 ls	5,000.00 /ls	5,000
Fixed audience seating	406 ea	285.00 /ea	115,710
Retractable Bleachers at Gym	650 seat	155.00 /seat	100,750
<b>E1020 Institutional Equipment</b>	<b>136,600 sf</b>	<b>12.08 /sf</b>	<b>1,650,389</b>
<b>E1090 Other Equipment</b>			
Refrigerator	6 ea	1,200.00 /ea	7,200
<i>Ice maker - None shown</i>	-	-	
<i>Undercounter refrigerator - None shown</i>	-	-	
Microwave oven	1 ea	450.00 /ea	450
Range hood	1 ea	650.00 /ea	650
Range	1 ea	900.00 /ea	900
Dishwasher	4 ea	925.00 /ea	3,700
Washer/dryer - stackable	2 ea	1,500.00 /ea	3,000
Scoreboards - basketball	1 ea	7,500.00 /ea	7,500
<b>E1090 Other Equipment</b>	<b>136,600 sf</b>	<b>0.17 /sf</b>	<b>23,400</b>
<b>E10 Equipment</b>	<b>136,600 sf</b>	<b>12.25 /sf</b>	<b>1,673,789</b>
<b>E20 Furnishings</b>			
<b>E2010 Fixed Furnishings</b>			
Hardwood trim @ locker guardrail per A650	3,300 lf	15.00 /lf	49,500
P-lam top panels @ locker guardrail per A650	1,005 lf	50.00 /lf	50,250
P-lam side panels @ locker guardrail per A650	450 lf	50.00 /lf	22,500
Casework for lockers (bank of 5) - including base	1,005 lf	250.00 /lf	251,250
P-lam base cabinet w/top	40 lf	450.00 /lf	18,000
P-lam workstation w/top	786 lf	250.00 /lf	196,500



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>E2010 Fixed Furnishings</b>			
Mobile storage	183 ea	550.00 /ea	100,650
P-lam valance at fin tube - VM-M02	650 lf	45.00 /lf	29,250
P-lam 3/4" lip at counter - VM-M02	650 lf	4.00 /lf	2,600
P-lam wall cabinet	45 lf	325.00 /lf	14,625
P-lam full height cabinet	50 lf	700.00 /lf	35,000
Bathroom vanity w/top	265 lf	250.00 /lf	66,250
Reception cabinet	20 lf	1,000.00 /lf	20,000
P-lam circulation desk	10 lf	750.00 /lf	7,500
P-lam work counter @ Admin	10 lf	1,500.00 /lf	15,000
P-lam counter @ Servery	32 lf	200.00 /lf	6,400
P-lam end/filler panels @ Admin	10 lf	135.00 /lf	1,350
Mailboxes	18 lf	415.00 /lf	7,470
Storage shelving	400 lf	150.00 /lf	60,000
Storage shelving w/custom 3d GFRG relief - VM-I19 (MDF ilo custom GFRG)	lf	/lf	
Storage shelving w/ MDF	495 lf	200.00 /lf	99,000
P-lam bookcases	50 lf	500.00 /lf	25,000
Built-in benches	205 lf	600.00 /lf	123,000
Display cases	5 ea	4,500.00 /ea	22,500
Misc. casework - Allowance	136,600 sf	1.00 /sf	136,600
Folding screen	ea	/ea	
Misc. lab equipment - Allowance	1 ls	25,000.00 /ls	25,000
Fume hoods	3 ea	11,000.00 /ea	33,000
Roller shades	12,553 sf	10.00 /sf	125,530
Roller shades - interior	3,300 sf	10.00 /sf	33,000
Roller shades - doors	50 ea	150.00 /ea	7,500
Base cabinet w/epoxy top	30 lf	600.00 /lf	18,000
Epoxy countertop - open below	325 lf	375.00 /lf	121,875
Epoxy backsplash	635 lf	60.00 /lf	38,100
Wall cabinets	125 lf	400.00 /lf	50,000
<b>E2010 Fixed Furnishings</b>	<b>136,600 sf</b>	<b>13.27 /sf</b>	<b>1,812,200</b>
<b>E20 Furnishings</b>	<b>136,600 sf</b>	<b>13.27 /sf</b>	<b>1,812,200</b>
<b>E Equipment &amp; Furnishings</b>	<b>136,600 sf</b>	<b>25.52 /sf</b>	<b>3,485,989</b>

**F Special Construction & Demolition**

**F20 Demolition**

**F2010 Building Elements Demolition**

Building demolition	195,400 sf	6.50 /sf	1,270,100
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Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>F2010 Building Elements Demolition</b>	<b>194,500 sf</b>	<b>6.53 /sf</b>	<b>1,270,100</b>
<b>F2020 Hazardous Component Abatement</b>			
Asbestos abatement	195,400 sf	8.20 /sf	1,602,280
<b>F2020 Hazardous Component Abatement</b>	<b>194,500 sf</b>	<b>8.24 /sf</b>	<b>1,602,280</b>
<b>F20 Demolition</b>	<b>194,500 sf</b>	<b>14.77 /sf</b>	<b>2,872,380</b>
<b>F Special Construction &amp; Demolition</b>	<b>194,500 sf</b>	<b>14.77 /sf</b>	<b>2,872,380</b>

## G Sitework

### G10 Site Preparation

#### G1010 Site Clearing

Mobilizations	BP#1	/BP#1
Survey/layout	BP#1	/BP#1
Police details	BP#1	/BP#1
Precast Concrete Jersey Barriers for Temp. Parking Lot	BP#1	/BP#1
Temporary site signage	BP#1	/BP#1
As-built plan preparation	BP#1	/BP#1
Localized dewatering	BP#1	/BP#1
Clear & grub, vegetation removal	BP#1	/BP#1
Strip & stockpile topsoil/loam	BP#1	/BP#1
Construct Phase 2 Temp. Sediment Basins	BP#1	/BP#1
SWPPP (Prep of SWPPP by civil engineer) - Allowance	BP#1	/BP#1
12"diameter Straw Wattles	BP#1	/BP#1
Silt sacks at catch basin	BP#1	/BP#1
Construction entrance	BP#1	/BP#1
Street sweeping	BP#1	/BP#1
Inspect / repair silt barrier weekly	BP#1	/BP#1
Remove erosion control measure at project completion	BP#1	/BP#1
Asphalt paving - Temp. Parking Layout	BP#1	/BP#1
Temporary roads and maintenance required during construction	BP#1	/BP#1

#### G1020 Site Demolition & Relocations

Demo hydrants	BP#1	/BP#1
Demo bituminous concrete paving	BP#1	/BP#1
Demo bituminous walk	BP#1	/BP#1
Demo Temporary Bituminous Parking & Access Pavement	BP#1	/BP#1
Demo concrete sidewalks/pads/ramps	BP#1	/BP#1
Demo curbing	BP#1	/BP#1
Cut & cap site utilities - water	BP#1	/BP#1
Cut & cap site utilities - sewer	BP#1	/BP#1
Demo utility piping - water	BP#1	/BP#1

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G1020 Site Demolition &amp; Relocations</b>			
Demo utility piping - sewer	BP#1	/BP#1	
Demo utility piping - electrical	BP#1	/BP#1	
Demo utility piping - drain	BP#1	/BP#1	
Demo utility piping - gas	BP#1	/BP#1	
Demo drain structures	BP#1	/BP#1	
Demo grease trap	BP#1	/BP#1	
Demo fencing/guardrail	BP#1	/BP#1	
Misc. site demolition	BP#1	/BP#1	
Demo utility poles	BP#1	/BP#1	
Flag pole	1 ea	9,000.00 /ea	9,000
<b>G1020 Site Demolition &amp; Relocations</b>	<b>136,600 sf</b>	<b>0.07 /sf</b>	<b>9,000</b>
<b>G1030 Site Earthwork</b>			
Preconstruction survey and vibration monitoring & compliance - Allowance	BP#1	/BP#1	
Rough grading	BP#1	/BP#1	
Fine grading - building SOG	BP#1	/BP#1	
Fine grading - paving	BP#1	/BP#1	
Fine grading - conc walks & site pads	BP#1	/BP#1	
Fine grading - bituminous walks	BP#1	/BP#1	
Cut to subgrade @ site	BP#1	/BP#1	
Fill to subgrade from cut @ site	BP#1	/BP#1	
Grind foundations for fill - In Demolition	-	/-	
Fill to subgrade @ site - import	BP#1	/BP#1	
Site cuts to stockpile for temporary parking & access layout	BP#1	/BP#1	
Site surcharge	BP#1	/BP#1	
Contaminated soil removal - unlined landfill	BP#1	/BP#1	
Rock removal - NIC	-	/-	
Import loam & spread (6") at Lawns, Athletic Fields & Native Meadows	5,594 cy	40.00 /cy	223,760
Ammend & spread (6") at Lawns, Athletic Fields & Native Meadows	6,000 cy	12.00 /cy	72,000
Import loam & spread (6") at Detention Basins	943 cy	40.00 /cy	37,720
Import loam & spread (12") at Plant Beds	404 cy	40.00 /cy	16,160
Landscape Metal Edging at Building Mow Strip	2,300 lf	15.00 /lf	34,500
Building Mowing Strip- (Peastone)	100 tn	50.00 /tn	5,000
Import loam & spread (6") at Sodded Amphitheater Lawns	564 cy	40.00 /cy	22,560
<b>G1030 Site Earthwork</b>	<b>136,600 sf</b>	<b>3.01 /sf</b>	<b>411,700</b>
<b>G10 Site Preparation</b>	<b>136,600 sf</b>	<b>3.08 /sf</b>	<b>420,700</b>

**G20 Site Improvements**

**G2010 Roadways**

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G2010 Roadways</b>			
Street plates for protection	BP#1	/BP#1	
<b>G2020 Parking Lots</b>			
Gravel base course @ asphalt pavements	BP#1	/BP#1	
Gravel base course @ Raised Stamped asphalt pavement at Flagg Drive	BP#1	/BP#1	
1 1/2" crushed stone base course - concrete walks & site pads	BP#1	/BP#1	
Asphalt paving - (Parking Lots & Site Drives)	BP#1	/BP#1	
Asphalt paving - top course @ temporary to permanent	BP#1	/BP#1	
Precast concrete curbs	BP#1	/BP#1	
Vertical granite curbs	BP#1	/BP#1	
Handicapped ramps at curbing	BP#1	/BP#1	
Detectable Warning Plates at Handicapped Ramps	BP#1	/BP#1	
Speed bumps - bituminous	BP#1	/BP#1	
Pavement markings	BP#1	/BP#1	
Parking signage	BP#1	/BP#1	
<b>G2030 Pedestrian Paving</b>			
Processed Aggregate base course - bituminous walks	BP#1	/BP#1	
Concrete pavement	21,595 sf	9.00 /sf	194,355
Steps - premium	530 sf	10.00 /sf	5,300
Dumpster pad	355 sf	30.00 /sf	10,650
Concrete pavement with sawcut joints- ilo pavers - VM-L05/06	2,340 sf	11.00 /sf	25,740
Stamped pavement at Flagg Drive	BP#1	/BP#1	
Pavers - plaza paving	260 sf	25.00 /sf	6,500
Bituminous sidewalks	BP#1	/BP#1	
<b>G2030 Pedestrian Paving</b>	<b>136,600 sf</b>	<b>1.78 /sf</b>	<b>242,545</b>
<b>G2040 Site Development</b>			
Retaining footing	22 cy	920.53 /cy	20,252
Retaining wall	42 cy	1,100.00 /cy	46,200
Concrete bench/seat wall	6 cy	600.00 /cy	3,600
Steel @ Bandshell - AESS	6 ton	5,800.00 /ton	37,120
Guardrails - exterior, colorgalv	260 lf	325.00 /lf	84,500
Phenolic bench per A102A	1 ea	4,200.00 /ea	4,200
Wood @ site benches	40 lf	60.00 /lf	2,400
Glass @ Bandshell - 9/16" tempered, laminated	535 sf	125.00 /sf	66,875
Glass @ canopy - tempered	150 sf	150.00 /sf	22,500
Paint Bandshell	1 ls	10,000.00 /ls	10,000
Exterior signage - BP#1	ls	/ls	
Bicycle Racks	20 ea	785.00 /ea	15,700



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G2040 Site Development</b>			
Basketball Poles & Hoops	2 ea	3,000.00 /ea	6,000
Miscellaneous site furnishings - Allowance	1 ls	30,000.00 /ls	30,000
Gravel base course - misc site amenities- (i.e.- curbing, swales,etc.)	BP#1	/BP#1	
Basketball Court Pavement- (3 1/2" Total Paving w/ Gravel Base) - BP#1	sf	/sf	
Basketball Court Pavement Markings	1 ls	2,000.00 /ls	2,000
Fencing - Allowance - not required	ls	/ls	
24' wide Single Arm Gate	1 ea	3,500.00 /ea	3,500
Wooden Guardrailing - BP#1	lf	/lf	
Bollards - 6" steel w/concrete - BP#1	ea	/ea	
Bollards - architectural	103 ea	2,400.00 /ea	247,200
Bollards - architectural - VM-C01	ea	/ea	
Segmental retaining wall	2,600 sf	50.00 /sf	130,000
<b>G2040 Site Development</b>	<b>136,600 sf</b>	<b>5.36 /sf</b>	<b>732,047</b>
<b>G2050 Landscaping</b>			
Landscaping maintenance	1 yr	8,000.00 /yr	8,000
Irrigation system @ south sports field - by others	sf	/sf	
Irrigation @ amphitheater	23,435 sf	2.00 /sf	46,870
Irrigation system @ north sports field	81,000 sf	2.00 /sf	162,000
Mulch at trees and planting beds (3")	250 cy	105.00 /cy	26,250
Fine grade & hydroseed lawn areas	126,492 sf	0.30 /sf	37,948
Fine grade & seed (Native Wildflower Meadow)	98,182 sf	0.25 /sf	24,546
Fine grade & seed (Detention Basin Mix- Hydroseed)	39,153 sf	0.25 /sf	9,788
Fine grade & seed (Natural Turf Fields)	237,269 sf	0.25 /sf	59,317
Sod (100'x170')	17,000 sf	1.50 /sf	25,500
Sod northeast - phase 3 play area	5,000 sf	1.50 /sf	7,500
Sod (Amphitheater Lawns)	23,434 sf	1.50 /sf	35,151
Watering for sod areas	1 ls	7,500.00 /ls	7,500
Trees	123 ea	750.00 /ea	92,250
Shrubs (518 Total)	8,383 sf	8.50 /sf	71,256
Groundcover/perennials	2,372 ea	20.00 /ea	47,440
Rain garden	8,275 sf	10.00 /sf	82,750
<b>G2050 Landscaping</b>	<b>136,600 sf</b>	<b>5.45 /sf</b>	<b>744,065</b>
<b>G20 Site Improvements</b>	<b>136,600 sf</b>	<b>12.58 /sf</b>	<b>1,718,657</b>

**G30 Site Civil/Mechanical Utilites**

**G3010 Water Supply**

Fire hydrants	BP#1	/BP#1	
Fire hydrant - relocate existing	BP#1	/BP#1	

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G3010 Water Supply</b>			
Gate valves, tees, bends, thrust blocks, restraints	BP#1	/BP#1	
Water distribution connections to existing	BP#1	/BP#1	
Water line - domestic	BP#1	/BP#1	
Water line - hydrant & fire services	BP#1	/BP#1	
Pressure test & chlorinate	BP#1	/BP#1	
<b>G3020 Sanitary Sewer</b>			
Sanitary sewer piping	BP#1	/BP#1	
Sanitary sewer manholes	BP#1	/BP#1	
Connect to existing structures	BP#1	/BP#1	
Utility and sewer tie-in at trailer	BP#1	/BP#1	
Sanitary sewer testing - piping	BP#1	/BP#1	
Video inspect incoming sewer, etc. - Allowance	BP#1	/BP#1	
Sanitary sewer testing - structures	BP#1	/BP#1	
Grease interceptor - In Plumbing	-	/-	
Acid Neutralization - In Plumbing	-	/-	
<b>G3030 Storm Drainage</b>			
Catch basins	BP#1	/BP#1	
Granite Curb Inlets	BP#1	/BP#1	
Storm drainage manholes	BP#1	/BP#1	
Outlet control structures	BP#1	/BP#1	
Storm headwalls	BP#1	/BP#1	
Stormceptors	BP#1	/BP#1	
Storm drainage piping	BP#1	/BP#1	
Rip Rap Splash Pads	BP#1	/BP#1	
Weir Overflows	BP#1	/BP#1	
Check dams	BP#1	/BP#1	
Foundation drainage piping	BP#1	/BP#1	
Infiltration system	BP#1	/BP#1	
<b>G3060 Fuel Distribution</b>			
Excavation / backfill for gas line	BP#1	/BP#1	
<b>G40 Site Electrical Utilities</b>			
<b>G4010 Electrical Distribution</b>			
Temp power for welders	2 ea	2,398.27 /ea	4,797
Temp power for trailers	4 ea	1,302.42 /ea	5,210
Temp internet connection for trailers	4 ea	1,854.17 /ea	7,417
Feeder (PVC/CU) - 2500A [secondary]	105 lf	414.00 /lf	43,470
Empty conduit - sch 40 PVC - 4" - 1 way [generator]	135 lf	9.27 /lf	1,251



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G4010 Electrical Distribution</b>			
Empty conduit - sch 40 PVC - 4" - 1 way [secondary / spare]	105 lf	9.27 /lf	973
Empty conduit - sch 40 PVC - 4" - 2 way [primary]	250 lf	16.60 /lf	4,150
Magnetic warning tape - 1/8"	875 lf	4.37 /lf	3,826
Pole riser (GRC - 4"C)	2 ea	2,343.85 /ea	4,688
Electric manhole - 6'x12x7'	1 ea	6,773.56 /ea	6,774
Cast iron manhole frame/cover, 32"D x 6'H grade rings	1 ea	1,140.93 /ea	1,141
17"x30"x12"D ground pullbox (Quazite #PC1730BA12 w/ cover)	BP#1	/BP#1	
17"x30"x12"D ground pullbox (Quazite #PC1730BA12 w/ cover)	11 ea	1,078.60 /ea	11,865
Hand hole & cover - 4'x4'x4'	3 ea	1,937.11 /ea	5,811
Manhole / racking grounding & bonding	1 ea	701.05 /ea	701
Exterior (utility) transformer grounding & bonding	1 ea	1,066.05 /ea	1,066
Generator grounding & bonding	1 ea	1,066.05 /ea	1,066
Bare copper wire - #4/0 [duct bank]	875 lf	4.99 /lf	4,368
Elec Vehicle Charging Station / dual pedestal / cable mgmt.	3 ea	10,512.40 /ea	31,537
Utility meter socket (meter by Util. Co.)	1 ea	289.66 /ea	290
CT meter enclosure for switchboard	1 ea	1,462.26 /ea	1,462
Concrete pads F&I by G.C.	ea	/ea	
Excavation/backfill for Emergency Generator ductbank	BP#1	/BP#1	
Excavation/backfill for Primary Electric ductbank	BP#1	/BP#1	
Excavation/backfill for Fire Alarm ductbank	BP#1	/BP#1	
Excavation/backfill for Telcom ductbank	BP#1	/BP#1	
Excavation/backfill for U.G. ductbank	BP#1	/BP#1	
Excavation/backfill for 2"C Power Data ductbank (Amphitheater)	BP#1	/BP#1	
Excavation/backfill for 2"C to IDF ductbank	BP#1	/BP#1	
Concrete and rebar for electrical/telcom ductbanks	BP#1	/BP#1	
6" Concrete Filled Steel Pipe Bollards at Generator & Transformer Pads	BP#1	/BP#1	
<b>G4010 Electrical Distribution</b>	<b>136,600 sf</b>	<b>1.04 /sf</b>	<b>141,861</b>
<b>G4020 Site Lighting</b>			
Bucket truck rental (per mo.)	BP#1	/BP#1	
Remove existing exterior site light fixture	BP#1	/BP#1	
Remove existing exterior site light fixture	6 ea	672.85 /ea	4,037
Lighting contactor - 12 pole (exterior lighting)	1 ea	1,899.98 /ea	1,900
SL1: LED pole mounted luminaires mounted on a 20' pole	23 ea	4,973.00 /ea	114,379
SL2A: exterior bollard	13 ea	1,893.70 /ea	24,618
SL1A: LED pole mounted luminaires mounted on a 20' pole	BP#1	/BP#1	
SL3: wall mounted LED area light with integral photosensor	BP#1	/BP#1	
SL3: exterior bollard 43.3 cast illuminum	9 ea	1,893.70 /ea	17,043
SL5: exterior in-grade luminaire with asymmetrical light distribution	8 ea	776.00 /ea	6,208
SL10: LED mini in-ground flood fixture capable of 0-10V dimming	12 ea	712.60 /ea	8,551

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G4020 Site Lighting</b>			
EMT (10/2) - 20A	BP#1	/BP#1	
3/4" PVC - 20A (2#12 & #12G)	BP#1	/BP#1	
1" PVC - 30A (3#8 & #10G)	BP#1	/BP#1	
1" PVC - 30A (3#8 & #10G)	5,600 lf	10.95 /lf	61,298
3/4" GRC - 90 Deg Sweep	BP#1	/BP#1	
1" GRC - 90 Deg Sweep	BP#1	/BP#1	
1" GRC - 90 Deg Sweep	90 ea	174.22 /ea	15,680
Concrete light pole bases F&I by G.C.	ea	/ea	
Emergency Call Box base	BP#1	/BP#1	
EV Parking Station bases	BP#1	/BP#1	
Light pole bases	BP#1	/BP#1	
<b>G4020 Site Lighting</b>	<b>136,600 sf</b>	<b>1.86 /sf</b>	<b>253,715</b>
<b>G4030 Site Communications &amp; Security</b>			
Relocate existing emergency call box (provide new concrete base)	BP#1	/BP#1	
Empty conduit (PVC) - 1"	BP#1	/BP#1	
Empty conduit (PVC) - 1"	250 lf	8.07 /lf	2,016
Empty conduit (PVC) - 2"	700 lf	6.03 /lf	4,223
Empty conduit (sch 40 PVC) (4) 4"C (CATV, Telephone, Fiber, Spare)	240 lf	32.32 /lf	7,756
Three (3) 1.25" inner ducts for fiber	240 lf	15.50 /lf	3,721
Communications utility pole conduit riser (GRC - 4"C)	4 ea	2,343.84 /ea	9,375
Telecom manhole & cover - 4'x6'x7'	1 ea	3,920.36 /ea	3,920
360-degree multi-sensor exterior cameras mounted on poles	3 ea	4,509.56 /ea	13,529
Camera wiring (PVC)	600 lf	13.34 /lf	8,003
Ductbank w/ IMSA cable - 2" PVC	320 lf	16.30 /lf	5,217
Excavation/backfill for site lighting - Allowance	BP#1	/BP#1	
<b>G4030 Site Communications &amp; Security</b>	<b>136,600 sf</b>	<b>0.42 /sf</b>	<b>57,761</b>
<b>G40 Site Electrical Utilities</b>	<b>136,600 sf</b>	<b>3.32 /sf</b>	<b>453,336</b>
<b>G Sitework</b>	<b>136,600 sf</b>	<b>18.98 /sf</b>	<b>2,592,693</b>



Estimate Totals

Description	Amount	Totals	Rate	Cost per Unit
<b>Subtotal</b>	<b>53,069,827</b>	<b>53,069,827</b>		<b>388.51 /sf</b>
Design/Estimate Contingency	2,653,491		5.000 %	19.43 /sf
Escalation	835,850		1.500 %	6.12 /sf
<b>Subtotal</b>	<b>3,489,341</b>	<b>56,559,168</b>		<b>414.05 /sf</b>
SDI (Non-Trade Contracts)	352,133		1.400 %	2.58 /sf
Sub Bonds (Trade Contracts)	390,844		1.400 %	2.86 /sf
Contractor's Contingency	1,432,554		2.500 %	10.49 /sf
General Conditions	3,401,447			24.90 /sf
General Requirements	2,652,482			19.42 /sf
<b>Subtotal</b>	<b>8,229,460</b>	<b>64,788,628</b>		<b>474.29 /sf</b>
Builder's Risk Insurance - BP1				
General Liability Insurance	668,571			4.89 /sf
Building Permit - NIC				
Performance & Payment Bond				
<b>Subtotal</b>	<b>668,571</b>	<b>65,457,199</b>		<b>479.19 /sf</b>
Fee	1,337,143			9.79 /sf
Amendment #1 - Sitework	10,957,843			80.22 /sf
<b>Total</b>		<b>77,752,185</b>		<b>569.20 /sf</b>



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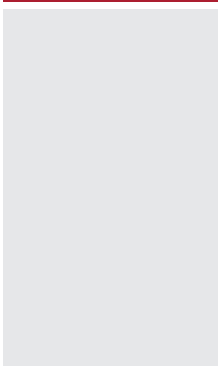
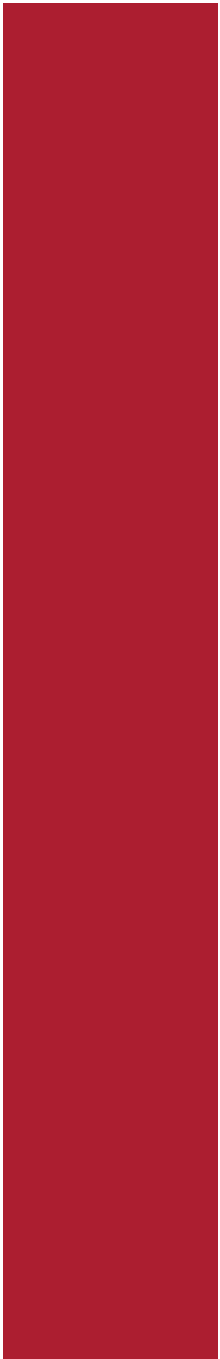


Description	Takeoff Qty	Total Cost/Unit	Total Amount
01-54 SCAFFOLDING	136,600 sf	0.55 /sf	75,000
02-20 SELECTIVE DEMOLITION & ABATEMENT	136,600 sf	9.30 /sf	1,270,100
02-82 HAZARDOUS MATERIAL ABATEMENT	136,600 sf	11.73 /sf	1,602,280
03-30 CONCRETE	136,600 sf	20.02 /sf	2,734,978
03-45 POLISHED CONCRETE	136,600 sf	0.28 /sf	37,500
04-20 MASONRY (TS)	136,600 sf	14.76 /sf	2,015,845
05-12 STRUCTURAL STEEL	136,600 sf	32.88 /sf	4,490,865
05-50 MISCELLANEOUS METALS (TS)	136,600 sf	6.93 /sf	947,250
06-25 FINISH CARPENTRY	136,600 sf	15.38 /sf	2,101,375
07-10 WATERPROOFING & JOINT SEALANTS (TS)	136,600 sf	5.57 /sf	760,949
07-42 METAL/COMPOSITE PANELS & SIDING	136,600 sf	8.64 /sf	1,180,575
07-50 MEMBRANE ROOFING (TS)	136,600 sf	10.58 /sf	1,445,670
07-81 FIREPROOFING	136,600 sf	2.94 /sf	401,945
08-10 DOORS, FRAMES & HARDWARE	136,600 sf	4.75 /sf	649,457
08-34 OVERHEAD DOORS & GRILLES	136,600 sf	0.55 /sf	74,750
08-41 ALUMINUM STOREFRONT & WINDOWS (TS)	136,600 sf	13.62 /sf	1,860,025
08-45 TRANSLUCENT PANEL SYSTEMS	136,600 sf	/sf	
08-62 SKYLIGHTS	136,600 sf	5.01 /sf	684,000
08-80 GLASS & GLAZING (TS)	136,600 sf	7.74 /sf	1,057,800
08-90 LOUVERS	136,600 sf	0.41 /sf	56,100
09-21 DRYWALL	136,600 sf	35.96 /sf	4,912,089
09-30 TILE (TS)	136,600 sf	1.80 /sf	245,825
09-51 ACOUSTICAL CEILINGS (TS)	136,600 sf	3.64 /sf	497,526
09-55 ACOUSTICAL PANELS	136,600 sf	2.94 /sf	401,678
09-64 WOOD FLOORING	136,600 sf	1.55 /sf	211,650
09-65 RESILIENT FLOORING (TS)	136,600 sf	7.99 /sf	1,091,810
09-67 RESINOUS FLOORING	136,600 sf	0.65 /sf	88,550
09-68 CARPET	136,600 sf	0.21 /sf	27,975
09-90 PAINTING (TS)	136,600 sf	3.77 /sf	514,570
10-14 SIGNAGE	136,600 sf	0.35 /sf	47,810
10-24 OPERABLE PARTITIONS	136,600 sf	2.01 /sf	273,875

Description	Takeoff Qty	Total Cost/Unit	Total Amount
10-51 LOCKERS	136,600 sf	3.14 /sf	428,800
10-95 MISCELLANEOUS SPECIALTIES	136,600 sf	2.47 /sf	337,243
11-31 RESIDENTIAL APPLIANCES	136,600 sf	0.19 /sf	25,900
11-40 FOOD SERVICE EQUIPMENT	136,600 sf	3.04 /sf	415,270
11-51 AUDIO-VISUAL EQUIPMENT	136,600 sf	3.29 /sf	450,000
11-61 THEATER & STAGE EQUIPMENT	136,600 sf	3.05 /sf	416,921
11-65 ATHLETIC/RECREATIONAL EQUIPMENT	136,600 sf	0.63 /sf	86,238
11-95 VOCATIONAL SHOP EQUIPMENT	136,600 sf	0.27 /sf	37,000
12-20 WINDOW TREATMENTS	136,600 sf	1.22 /sf	166,030
12-35 LAB CASEWORK	136,600 sf	2.09 /sf	285,975
12-60 FIXED AUDITORIUM SEATING	136,600 sf	0.85 /sf	115,710
12-62 BLEACHERS	136,600 sf	0.74 /sf	100,750
14-20 ELEVATORS (TS)	136,600 sf	1.61 /sf	220,000
21-01 FIRE PROTECTION (TS)	136,600 sf	5.80 /sf	791,653
22-01 PLUMBING (TS)	136,600 sf	16.07 /sf	2,195,545
23-01 HVAC (TS)	136,600 sf	58.33 /sf	7,967,908
26-01 ELECTRICAL (TS)	136,600 sf	41.46 /sf	5,663,400
31-23 SITEWORK	136,600 sf	/sf	
32-10 LANDSCAPING & SITE IMPROVEMENTS	136,600 sf	11.71 /sf	1,600,165
32-18 ATHLETIC/SYNTHETIC SURFACING	136,600 sf	0.02 /sf	2,000
32-31 FENCING	136,600 sf	0.03 /sf	3,500

**Estimate Totals**

Description	Amount	Totals	Rate	Cost per Unit
<b>Subtotal</b>	<b>53,069,827</b>	<b>53,069,827</b>		<b>388.51 /sf</b>
Design/Estimate Contingency	2,653,491		5.000 %	19.43 /sf
Escalation	835,850		1.500 %	6.12 /sf
<b>Subtotal</b>	<b>3,489,341</b>	<b>56,559,168</b>		<b>414.05 /sf</b>
SDI (Non-Trade Contracts)	352,133		1.400 %	2.58 /sf
Sub Bonds (Trade Contracts)	390,844		1.400 %	2.86 /sf
Contractor's Contingency	1,432,554		2.500 %	10.49 /sf
General Conditions	3,401,447			24.90 /sf
General Requirements	2,652,482			19.42 /sf
<b>Subtotal</b>	<b>8,229,460</b>	<b>64,788,628</b>		<b>474.29 /sf</b>
Builder's Risk Insurance - BP1				
General Liability Insurance	668,571			4.89 /sf
Building Permit - NIC				
Performance & Payment Bond				
<b>Subtotal</b>	<b>668,571</b>	<b>65,457,199</b>		<b>479.19 /sf</b>
Fee	1,337,143			9.79 /sf
Amendment #1 - Sitework	10,957,843			80.22 /sf
<b>Total</b>		<b>77,752,185</b>		<b>569.20 /sf</b>



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Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>01-54 SCAFFOLDING</b>			
Dance floor at auditorium - multi-trade	1 ls	75,000.00 /ls	75,000
<b>01-54 SCAFFOLDING</b>	<b>136,600 sf</b>	<b>0.55 /sf</b>	<b>75,000</b>
<b>02-20 SELECTIVE DEMOLITION &amp; ABATEMENT</b>			
Building demolition	195,400 sf	6.50 /sf	1,270,100
<b>02-20 SELECTIVE DEMOLITION &amp; ABATEMENT</b>	<b>136,600 sf</b>	<b>9.30 /sf</b>	<b>1,270,100</b>
<b>02-82 HAZARDOUS MATERIAL ABATEMENT</b>			
Asbestos abatement	195,400 sf	8.20 /sf	1,602,280
<b>02-82 HAZARDOUS MATERIAL ABATEMENT</b>	<b>136,600 sf</b>	<b>11.73 /sf</b>	<b>1,602,280</b>
<b>03-30 CONCRETE</b>			
Lull, laborer for cleanup by Consigli (Concrete)	-1 ls	116,000.00 /ls	(116,000)
Trade support - lull, laborer for cleanup (Concrete)	1 ls	116,000.00 /ls	116,000
Slab depressions	680 lf	65.00 /lf	44,201
Elevator pit	1 ea	15,000.00 /ea	15,000
Retaining footing	22 cy	920.53 /cy	20,252
Retaining wall	42 cy	1,100.00 /cy	46,200
Concrete bench/seat wall	6 cy	600.00 /cy	3,600
F3 spread footings	3 cy	1,565.14 /cy	4,695
F4 spread footings	2 cy	1,067.03 /cy	2,134
F5 spread footings	37 cy	868.30 /cy	32,127
F6 spread footings	43 cy	641.06 /cy	27,566
F7 spread footings	38 cy	517.77 /cy	19,675
F7 spread footings - VM-S05	-7 ea	1,880.15 /ea	(13,161)
F8 spread footings	50 cy	483.12 /cy	24,156
F9 spread footings	102 cy	419.45 /cy	42,784
F10 spread footings	33 cy	530.98 /cy	17,522
F11 spread footings	78 cy	463.04 /cy	36,117
F12 spread footings	59 cy	428.05 /cy	25,255
Continuous footings - 3'x12"	175 cy	813.35 /cy	142,336
Continuous footings - 4'x12"	18 cy	920.53 /cy	16,570
Continuous footings - 5'x12" @ Bandshell	8 cy	657.44 /cy	5,260
Foundation walls - 16"	239 cy	1,012.78 /cy	242,054
Foundation walls - 16" @ Bandshell	9 cy	1,012.78 /cy	9,115
Foundation walls - 21"	110 cy	884.47 /cy	97,292
Retaining walls - 16"	61 cy	1,197.62 /cy	73,055

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>03-30 CONCRETE</b>			
Concrete walls @ Auditorium	185 lf	175.00 /lf	32,375
Piers - 24"x24"	36 cy	1,404.42 /cy	50,559
Grade beam 1	30 cy	1,285.48 /cy	38,564
Grade beam 2	24 cy	1,111.93 /cy	26,686
Slab on grade - 5"	66,175 sf	8.12 /sf	537,341
Ramps on grade - premium - VM-S03	sf	/sf	
Steps on grade - premium - VM-S03	lf	/lf	
Power trowel/seal concrete @ Auditorium	2,875 sf	3.00 /sf	8,625
Place & finish slabs - 2-1/2" on 3" deck @ roof	29,675 sf	7.00 /sf	207,725
Place & finish slabs - 3-1/4" on 3" deck @ floor (LW)	64,235 sf	8.48 /sf	544,713
Topping slab @ Breakout LGMF floors	1,310 sf	8.05 /sf	10,546
Place & finish slabs - 3-1/4" on 3" deck @ roof	7,585 sf	8.05 /sf	61,059
Place & finish stair treads/landings	5 flts	1,800.00 /flts	9,000
Underslab insulation (perimeter only)	6,600 sf	3.00 /sf	19,800
Foundation wall insulation	6,045 sf	3.00 /sf	18,135
Concrete pavement	21,595 sf	9.00 /sf	194,355
Steps - premium	530 sf	10.00 /sf	5,300
Dumpster pad	355 sf	30.00 /sf	10,650
Concrete pavement with sawcut joints- ilo pavers - VM-L05/06	2,340 sf	11.00 /sf	25,740
<b>03-30 CONCRETE</b>	<b>136,600 sf</b>	<b>20.02 /sf</b>	<b>2,734,978</b>
<b>03-45 POLISHED CONCRETE</b>			
Precast planters	50 lf	750.00 /lf	37,500
<b>03-45 POLISHED CONCRETE</b>	<b>136,600 sf</b>	<b>0.28 /sf</b>	<b>37,500</b>
<b>04-20 MASONRY (TS)</b>			
Exterior wall mockup - Masonry, Allowance	1 allw	7,500.00 /allw	7,500
Exterior staging	39,645 sf	2.50 /sf	99,113
Lull, laborer for cleanup by Consigli (Masonry)	-1 ls	77,000.00 /ls	(77,000)
Trade support - lull, laborer for cleanup (Masonry)	1 ls	77,000.00 /ls	77,000
Install loose lintels (< 8")	21 ea	150.00 /ea	3,150
4x4x12 iron spot brick veneer, scored	1,990 sf	36.00 /sf	71,640
4x8x8 iron spot brick veneer, scored	6,950 sf	36.00 /sf	250,200
Brick veneer - interior - N/A	-	/-	
Brick veneer, precast cap @ entry wall per A102A	25 lf	285.00 /lf	7,125
4x4x12 scored ground faced CMU veneer	7,540 sf	27.00 /sf	203,580
4x8x16 scored ground faced CMU veneer	21,345 sf	29.00 /sf	619,005
CMU - 12" exterior wall	15,790 sf	25.00 /sf	394,750



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>04-20 MASONRY (TS)</b>			
CMU - 12" interior wall	7,515 sf	25.00 /sf	187,875
CMU - ground face premium - VM-I22	sf	/sf	
CMU - ground face premium	7,515 sf	4.50 /sf	33,818
CMU - acoustical block premium	976 sf	5.00 /sf	4,880
Mineral wool insulation at brick veneer	38,060 sf	3.50 /sf	133,210
<b>04-20 MASONRY (TS)</b>	<b>136,600 sf</b>	<b>14.76 /sf</b>	<b>2,015,845</b>
<b>05-12 STRUCTURAL STEEL</b>			
Exterior wall mockup - Steel, Allowance	1 allw	20,000.00 /allw	20,000
Moment connections @ floor	148 ea	650.00 /ea	96,200
Moment connections @ roof	83 ea	650.00 /ea	53,950
Steel @ floors	439 ton	3,900.00 /ton	1,711,710
Steel hangers - AESS	2 ton	5,800.00 /ton	12,180
Steel @ floors - VM-S05	-20 ea	3,307.50 /ea	(66,150)
Steel @ screen wall - galvanized	7 ton	4,300.00 /ton	30,530
Steel @ Bandshell - AESS	6 ton	5,800.00 /ton	37,120
Steel @ Canopy - AESS	6 ton	5,800.00 /ton	31,900
Steel @ roof	340 ton	3,900.00 /ton	1,325,610
Steel dunnage - RTU & chiller	5 ton	6,000.00 /ton	30,000
Relieving angles @ brick veneer	1,125 lf	150.00 /lf	168,750
Shoring @ Learning Commons	1 ls	50,000.00 /ls	50,000
Open web joists, bridging	55 ton	3,200.00 /ton	176,000
Metal floor decking - galvanized (3" 18g)	64,740 sf	4.00 /sf	258,960
Metal roof decking - acoustical (3" 18/16g)	7,610 sf	8.00 /sf	60,880
Metal floor decking @ Breakout room LGMF floors	1,310 sf	4.00 /sf	5,240
Metal roof decking - galvanized (1-1/2" 20g)	740 sf	3.00 /sf	2,220
Metal roof decking - acoustical (1-1/2" 20g)	8,855 sf	7.00 /sf	61,985
Metal roof decking - galvanized (3" 18g)	45,945 sf	4.00 /sf	183,780
Ornamental stairs - excluding rails	4 flt	60,000.00 /flt	240,000
<b>05-12 STRUCTURAL STEEL</b>	<b>136,600 sf</b>	<b>32.88 /sf</b>	<b>4,490,865</b>
<b>05-50 MISCELLANEOUS METALS (TS)</b>			
4x4x1/8" galvanized sill angle expansion	285 lf	50.00 /lf	14,250
Misc. metal fabrications	136,600 sf	1.00 /sf	136,600
Seismic clips - 4' OC, each side	270 ea	60.00 /ea	16,200
Loose lintels - Furnish	130 lf	25.00 /lf	3,250
Ornamental stairs - In Structural Steel	-	/-	
Egress stair	5 flt	20,000.00 /flt	100,000

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>05-50 MISCELLANEOUS METALS (TS)</b>			
Elevator pit ladders	1 ea	450.00 /ea	450
Steel angles/stantions @ locker guardrail	1,005 lf	150.00 /lf	150,750
Handrail @ steps/ramps	50 lf	295.00 /lf	14,750
Cane rails	120 lf	200.00 /lf	24,000
Guardrails @ Atrium	485 lf	500.00 /lf	242,500
Guardrails @ Atrium stairs	230 lf	500.00 /lf	115,000
Guardrails - 42" galvanized perforated @ exterior	60 lf	500.00 /lf	30,000
Guardrails - 42" galvanized perforated @ terrace	30 lf	500.00 /lf	15,000
Guardrails - exterior, colorgalv	260 lf	325.00 /lf	84,500
<i>Pipe @ bathroom partitions per 13/A600 - VM-I17</i>	ea	/ea	
<b>05-50 MISCELLANEOUS METALS (TS)</b>	<b>136,600 sf</b>	<b>6.93 /sf</b>	<b>947,250</b>
<b>06-25 FINISH CARPENTRY</b>			
Lull, laborer for cleanup by Consigli (Finish Carpentry)	-1 ls	72,000.00 /ls	(72,000)
Trade support - lull, laborer for cleanup (Finish Carpentry)	1 ls	72,000.00 /ls	72,000
Wood base	100 lf	25.00 /lf	2,500
Miscellaneous wood base/trim	136,600 sf	0.50 /sf	68,300
Trims at Breakout D (at glass lights) - VM-I20	320 sf	25.00 /sf	8,000
Window sills - P-lam	1,180 lf	25.00 /lf	29,500
Hardwood trim @ locker guardrail per A650	3,300 lf	15.00 /lf	49,500
P-lam panel	1,440 sf	45.00 /sf	64,800
P-lam panel on Z-clips @ Breakout	325 sf	45.00 /sf	14,625
P-lam panel ceiling	419 sf	45.00 /sf	18,855
Suspended P-lam clouds @ Auditorium	85 ea	2,000.00 /ea	170,000
P-lam top panels @ locker guardrail per A650	1,005 lf	50.00 /lf	50,250
P-lam side panels @ locker guardrail per A650	450 lf	50.00 /lf	22,500
P-lam panel backsplash	35 sf	45.00 /sf	1,575
Marker tray - bamboo	1,660 lf	30.00 /lf	49,800
Casework for lockers (bank of 5) - including base	1,005 lf	250.00 /lf	251,250
MDF bumper rail	3,480 lf	25.00 /lf	87,000
P-lam wall panels - sound reflecting at auditorium	2,925 sf	45.00 /sf	131,625
P-lam wall panels - vestibules	400 sf	45.00 /sf	18,000
P-lam projector enclosure	1 ls	2,500.00 /ls	2,500
<i>Swing Panels - Auditorium - VM-I26</i>	ea	/ea	
P-lam base cabinet w/top	40 lf	450.00 /lf	18,000
P-lam workstation w/top	786 lf	250.00 /lf	196,500
Mobile storage	183 ea	550.00 /ea	100,650
P-lam valance at fin tube - VM-M02	650 lf	45.00 /lf	29,250
P-lam 3/4" lip at counter - VM-M02	650 lf	4.00 /lf	2,600



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>06-25 FINISH CARPENTRY</b>			
P-lam wall cabinet	45 lf	325.00 /lf	14,625
P-lam full height cabinet	50 lf	700.00 /lf	35,000
Bathroom vanity w/top	265 lf	250.00 /lf	66,250
Reception cabinet	20 lf	1,000.00 /lf	20,000
P-lam circulation desk	10 lf	750.00 /lf	7,500
P-lam work counter @ Admin	10 lf	1,500.00 /lf	15,000
P-lam counter @ Served	32 lf	200.00 /lf	6,400
P-lam end/filler panels @ Admin	10 lf	135.00 /lf	1,350
Mailboxes	18 lf	415.00 /lf	7,470
Storage shelving	400 lf	150.00 /lf	60,000
Storage shelving w/custom 3d GFRG relief - VM-I19 (MDF ilo custom GFRG)	lf	/lf	
Storage shelving w/ MDF	495 lf	200.00 /lf	99,000
P-lam bookcases	50 lf	500.00 /lf	25,000
Built-in benches	205 lf	600.00 /lf	123,000
Display cases	5 ea	4,500.00 /ea	22,500
Misc. casework - Allowance	136,600 sf	1.00 /sf	136,600
Phenolic bench per A102A	1 ea	4,200.00 /ea	4,200
Wood @ site benches	40 lf	60.00 /lf	2,400
Wood louvered shades - Rulon panel grille	450 lf	150.00 /lf	67,500
<b>06-25 FINISH CARPENTRY</b>	<b>136,600 sf</b>	<b>15.38 /sf</b>	<b>2,101,375</b>

**07-10 WATERPROOFING & JOINT SEALANTS (TS)**

Exterior wall mockup - Waterproofing, Allowance	1 allw	5,000.00 /allw	5,000
Lull, laborer for cleanup by Consigli (Waterproofing)	-1 ls	29,000.00 /ls	(29,000)
Trade support - lull, laborer for cleanup (Waterproofing)	1 ls	29,000.00 /ls	29,000
Caulking @ storefront/curtainwall	8,005 lf	4.00 /lf	32,020
Caulking & sealants @ interior	136,600 sf	0.90 /sf	122,940
Dampproofing at foundation wall	7,770 sf	3.00 /sf	23,310
Misc. caulking & sealants @ exterior	73,825 sf	0.75 /sf	55,369
Foundation wall waterproofing - membrane w/ drainage board	1,240 sf	9.00 /sf	11,160
Elevator pit waterproofing - cementitious	1 ea	4,500.00 /ea	4,500
Air and vapor barrier @ exterior walls	54,960 sf	7.50 /sf	412,200
Air and vapor barrier @ soffits	1,245 sf	7.50 /sf	9,338
Air and vapor barrier @ phenolic fins per A102A, A315	675 sf	7.50 /sf	5,063
Window transitions	8,005 lf	10.00 /lf	80,050
<b>07-10 WATERPROOFING &amp; JOINT SEALANTS (TS)</b>	<b>136,600 sf</b>	<b>5.57 /sf</b>	<b>760,949</b>

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>07-42 METAL/COMPOSITE PANELS &amp; SIDING</b>			
Exterior wall mockup - Siding, Allowance	1 allw	10,000.00 /allw	10,000
Lull, laborer for cleanup by Consigli (Siding)	-1 ls	48,000.00 /ls	(48,000)
Trade support - lull, laborer for cleanup (Siding)	1 ls	48,000.00 /ls	48,000
Corrugated, perforated metal siding @ screen walls	1,100 sf	45.00 /sf	49,500
Corrugated metal panel siding	5,520 sf	45.00 /sf	248,400
Composite metal panel siding	2,665 sf	75.00 /sf	199,875
Phenolic panel siding	8,410 sf	80.00 /sf	672,800
	<b>136,600 sf</b>	<b>8.64 /sf</b>	<b>1,180,575</b>
<b>07-50 MEMBRANE ROOFING (TS)</b>			
Exterior wall mockup - Roofing, Allowance	1 allw	2,500.00 /allw	2,500
PVC membrane roof w/insulation, underlayment, cover board, vapor barrier	62,685 sf	18.25 /sf	1,144,001
PVC membrane @ walls	2,740 sf	20.25 /sf	55,485
Reinforced walkway pads	714 sf	7.50 /sf	5,355
Pavers - terrace	330 sf	35.00 /sf	11,550
Pavers - main entrance	1,165 sf	35.00 /sf	40,775
Roof accessories	62,685 sf	0.35 /sf	21,940
Roof vents & hatches	1 ls	25,000.00 /ls	25,000
Metal roof fascia	2,630 lf	35.00 /lf	92,050
Additional flashing, scuppers	62,685 sf	0.75 /sf	47,014
	<b>136,600 sf</b>	<b>10.58 /sf</b>	<b>1,445,670</b>
<b>07-81 FIREPROOFING</b>			
Sprayed fireproofing - steel beams and columns @ floor structure	64,740 sf	3.00 /sf	194,220
Sprayed fireproofing - steel beams and columns @ roof structure below 20'	33,575 sf	3.00 /sf	100,725
Patch Sprayed fireproofing - floor structure	5 days	3,500.00 /days	17,500
Patch Sprayed fireproofing - roof structure	5 days	3,500.00 /days	17,500
Intumescent fireproofing @ Learning Commons - not required	0 ls	0.00 /ls	0
Intumescent fireproofing @ Learning Commons - Allowance	1 ls	75,000.00 /ls	75,000
Intumescent fireproofing @ Learning Commons -VM-S01 credit	-1 ls	3,000.00 /ls	(3,000)
	<b>136,600 sf</b>	<b>2.94 /sf</b>	<b>401,945</b>
<b>08-10 DOORS, FRAMES &amp; HARDWARE</b>			
Install exterior door, HW	14 ea	300.00 /ea	4,200
Install interior door, HW	299 ea	300.00 /ea	89,700



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>08-10 DOORS, FRAMES &amp; HARDWARE</b>			
HM doors - interior - flush	67 lvs	280.00 /lvs	18,760
HM doors - exterior flush	23 lvs	565.00 /lvs	12,995
HM frames - exterior single	5 ea	230.00 /ea	1,150
HM frames - exterior double	9 ea	395.00 /ea	3,555
HM frames - interior single	260 ea	280.00 /ea	72,800
HM frames - interior double	27 ea	345.00 /ea	9,315
Wood door - interior flush	271 lvs	350.00 /lvs	94,850
Fire rated wood doors - premium	40 lvs	350.00 /lvs	14,000
Acoustical doors (STC 45) - premium	1 ls	15,000.00 /ls	15,000
Hardware sets - exterior door/panic	14 set	2,482.00 /set	34,748
Hardware sets - auto operators	1 set	4,500.02 /set	4,500
Hardware sets - standard interior	299 set	916.00 /set	273,884
<b>08-10 DOORS, FRAMES &amp; HARDWARE</b>	<b>136,600 sf</b>	<b>4.75 /sf</b>	<b>649,457</b>
<b>08-34 OVERHEAD DOORS &amp; GRILLES</b>			
Coiling security screen - 4' high, manual	85 sf	70.00 /sf	5,950
Coiling security screen - 8' high, manual	690 sf	70.00 /sf	48,300
Custom security gate @ Learning Commons	2 lvs	6,000.00 /lvs	12,000
Overhead coiling door	1 ea	7,500.00 /ea	7,500
Loading dock equipment	1 ea	1,000.00 /ea	1,000
<b>08-34 OVERHEAD DOORS &amp; GRILLES</b>	<b>136,600 sf</b>	<b>0.55 /sf</b>	<b>74,750</b>
<b>08-41 ALUMINUM STOREFRONT &amp; WINDOWS (TS)</b>			
Exterior wall mockup - Windows, Allowance	1 allw	20,000.00 /allw	20,000
Lull, laborer for cleanup by Consigli (Windows)	-1 ls	73,000.00 /ls	(73,000)
Trade support - lull, laborer for cleanup (Windows)	1 ls	73,000.00 /ls	73,000
Aluminum storefront/windows	13,178 sf	100.00 /sf	1,317,800
Aluminum storefront - School Guard	545 sf	140.00 /sf	76,300
Extruded aluminum perimeter angles	8,005 lf	30.00 /lf	240,150
Aluminum entrance doors, HW - exterior	7 lvs	6,000.00 /lvs	42,000
Aluminum entrance doors, HW - exterior, School Guard	10 lvs	7,000.00 /lvs	70,000
Automatic operators	1 pair	4,400.00 /pair	4,400
Glass @ Bandshell - 9/16" tempered, laminated	535 sf	125.00 /sf	66,875
Glass @ canopy - tempered	150 sf	150.00 /sf	22,500
<b>08-41 ALUMINUM STOREFRONT &amp; WINDOWS (TS)</b>	<b>136,600 sf</b>	<b>13.62 /sf</b>	<b>1,860,025</b>
<b>08-45 TRANSLUCENT PANEL SYSTEMS</b>			

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>08-45 TRANSLUCENT PANEL SYSTEMS</b>			
Polycarbonate canopy	sf	/sf	
<b>08-62 SKYLIGHTS</b>			
Metal-framed skylights (8:12)	4,128 sf	150.00 /sf	619,200
Metal-framed skylights gable ends	432 sf	150.00 /sf	64,800
<b>08-62 SKYLIGHTS</b>	<b>136,600 sf</b>	<b>5.01 /sf</b>	<b>684,000</b>
<b>08-80 GLASS &amp; GLAZING (TS)</b>			
Aluminum storefront - interior, School Guard	340 sf	140.00 /sf	47,600
Aluminum windows - interior, School Guard	2 ea	12,000.00 /ea	24,000
Aluminum entrance doors, HW - interior	1 lvs	6,000.00 /lvs	6,000
Aluminum entrance doors, HW - interior, School Guard	8 lvs	7,000.00 /lvs	56,000
Misc. interior glass & glazing	136,600 sf	0.25 /sf	34,150
Glazed partition	5,575 sf	60.00 /sf	334,500
Glazed partition - double acoustic	835 sf	110.00 /sf	91,850
Glazed partition @ sidelights	335 sf	75.00 /sf	25,125
Glass walls @ Breakout	1,465 sf	120.00 /sf	175,800
Glass roof @ Breakout	70 sf	150.00 /sf	10,500
Glazed partition - translucent/etched @ bathrooms - VM-I17	sf	/sf	
Glass lights @ Breakout D - VM-I20	320 sf	120.00 /sf	38,400
Translucent glass floor @ Breakout - Deleted/Recon	sf	/sf	
Door glazing - full	151 ea	400.00 /ea	60,400
Door glazing - narrow	2 ea	100.00 /ea	200
Mirrors - unframed restroom	1,375 sf	35.00 /sf	48,125
Graduated glass film	3,675 sf	5.00 /sf	18,375
3M Safety and Security Window Film @ glass walls	3,775 sf	15.00 /sf	56,625
3M Safety and Security Window Film @ doors	67 lvs	450.00 /lvs	30,150
<b>08-80 GLASS &amp; GLAZING (TS)</b>	<b>136,600 sf</b>	<b>7.74 /sf</b>	<b>1,057,800</b>
<b>08-90 LOUVERS</b>			
Metal louver	660 sf	85.00 /sf	56,100
<b>08-90 LOUVERS</b>	<b>136,600 sf</b>	<b>0.41 /sf</b>	<b>56,100</b>
<b>09-21 DRYWALL</b>			
Exterior wall mockup - Drywall, Allowance	1 allw	10,000.00 /allw	10,000
Lull, laborer for cleanup by Consigli (Drywall)	-1 ls	188,000.00 /ls	(188,000)
Trade support - lull, laborer for cleanup (Drywall)	1 ls	188,000.00 /ls	188,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>09-21 DRYWALL</b>			
Light gage metal framing @ Breakout floors	1,310 sf	25.00 /sf	32,750
Light gage metal framing @ Breakout walls	16,820 sf	10.00 /sf	168,200
Roof blocking	10,520 lf	25.00 /lf	263,000
Window blocking	7,945 lf	10.00 /lf	79,450
Door blocking - exterior	265 lf	10.90 /lf	2,888
Door blocking - interior	4,960 lf	10.90 /lf	54,060
In-wall blocking	12,265 lf	10.00 /lf	122,650
Miscellaneous rough carpentry - Allowance	136,600 sf	0.50 /sf	68,300
Firestopping @ rated walls	5,115 lf	16.20 /lf	82,863
Miscellaneous firestopping	136,600 sf	0.10 /sf	13,660
Access panels	1 ls	15,000.00 /ls	15,000
Level 5 finish - Allowance	25,000 sf	2.00 /sf	50,000
Interior wall framing - 3-5/8"/4"	100,900 sf	4.50 /sf	454,050
Interior wall framing - 6"	4,415 sf	6.00 /sf	26,490
Interior wall framing - 8"	21,965 sf	8.00 /sf	175,720
Interior wall framing - 10"	555 sf	9.50 /sf	5,273
GWB - 5/8", level 4	214,870 sf	3.25 /sf	698,328
GWB - 5/8", additional layer	94,155 sf	2.75 /sf	258,926
GWB - high impact	1 ls	50,000.00 /ls	50,000
Shaft liner - 1"	2,045 sf	3.25 /sf	6,646
Sound batt insulation	133,845 sf	1.25 /sf	167,306
Half height walls @ Auditorium	400 sf	18.00 /sf	7,200
LGMF framing @ locker guardrail	4,020 sf	4.00 /sf	16,080
GWB - 5/8", level 5 @ locker guardrail	4,020 sf	5.25 /sf	21,105
GWB Wall - Breakout D - VM-I20	1,280 sf	30.00 /sf	38,400
Curved walls - premium	6,030 sf	5.00 /sf	30,150
Exterior walls - 10" studs, 1/2" sheathing, 5/8" GWB, insulation	42,285 sf	18.50 /sf	782,273
Framing @ phenolic fins per A102A, A315	675 sf	6.00 /sf	4,050
Install HM door frames - exterior single	5 ea	57.50 /ea	288
Install HM door frames - interior single	260 ea	57.50 /ea	14,950
Install HM door frames - exterior double	9 ea	92.00 /ea	828
Install HM door frames - interior double	27 ea	92.00 /ea	2,484
Gypsum board ceilings	24,452 sf	12.00 /sf	293,424
Gypsum board ceilings - 1 hr	655 sf	15.00 /sf	9,825
Stucco soffit	1,245 sf	8.95 /sf	11,143
Exterior soffit framing, sheathing, insulation	1,245 sf	18.00 /sf	22,410
Gypsum board soffits	30,490 sf	20.00 /sf	609,800
Gypsum board soffits @ Learning Commons	6,225 sf	20.00 /sf	124,500
Gypsum board soffits @ Skylights	1,570 sf	20.00 /sf	31,400

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>09-21 DRYWALL</b>			
Patch GWB	136,600 sf	0.50 /sf	68,300
Fiberglass reinforced panels (FRP) - wall panels	2,240 sf	8.00 /sf	17,920
<b>09-21 DRYWALL</b>	<b>136,600 sf</b>	<b>35.96 /sf</b>	<b>4,912,089</b>
<b>09-30 TILE (TS)</b>			
Lull, laborer for cleanup by Consigli (Tile)	-1 ls	7,000.00 /ls	(7,000)
Trade support - lull, laborer for cleanup (Tile)	1 ls	7,000.00 /ls	7,000
Ceramic wall tile	3,725 sf	18.00 /sf	67,050
Porcelain floor tile	5,511 sf	25.00 /sf	137,775
Porcelain floor tile - VM-101	sf	/sf	
Quarry floor tile	1,770 sf	20.00 /sf	35,400
Quarry tile base	280 lf	20.00 /lf	5,600
<b>09-30 TILE (TS)</b>	<b>136,600 sf</b>	<b>1.80 /sf</b>	<b>245,825</b>
<b>09-51 ACOUSTICAL CEILINGS (TS)</b>			
Lull, laborer for cleanup by Consigli (Ceilings)	-1 ls	49,000.00 /ls	(49,000)
Trade support - lull, laborer for cleanup (Ceilings)	1 ls	49,000.00 /ls	49,000
A1 - Armstrong Ultima #1911, random running bond pattern	23,323 sf	9.00 /sf	209,907
A1 - Armstrong Ultima #1911 @ Learning Commons	10,925 sf	9.00 /sf	98,325
A1 - Armstrong Ultima #1911 @ Auditorium vestibules	431 sf	9.00 /sf	3,879
A2 - Armstrong Calla #2824	18,115 sf	8.00 /sf	144,920
A3 - USG Geometrix 3 Dimensional	810 sf	35.00 /sf	28,350
A4 - Armstrong Healthzone Ultima	1,735 sf	7.00 /sf	12,145
<b>09-51 ACOUSTICAL CEILINGS (TS)</b>	<b>136,600 sf</b>	<b>3.64 /sf</b>	<b>497,526</b>
<b>09-55 ACOUSTICAL PANELS</b>			
Fabric wrapped acoustical panels	15,270 sf	20.00 /sf	305,400
Tectum wall panels	5,225 sf	18.00 /sf	94,050
Mural panorama wall covering	1,485 sf	1.50 /sf	2,228
<b>09-55 ACOUSTICAL PANELS</b>	<b>136,600 sf</b>	<b>2.94 /sf</b>	<b>401,678</b>
<b>09-64 WOOD FLOORING</b>			
Hardwood stage assembly	1,610 sf	25.00 /sf	40,250
Wood athletic flooring	8,570 sf	20.00 /sf	171,400
<b>09-64 WOOD FLOORING</b>	<b>136,600 sf</b>	<b>1.55 /sf</b>	<b>211,650</b>





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>09-65 RESILIENT FLOORING (TS)</b>			
Lull, laborer for cleanup by Consigli (Resilient)	-1 ls	48,000.00 /ls	(48,000)
Trade support - lull, laborer for cleanup (Resilient)	1 ls	48,000.00 /ls	48,000
Underlayment at 2nd and 3rd floor linoleum (Forbo NR99) (exclude corridors)	53,265 sf	4.00 /sf	213,060
<i>Moisture mitigation - Excluded</i>	-	/-	
Linoleum tile	80,000 sf	6.00 /sf	480,000
Linoleum plank	26,000 sf	8.00 /sf	208,000
<i>Linoleum plank - VM-101</i>	sf	/sf	
Linoleum tile base w/trim	19,465 lf	9.00 /lf	175,185
Rubber base	1,830 lf	3.50 /lf	6,405
Vented base @ Gym	380 lf	8.00 /lf	3,040
Rubber flooring @ ornamental stairs	765 sf	8.00 /sf	6,120
	<b>136,600 sf</b>	<b>7.99 /sf</b>	<b>1,091,810</b>
<b>09-67 RESINOUS FLOORING</b>			
Epoxy flooring/base	6,325 sf	14.00 /sf	88,550
	<b>136,600 sf</b>	<b>0.65 /sf</b>	<b>88,550</b>
<b>09-68 CARPET</b>			
Carpet @ Auditorium	235 sy	45.00 /sy	10,575
Entry mats - recessed	435 sf	40.00 /sf	17,400
	<b>136,600 sf</b>	<b>0.21 /sf</b>	<b>27,975</b>
<b>09-90 PAINTING (TS)</b>			
Paint GWB partitions	228,115 sf	0.80 /sf	182,492
<i>Paint CMU - interior, N/A</i>	-	/-	
Epoxy wall paint	13,985 sf	2.30 /sf	32,166
Paint Bandshell	1 ls	10,000.00 /ls	10,000
Paint GWB ceilings	27,620 sf	1.00 /sf	27,620
Paint GWB soffits	38,285 sf	1.00 /sf	38,285
Paint HM doors - exerior	23 lvs	90.00 /lvs	2,070
Paint HM doors - interior	55 lvs	90.00 /lvs	4,950
Paint HM frames - exterior, single	5 ea	50.00 /ea	250
Paint HM frames - interior, single	260 ea	50.00 /ea	13,000
Paint HM frames - exterior, double	9 ea	60.00 /ea	540
Paint HM frames - interior, double	27 ea	60.00 /ea	1,620
Paint stairs	9 flt	2,000.00 /flt	18,000

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>09-90 PAINTING (TS)</b>			
Paint exposed ceilings	29,000 sf	1.50 /sf	43,500
Paint exposed ceilings - gym	8,570 sf	2.50 /sf	21,425
Seal concrete floor	6,720 sf	2.00 /sf	13,440
Misc. exterior painting	73,825 sf	0.50 /sf	36,913
Touchup	136,600 sf	0.50 /sf	68,300
<b>09-90 PAINTING (TS)</b>	<b>136,600 sf</b>	<b>3.77 /sf</b>	<b>514,570</b>
<b>10-14 SIGNAGE</b>			
Interior signage	136,600 sf	0.35 /sf	47,810
Exterior signage - BP#1	ls	/ls	
<b>10-14 SIGNAGE</b>	<b>136,600 sf</b>	<b>0.35 /sf</b>	<b>47,810</b>
<b>10-24 OPERABLE PARTITIONS</b>			
Operable partitions	955 sf	60.00 /sf	57,300
Operable partitions w/writeable surface on one side	325 sf	80.00 /sf	26,000
Operable partitions w/writeable surface on both sides	1,815 sf	105.00 /sf	190,575
<b>10-24 OPERABLE PARTITIONS</b>	<b>136,600 sf</b>	<b>2.01 /sf</b>	<b>273,875</b>
<b>10-51 LOCKERS</b>			
Student lockers - phenolic	660 ea	600.00 /ea	396,000
Athletic lockers	80 ea	350.00 /ea	28,000
Staff lockers	12 ea	400.00 /ea	4,800
<b>10-51 LOCKERS</b>	<b>136,600 sf</b>	<b>3.14 /sf</b>	<b>428,800</b>
<b>10-95 MISCELLANEOUS SPECIALTIES</b>			
<i>Folding screen</i>	ea	/ea	
Magnetic writeable wall covering	6,800 sf	22.00 /sf	149,600
Toilet partition	23 ea	1,020.00 /ea	23,460
Toilet partition - handicap	16 ea	1,650.00 /ea	26,400
Urinal screens - wall-hung	15 ea	433.00 /ea	6,495
Cubicle curtains	45 lf	40.00 /lf	1,800
Cubicle curtain track	45 lf	11.50 /lf	518
Corner guards	1 ls	20,000.00 /ls	20,000
Toilet paper dispenser	53 ea	105.17 /ea	5,574
Grab bar	60 ea	141.38 /ea	8,483
Soap dispenser - surface mounted	58 ea	87.64 /ea	5,083
Paper towel dispenser - recessed	30 ea	136.79 /ea	4,104



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>10-95 MISCELLANEOUS SPECIALTIES</b>			
Framed mirrors	14 ea	171.00 /ea	2,394
Sanitary napkin disposal	45 ea	274.00 /ea	12,330
Shower curtains, hooks & rod	3 ea	125.00 /ea	375
Shower seat	2 ea	668.00 /ea	1,336
Mop rack	3 ea	230.67 /ea	692
Fire extinguisher cabinet - fully recessed	27 ea	350.00 /ea	9,450
Misc. specialties - Allowance	136,600 sf	0.25 /sf	34,150
Projection screen @ Gym, Cafeteria	2 ea	10,000.00 /ea	20,000
Projection screen	1 ea	5,000.00 /ea	5,000
<b>10-95 MISCELLANEOUS SPECIALTIES</b>	<b>136,600 sf</b>	<b>2.47 /sf</b>	<b>337,243</b>
<b>11-31 RESIDENTIAL APPLIANCES</b>			
Misc. appliances	1 ls	10,000.00 /ls	10,000
Refrigerator	6 ea	1,200.00 /ea	7,200
Ice maker - None shown	-	/-	
Undercounter refrigerator - None shown	-	/-	
Microwave oven	1 ea	450.00 /ea	450
Range hood	1 ea	650.00 /ea	650
Range	1 ea	900.00 /ea	900
Dishwasher	4 ea	925.00 /ea	3,700
Washer/dryer - stackable	2 ea	1,500.00 /ea	3,000
<b>11-31 RESIDENTIAL APPLIANCES</b>	<b>136,600 sf</b>	<b>0.19 /sf</b>	<b>25,900</b>
<b>11-40 FOOD SERVICE EQUIPMENT</b>			
Food service equipment - Allowance	1 ls	415,270.00 /ls	415,270
<b>11-40 FOOD SERVICE EQUIPMENT</b>	<b>136,600 sf</b>	<b>3.04 /sf</b>	<b>415,270</b>
<b>11-51 AUDIO-VISUAL EQUIPMENT</b>			
Sound systems @ Auditorium - Allowance	1 allw	200,000.00 /allw	200,000
Sound systems @ Gym - Allowance	1 allw	120,000.00 /allw	120,000
Sound systems @ Cafeteria - Allowance	1 allw	50,000.00 /allw	50,000
Sound systems @ Band/Chorus - Allowance	2 allw	30,000.00 /allw	60,000
Sound systems @ Drama - Allowance	1 allw	20,000.00 /allw	20,000
<b>11-51 AUDIO-VISUAL EQUIPMENT</b>	<b>136,600 sf</b>	<b>3.29 /sf</b>	<b>450,000</b>
<b>11-61 THEATER &amp; STAGE EQUIPMENT</b>			
Orchestra enclosures - FFE	-	/-	

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>11-61 THEATER &amp; STAGE EQUIPMENT</b>			
Theatrical rigging - Allowance	1 ls	158,300.00 /ls	158,300
Theatrical draperies - Allowance	1 ls	33,854.00 /ls	33,854
Theatrical lighting instruments & accessories - Allowance	1 ls	129,018.00 /ls	129,018
Theatrical lighting controls - Allowance	1 ls	95,749.00 /ls	95,749
<b>11-61 THEATER &amp; STAGE EQUIPMENT</b>	<b>136,600 sf</b>	<b>3.05 /sf</b>	<b>416,921</b>
<b>11-65 ATHLETIC/RECREATIONAL EQUIPMENT</b>			
Basketball backstop - ceiling-hung	6 ea	6,500.00 /ea	39,000
Gym divider curtain - electric roll up	1,215 sf	20.00 /sf	24,300
Gym wall mats	835 sf	12.50 /sf	10,438
Volleyball system	1 ls	5,000.00 /ls	5,000
Scoreboards - basketball	1 ea	7,500.00 /ea	7,500
<b>11-65 ATHLETIC/RECREATIONAL EQUIPMENT</b>	<b>136,600 sf</b>	<b>0.63 /sf</b>	<b>86,238</b>
<b>11-95 VOCATIONAL SHOP EQUIPMENT</b>			
Vocational shop equipment - Allowance	1 ls	25,000.00 /ls	25,000
- Welding booths - In Above	-	- /-	
- Portable welding fumes extractor - In Above	-	- /-	
- Paint spray hoods - In Above	-	- /-	
- Portable wood working equipment dust collector - In HVAC	-	- /-	
Kiln	1 ls	12,000.00 /ls	12,000
<b>11-95 VOCATIONAL SHOP EQUIPMENT</b>	<b>136,600 sf</b>	<b>0.27 /sf</b>	<b>37,000</b>
<b>12-20 WINDOW TREATMENTS</b>			
Roller shades	12,553 sf	10.00 /sf	125,530
Roller shades - interior	3,300 sf	10.00 /sf	33,000
Roller shades - doors	50 ea	150.00 /ea	7,500
<b>12-20 WINDOW TREATMENTS</b>	<b>136,600 sf</b>	<b>1.22 /sf</b>	<b>166,030</b>
<b>12-35 LAB CASEWORK</b>			
Misc. lab equipment - Allowance	1 ls	25,000.00 /ls	25,000
Fume hoods	3 ea	11,000.00 /ea	33,000
Base cabinet w/epoxy top	30 lf	600.00 /lf	18,000
Epoxy countertop - open below	325 lf	375.00 /lf	121,875
Epoxy backsplash	635 lf	60.00 /lf	38,100
Wall cabinets	125 lf	400.00 /lf	50,000

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>12-35 LAB CASEWORK</b>	<b>136,600 sf</b>	<b>2.09 /sf</b>	<b>285,975</b>
<b>12-60 FIXED AUDITORIUM SEATING</b>			
Fixed audience seating	406 ea	285.00 /ea	115,710
<b>12-60 FIXED AUDITORIUM SEATING</b>	<b>136,600 sf</b>	<b>0.85 /sf</b>	<b>115,710</b>
<b>12-62 BLEACHERS</b>			
Retractable Bleachers at Gym	650 seat	155.00 /seat	100,750
<b>12-62 BLEACHERS</b>	<b>136,600 sf</b>	<b>0.74 /sf</b>	<b>100,750</b>
<b>14-20 ELEVATORS (TS)</b>			
Passenger elevators - cab, equipment	1 ls	40,000.00 /ls	40,000
Passenger elevators - stops	4 stop	45,000.00 /stop	180,000
<b>14-20 ELEVATORS (TS)</b>	<b>136,600 sf</b>	<b>1.61 /sf</b>	<b>220,000</b>
<b>21-01 FIRE PROTECTION (TS)</b>			
Lull, laborer for cleanup by Consigli (Fire Protection)	-1 ls	31,000.00 /ls	(31,000)
Trade support - lull, laborer for cleanup (Fire Protection)	1 ls	31,000.00 /ls	31,000
General requirements (management/design, permits, as-builts, coring, fire stopping)	136,600 sf	0.50 /sf	68,300
Hydraulic calculation & shop drawings	1 ls	4,000.00 /ls	4,000
Coordination & management	1 ls	16,000.00 /ls	16,000
Seismic restraints	1 sf	0.08 /sf	0
Permits & fees	1 ls	1,500.00 /ls	1,500
Off-load & distribution	136,600 sf	0.06 /sf	8,196
Fire dept. inlet connection - 2-1/2" polished brass - 3 -way	1 ea	1,863.93 /ea	1,864
Fire main - sch 40 black steel piping w/ fittings - 6"	40 lf	99.13 /lf	3,965
Standpipe - sch 40 black steel piping w/ fittings - 4"	30 lf	59.68 /lf	1,790
Standpipe - sch 40 black steel piping w/ fittings - 6"	105 lf	99.13 /lf	10,409
Drain riser - sch 40 black steel piping w/ fittings - 3"	140 lf	49.66 /lf	6,953
Fire hose cabinet - stainless steel - surface	10 ea	2,519.50 /ea	25,195
<i>Sprinkler head - wet - recessed pendant</i>	<i>ea</i>	<i>/ea</i>	
Sprinkler head - wet - semi-recessed pendant	1,000 ea	115.00 /ea	115,000
Sprinkler head - wet - pendant or upright	150 ea	77.23 /ea	11,584
Sprinkler head - wet - sidewall	100 ea	87.51 /ea	8,751
Sprinkler head - wet - sidewall Window Sprinklers	40 ea	87.51 /ea	3,500
Sprinkler head - quick response pendant or upright	60 ea	87.23 /ea	5,234
Sprinkler branch piping black steel sch. 40 w/ fittings (avg. size)	8,000 lf	27.77 /lf	222,136
Sprinkler main piping black steel sch. 40 w/ fittings 3" Drain	150 lf	49.66 /lf	7,449

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>21-01 FIRE PROTECTION (TS)</b>			
Sprinkler main piping black steel sch. 10 w/ fittings (avg. size)	4,570 lf	43.18 /lf	197,352
Sprinkler main piping black steel sch. 10 w/ fittings 4"	500 lf	39.66 /lf	19,831
Sprinkler main piping black steel sch. 10 w/ fittings 6"	110 lf	69.39 /lf	7,633
Wet alarm valve - 6"	1 ea	3,656.71 /ea	3,657
Double check valve (BFP) assembly - 6"	1 ea	8,244.56 /ea	8,245
Pressure reducing valve - 4"	1 ea	2,416.71 /ea	2,417
Butterfly valve - 4"	1 ea	1,301.71 /ea	1,302
Butterfly valve - 4"	2 ea	1,301.71 /ea	2,603
Butterfly valve - 6"	2 ea	1,566.71 /ea	3,133
Zone flow control valve- 2-1/2"	7 ea	1,868.93 /ea	13,082
Waterflow switch	9 ea	421.96 /ea	3,798
Tamper switch	12 ea	356.96 /ea	4,284
Test port/test header	1 ea	381.96 /ea	382
Water motor gong bell	1 ea	628.36 /ea	628
Sprinkler head - dry - sidewall	16 ea	92.51 /ea	1,480
<b>21-01 FIRE PROTECTION (TS)</b>	<b>136,600 sf</b>	<b>5.80 /sf</b>	<b>791,653</b>
<b>22-01 PLUMBING (TS)</b>			
Lull, laborer for cleanup by Consigli (Plumbing)	-1 ls	83,000.00 /ls	(83,000)
Trade support - lull, laborer for cleanup (Plumbing)	1 ls	83,000.00 /ls	83,000
General requirements (management, permits, as-builts, coring, fire stopping)	136,600 sf	1.50 /sf	204,900
3D/BIM coordination	1 ls	4,000.00 /ls	4,000
Insulation/copper pipe/fiberglass	9,635 lf	7.67 /lf	73,925
Insulation/rainleader pipe/fiberglass/PVC jacketed/horiz. & vert.	1,868 lf	12.93 /lf	24,153
Commissioning support/day	5 day	824.56 /day	4,123
Water meter w/remote readout - 4"	1 ea	2,285.75 /ea	2,286
Water sub-meter - 1"	1 ea	275.84 /ea	276
Water sub-meter - 2"	1 ea	492.30 /ea	492
Backflow preventer/RPZ-BFP - 4"	1 ea	1,960.75 /ea	1,961
Backflow preventer/boiler make-up - 1"	1 ea	201.54 /ea	202
Backflow preventer/irrigation - 1"	1 ea	201.54 /ea	202
Backflow preventer/Tempered - 1"	1 ea	201.54 /ea	202
Backflow preventer/Non Potable - 1" Sci Class 2214, 1110	3 ea	201.54 /ea	605
Recirculation pump/bronze - avg. size Tempered	1 ea	684.14 /ea	684
Recirculation pump/bronze - avg. size Non Potable	1 ea	684.14 /ea	684
Recirculation pump/bronze/20 gpm - 1/6 hp (Grundfos Magna)	1 ea	1,406.14 /ea	1,406
Expansion tank/ASME/ non-potable - 3.2 gal (B&G #PTA-12)	1 ea	1,062.61 /ea	1,063
Expansion tank/ASME/potable - 34.5 gal (B&G #PTA-80V)	1 ea	1,940.14 /ea	1,940

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>22-01 PLUMBING (TS)</b>			
TMV - 1/2"x3/4" - 10 gpm (Leonard #TM-15-E)	2 ea	677.14 /ea	1,354
TMV - 3/4"x3/4" - 37 gpm (Leonard #TM-30-E) Non Potable	1 ea	785.14 /ea	785
TMV/Digital Mixing Valve	1 ea	20,824.56 /ea	20,825
TMV/master/hi-lo temp. Kitchen	1 ea	2,759.21 /ea	2,759
Hose bibbs w/vac. breaker - interior	17 ea	202.30 /ea	3,439
Trap primers/electronic - 6 outlet (PPP #PT-6)	6 ea	1,294.14 /ea	7,765
Shock absorbers/12 - 33 fixture units (Shoktrol #200)	10 ea	269.77 /ea	2,698
Domestic water entrance UG/ductile iron - 6"	25 lf	408.13 /lf	10,203
Domestic water AG/type "L" copper/press fit ftgs. - avg. size	1,620 lf	21.19 /lf	34,322
Domestic water AG/type "L" copper/press fit ftgs. - avg. size Non Potable	1,650 lf	21.19 /lf	34,957
Domestic water AG/type "L" copper/press fit ftgs. - avg. size Non Potable	520 lf	21.19 /lf	11,017
Domestic water AG/type "L" copper/press fit - 1/2" TP	1,400 lf	11.83 /lf	16,565
Domestic water AG/type "L" copper/press fit - 1/2"	1,460 lf	11.83 /lf	17,274
Domestic water AG/type "L" copper/press fit - 3/4"	450 lf	14.33 /lf	6,446
Tempered water AG/type "L" copper/press fit - 1"	210 lf	18.70 /lf	3,926
Domestic water AG/type "L" copper/press fit - 1"	660 lf	18.70 /lf	12,339
Tempered water AG/type "L" copper/press fit - 1-1/4"	40 lf	22.94 /lf	918
Domestic water AG/type "L" copper/press fit - 1-1/4"	800 lf	22.94 /lf	18,352
Domestic water AG/type "L" copper/press fit - 1-1/2"	260 lf	27.56 /lf	7,165
Domestic water AG/type "L" copper/press fit - 2"	260 lf	37.42 /lf	9,729
Domestic water AG/type "L" copper/press fit - 2-1/2"	320 lf	60.35 /lf	19,311
Domestic water AG/type "L" copper/press fit - 3"	85 lf	77.19 /lf	6,562
Domestic water AG/type "L" copper/press fit - 4"	150 lf	105.45 /lf	15,818
- Domestic water piping accessories	9,885 lf	2.52 /lf	24,942
- Domestic water clean & test piping system	1 ls	3,324.56 /ls	3,325
- Domestic water valve tags & charts	250 ea	8.18 /ea	2,046
- Domestic water pipe & equipment I.D.	9,885 lf	1.38 /lf	13,625
Floor drain - 3" (#ZN415-6B)	12 ea	294.07 /ea	3,529
Floor drain - 4" (#ZN415-8B)	14 ea	353.07 /ea	4,943
Floor drain/heavy duty - 3" (#ZN415-6B-HD)	6 ea	394.07 /ea	2,364
- Funnel add - 3" (#Z326)	6 ea	119.77 /ea	719
Floor sink/12x12 - 3" (#Z1900)	8 ea	2,555.37 /ea	20,443
Floor cleanouts - 4" (#ZN1400)	50 ea	291.07 /ea	14,554
Grease interceptor Labor to Connect to Exterior Site Structure	1 ea	824.56 /ea	825
Grease interceptor/interior Kitchen	1 ea	4,291.56 /ea	4,292
Oil interceptor - Labor to Connect to site structure	1 ea	1,236.84 /ea	1,237
Elevator sump pump/oil minder	1 ea	3,812.28 /ea	3,812

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>22-01 PLUMBING (TS)</b>			
Backwater valve - 4" (#Z1095)	1 ea	738.14 /ea	738
Backwater valve - 6" (#Z1095)	2 ea	973.14 /ea	1,946
Sanitary UG/cast iron single hub pipe & ftgs. - 2"	200 lf	31.98 /lf	6,396
Sanitary UG/cast iron single hub pipe & ftgs. - 3"	531 lf	36.45 /lf	19,354
Sanitary UG/cast iron single hub pipe & ftgs. - 4"	550 lf	44.78 /lf	24,628
Sanitary UG/cast iron single hub pipe & ftgs. - 5"	330 lf	64.12 /lf	21,159
Sanitary UG/cast iron single hub pipe & ftgs. - 6"	50 lf	74.82 /lf	3,741
Sanitary AG/cast iron no hub pipe & ftgs. - avg. size Fixture runouts	2,500 lf	47.33 /lf	118,315
Sanitary AG/cast iron no hub pipe & ftgs. - avg. size FD runouts	280 lf	47.33 /lf	13,251
Sanitary AG/cast iron no hub pipe & ftgs. - 1-1/2"	40 lf	33.82 /lf	1,353
Sanitary AG/cast iron no hub pipe & ftgs. - 2"	1,220 lf	34.83 /lf	42,487
Sanitary AG/cast iron no hub pipe & ftgs. - 3"	605 lf	44.36 /lf	26,835
Sanitary AG/cast iron no hub pipe & ftgs. - 4"	270 lf	52.52 /lf	14,181
Sanitary AG/cast iron no hub pipe & ftgs. - 5"	10 lf	68.67 /lf	687
Grease waste UG/cast iron single hub pipe & ftgs. - 2"	40 lf	31.98 /lf	1,279
Grease waste UG/cast iron single hub pipe & ftgs. - 3"	152 lf	36.45 /lf	5,540
Grease waste UG/cast iron single hub pipe & ftgs. - 4"	325 lf	44.78 /lf	14,553
- Sanitary waste & vent piping accessories	7,103 lf	1.77 /lf	12,595
Roof drain/#ZC100 - 4"	7 ea	298.07 /ea	2,086
Roof drain/#ZC100 - 5"	3 ea	387.84 /ea	1,164
Roof drain/#ZC100 - 6"	9 ea	387.84 /ea	3,491
Roof drain/#ZC100 - 8"	2 ea	477.61 /ea	955
Rainleader UG/cast iron single hub pipe & ftgs. - 4"	60 lf	44.77 /lf	2,686
Rainleader UG/cast iron single hub pipe & ftgs. - 6"	140 lf	74.82 /lf	10,475
Rainleader UG/cast iron single hub pipe & ftgs. - 8"	150 lf	103.25 /lf	15,488
Rainleader UG/cast iron single hub pipe & ftgs. - 10"	203 lf	141.04 /lf	28,631
Rainleader UG/cast iron single hub pipe & ftgs. - 12"	20 lf	186.99 /lf	3,740
Rainleader AG/cast iron no hub pipe & ftgs. - 4"	275 lf	52.53 /lf	14,445
Rainleader AG/cast iron no hub pipe & ftgs. - 6"	700 lf	81.16 /lf	56,810
Perimeter PVC foundation drain piping below grade	1,600 lf	45.00 /lf	72,000
Perforated PVC piping below slab - assume 25' oc	0 lf	/lf	
Rainleader AG/cast iron no hub pipe & ftgs. - 8"	320 lf	133.84 /lf	42,828
Emergency gas shut off/cabinet w/1-1/2" solenoid & UL ball valve	1 ea	6,293.42 /ea	6,293
<b>Kitchen</b>			
- Remote panic buttons	2 ea	328.07 /ea	656
Gas piping/sch 40 black steel CW t&c - 1-1/4"	240 lf	34.14 /lf	8,194
Gas piping/sch 40 black steel CW t&c - 2"	20 lf	42.28 /lf	846
Gas piping/sch 40 blk stl ERW weld - 2-1/2"	165 lf	45.73 /lf	7,546
Gas piping/sch 40 blk stl ERW weld - 4"	40 lf	75.73 /lf	3,029





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>22-01 PLUMBING (TS)</b>			
Gas piping/sch 40 blk stl ERW weld - 6"	100 lf	124.72 /lf	12,472
- Gas piping accessories	565 lf	2.52 /lf	1,426
Gas piping to (1) lab	1 ls	30,003.26 /ls	30,003
Gas piping connection to generator	1 ls	24,999.69 /ls	25,000
DWH/gas fired/500 mbh - (Lochinvar #AWN-501PM)	2 ea	18,618.42 /ea	37,237
HWH/electric - 40 gals (Brad. Wht. #M-2-40S10DS) Non Potable	ea	/ea	
HWH/electric - 40 gals (Brad. Wht. #M-2-40S10DS) Tempered	ea	/ea	
DHW Storage Tank 318 Gallon	1 ea	7,018.42 /ea	7,018
Water closet/wall mnt./carrier/flush valve P-1	23 ea	1,265.42 /ea	29,105
Water closet/wall mnt./carrier/flush valve/ADA P-1A	31 ea	1,299.42 /ea	40,282
Urinal/wall mnt./carrier/flush valve P-2	15 ea	1,140.35 /ea	17,105
Urinal/wall mnt./carrier/flush valve/ADA P-2A	7 ea	1,175.35 /ea	8,227
Lavatory/lay-in/std 1-lever faucet/ADA P3-A	14 ea	517.44 /ea	7,244
Lavatory/undermount/std 1-lever faucet P-3	50 ea	501.44 /ea	25,072
Lavatory/wall hung/std 1-lever faucet/carrier/ADA P-3A	17 ea	1,083.05 /ea	18,412
Mixing valve/single lav. (Leonard #170)	93 ea	328.84 /ea	30,582
Sink/lay-in/1-bowl 22"x19"/std faucet/ADA P-8,P-8A	7 ea	1,065.75 /ea	7,460
Sink/lay-in/1-bowl 20"x22"/sensor faucet/ADA Art P-9, P-9A	4 ea	1,303.82 /ea	5,215
Sink/lay-in/1-bowl 20"x22"/sensor faucet/ADA	1 ea	1,303.82 /ea	1,304
Sink/acid waste/std 2-lever wrist blade faucet/st. steel P-7	42 ea	2,545.42 /ea	106,908
- Solids interceptors (Art Room sinks)	4 ea	521.14 /ea	2,085
Mop sink/floor mnt - 24"x24" P-5	5 ea	1,261.51 /ea	6,308
Shower stall/std valve & access./6'x3' gelcoat/ADA P-6	4 ea	3,854.17 /ea	15,417
Emergency eye wash station/mixing valve/sink mount with drench P-10A	42 ea	1,034.21 /ea	43,437
Emergency shower/eye wash sta./mixing valve/cabinet mount P-10	3 ea	3,265.35 /ea	9,796
Water cooler/remote condenser/bi-level/ADA	11 ea	10,436.84 /ea	114,805
- Plumbing fixtures offload & distribution	276 ea	103.07 /ea	28,447
- Plumbing fixtures rough-in	276 ea	128.07 /ea	35,347
Acid neut. system w/monitor/200 gal. tank	1 ea	42,442.98 /ea	42,443
Acid neut. system w/monitor/200 gal. tank - VM-P01e	ea	/ea	
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 2"	77 lf	45.56 /lf	3,508
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 2" - VM-P01e	lf	/lf	
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 4"	423 lf	68.91 /lf	29,149
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 4" - VM-P01e	0 lf	0.00 /lf	0
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 2"	944 lf	51.44 /lf	48,562
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 3"	275 lf	65.67 /lf	18,060
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 4"	616 lf	77.44 /lf	47,701
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 4" - VM-P01e	lf	/lf	
- Acid waste & vent piping accessories	2,335 lf	2.02 /lf	4,724



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>22-01 PLUMBING (TS)</b>			
- Acid waste & vent piping accessories - VM-P01e	lf	/lf	
Wiring for Acid Waste Systems	1 ls	12,000.00 /ls	12,000
Pumps/chamber	1 ls	25,000.00 /ls	25,000
Pumps/chamber	ls	/ls	
Local chip tanks - VM-P01e - VM-P01e	ea	/ea	
<b>22-01 PLUMBING (TS)</b>	<b>136,600 sf</b>	<b>16.07 /sf</b>	<b>2,195,545</b>
<b>23-01 HVAC (TS)</b>			
Lull, laborer for cleanup by Consigli (HVAC)	-1 ls	343,000.00 /ls	(343,000)
Trade support - lull, laborer for cleanup (HVAC)	1 ls	343,000.00 /ls	343,000
General requirements (sq. ft.)	136,600 sf	1.15 /sf	157,090
3D/BIM coordination	1 ls	100,000.00 /ls	100,000
Testing & balancing/cost per sq. ft.	136,600 sf	0.65 /sf	88,790
Insulation/ductwork/blanket wrap	86,800 sf	3.55 /sf	307,790
Insulation/ductwork/weatherproof exposed	4,500 sf	12.89 /sf	57,986
Insulation/pipe/copper	11,020 lf	7.09 /lf	78,155
Insulation/pipe/copper - reconciliation adjust	-3,000 lf	7.09 /lf	(21,276)
Insulation/pipe/weld	9,500 lf	10.10 /lf	95,956
Commissioning support/lump sum	1 ls	15,000.00 /ls	15,000
Automatic temperature controls/cost per sq. ft.	136,790 sf	0.25 /sf	34,198
ATC - Air valve/hood exhaust/HEX	3 ea	3,971.15 /ea	11,913
ATC - Air valves/no coil control wiring - 3 pts./fume hood	9 pnt	413.75 /pnt	3,724
ATC - RTU's/custom - 30 pts.	240 pnt	1,233.84 /pnt	296,122
ATC - MUA units - 10 pts.	10 pnt	719.04 /pnt	7,190
ATC - Exhaust fans - 3 pts.	15 pnt	673.27 /pnt	10,099
ATC - Life safty fans - 8 pts.	32 pnt	725.38 /pnt	23,212
ATC - Lab exhaust fans - 5 pts./fan	15 pnt	725.38 /pnt	10,881
ATC - Boilers/modular - 10 pts.	20 pnt	777.50 /pnt	15,550
ATC - Pumps - 4 pts.	16 pnt	725.38 /pnt	11,606
ATC - VFD wiring for pumps (remote mount) - 4 pts.	16 pnt	723.27 /pnt	11,572
ATC - Circulators - 2 pts.	4 pnt	462.69 /pnt	1,851
ATC - Chillers - 15 pts.	15 pnt	1,233.84 /pnt	18,508
ATC - VAV box/no coil (ATC furn./factory install controls) 2 pts.	310 pnt	386.63 /pnt	119,856
ATC - Fintube radiation zones - 2 pts.	20 pnt	361.63 /pnt	7,233
ATC - Cabinet unit heaters - 3 pts.	42 pnt	361.63 /pnt	15,189
ATC - Unit heaters - 3 pts.	6 pnt	361.63 /pnt	2,170
ATC - Radiant ceiling panel zones - 2 pts.	246 pnt	361.63 /pnt	88,962
ATC - Plumbing points - 10 pts.	10 pnt	563.82 /pnt	5,638
ATC - Elctrical points - 10 pts.	10 pnt	563.82 /pnt	5,638



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>23-01 HVAC (TS)</b>			
Hot water s&r/type "L" copper solder - avg. size (take-off)	8,770 lf	24.48 /lf	214,723
Hot water s&r/type "L" copper solder - avg. size - recon adjust	-6,000 lf	24.48 /lf	(146,903)
Hot water s&r/type "L" copper solder - avg. size (misc.)	1,000 lf	24.48 /lf	24,484
Hot water s&r/sch 40 blk stl ERW weld - avg. size (shown)	7,450 lf	94.20 /lf	701,762
Glycol Chilled water s&r/type "L" copper solder - avg. size (misc.)	1,250 lf	24.48 /lf	30,605
Glycol Chilled water s&r/sch 40 blk stl ERW weld - avg. size	2,050 lf	94.20 /lf	193,102
- Hydronic piping accessories	17,520 lf	2.53 /lf	44,359
Pump/base mount/790 gpm (HW)	2 ea	8,167.68 /ea	16,335
Chilled water pump house (pumps & accesories, enclosure, piping, unit heater	1 ls	226,667.68 /ls	226,668
- Suction diffusers	2 ea	1,460.58 /ea	2,921
- Flex connector/HVAC pumps	4 ea	556.35 /ea	2,225
- Triple duty valves	2 ea	2,312.69 /ea	4,625
Air separators	1 ea	4,333.84 /ea	4,334
Expansion tanks/ASME	2 ea	7,167.68 /ea	14,335
Chemical treatment (lump sum)	1 ls	20,000.00 /ls	20,000
Glycol feed/50 gal. tank w/pump (Neptune #G-50-1)	2 ea	5,272.92 /ea	10,546
- Glycol solution/40% propylene	1,000 gal	25.21 /gal	25,212
Sheetmetal & accessories/galvanized	105,500 lb	11.04 /lb	1,164,720
Sheetmetal & accessories/galvanized - reduction for reconcillation	-15,000 lb	11.04 /lb	(165,600)
Directed change to Trade for further recon	-1 ls	210,526.04 /ls	(210,526)
Sheetmetal & accessories/galvanized (perforated)	1,500 lb	14.49 /lb	21,735
Sheetmetal & accessories/galvanized (smoke exhasut)	6,500 lb	11.04 /lb	71,760
Sheetmetal & accessories/galv./rectangular single wall	29,250 lb	11.04 /lb	322,920
Sheetmetal & accessories/galv./flat oval/double wall w/ liner - VM-I24	lb	/lb	
Sheetmetal & accessories/stainless steel (dishwasher)	500 lb	22.28 /lb	11,140
Sheetmetal & accessories/welded stainless steel (kitchen exhaust)	500 lb	29.78 /lb	14,890
Sheetmetal & accessories/welded stainless steel (kiln exhaust)	500 lb	29.78 /lb	14,890
Sheetmetal & accessories/welded stainless steel (3 - fume hoods)	4,500 lb	29.78 /lb	134,009
Sheetmetal & accessories/fabric/1-row cable (DuctSox) - 24"	305 lf	81.29 /lf	24,792
Duct enclosure (roof)	1 ea	5,424.10 /ea	5,424
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 ea	122.47 /ea	980
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 ea	122.47 /ea	980

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>23-01 HVAC (TS)</b>			
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 lf	122.47 /lf	980
SM - Diffusers, registers & grilles	136,600 sf	0.20 /sf	27,320
SM - Linear slot diffusers (supply)	6 ea	465.39 /ea	2,792
SM - Linear slot diffusers (exhaust) - architectural	lf	//	
SM - Displ. Diffuser/Floor Mnt.	156 ea	1,289.88 /ea	201,221
SM - Combination fire/smoke dampers/louver type/UL	20 ea	776.53 /ea	15,530
SM - Motorized damper	14 ea	1,107.92 /ea	15,511
SM - Smoke detectors/duct mount	40 ea	747.47 /ea	29,899
SM - Sound attenuators/in-line/std. gauge	239,000 cfm	0.55 /cfm	131,341
SM - Kitchen exhaust hood/st. steel/install only (by KES)	1 ea	2,339.28 /ea	2,339
SM - Dishwasher exhaust hood/st. steel/install only (by KES)	1 ea	1,559.52 /ea	1,560
SEF-1-4	4 ea	17,339.28 /ea	69,357
EF-3&4 /centrifugal downblast/roof/direct drive - 500 cfm	2 ea	1,069.31 /ea	2,139
EF-1&2 /centrifugal downblast/roof/direct drive - 2,500 cfm	2 ea	1,771.24 /ea	3,542
KEF-1/centrifugal upblast/roof - 4,170 cfm	1 ea	2,734.82 /ea	2,735
FEF-1,2,3 Lab exhaust fan/roof - 1,200 cfm	3 ea	9,084.82 /ea	27,254
Dust collection system	1 ea	17,339.28 /ea	17,339
Kiln exhaust	1 ls	5,500.00 /ls	5,500
Variable air volume box - small	12 ea	533.15 /ea	6,398
Variable air volume box - medium	143 ea	668.62 /ea	95,612
Boiler/HW/gas/high eff. cond. - 4,000 mbh Riello AR 4000	2 ea	57,501.52 /ea	115,003
Boiler circulator pump	2 ea	1,708.46 /ea	3,417
Boiler combustion air/galvanized steel 10"	200 lf	38.00 /lf	7,600
Flue piping/double wall/stainless steel 10"	205 lf	185.00 /lf	37,925
Chiller/air cooled - 370 tons	1 ea	381,153.80 /ea	381,154
Buffer tanks/Lochinvar - 300 gals.	1 ea	8,750.76 /ea	8,751
RTU-1-4 Classrooms (service enclosure, HW&CHW coils, energy recovery)	88,000 cfm	14.90 /cfm	1,311,200
RTU-5 Gymnasium (service enclosure, HW&CHW coils, energy recovery)	15,000 cfm	14.90 /cfm	223,500
RTU-6 Auditorium (service enclosure, HW&CHW coils, energy recovery)	12,000 cfm	14.90 /cfm	178,800
RTU-7 Lockers (service enclosure, HW&CHW coils, energy recovery)	2,000 cfm	14.90 /cfm	29,800
MAU-1 Make-up air unit/HW&CHW coil/	5,000 cfm	7.00 /cfm	35,000
Mini-split AC system/1-zone/wall mnt./cool only - 12 mbh	1 ea	2,072.92 /ea	2,073
Mini-split AC system/1-zone/wall mnt./cool only - 18 mbh	5 ea	2,681.66 /ea	13,408
Mini-split AC system/1-zone/wall mnt./cool only - 24 mbh	2 ea	2,956.03 /ea	5,912
Mini-split refrigeration line set/6-12 mbh - 50'	2 ea	584.88 /ea	1,170
Mini-split refrigeration line set/15-18 mbh - 50'	10 ea	599.88 /ea	5,999

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>23-01 HVAC (TS)</b>			
Mini-split refrigeration line set/24-30 mbh - 50'	4 ea	614.88 /ea	2,460
Mini-split condensate drains/type"L" copper	450 lf	19.43 /lf	8,744
A/C cond. pump	8 ea	253.74 /ea	2,030
INS - Mini-split Insulation/copper pipe	450 lf	6.87 /lf	3,090
ATC - Mini-split condensing units (w/factory controls)	8 ea	879.76 /ea	7,038
ATC - Mini-split indoor units (w/factory controls)	8 ea	587.35 /ea	4,699
Terminal equipment	136,600 sf	0.10 /sf	13,660
Radiant ceiling panels/24" wide - ft.	1,280 lf	115.00 /lf	147,200
Finned-tube radiation pedestal mount (gym)	295 lf	194.24 /lf	57,301
Finned-tube radiation pedestal mount	20 lf	250.00 /lf	5,000
Finned-tube radiation bare - VM-M02	650 lf	41.00 /lf	26,650
Cabinet unit heater/hot water/wall mount/recessed - avg. size	4 ea	1,573.62 /ea	6,294
Cabinet unit heater/hot water/ceiling mount - avg. size	10 ea	1,749.51 /ea	17,495
Unit heater/hot water/horiz./propeller - avg. size	2 ea	1,092.41 /ea	2,185
Misc. VFD's	1 ls	35,000.00 /ls	35,000
VFD w/keypad/disconnect/bypass/NEMA 1 - HW pumps	2 ea	6,028.47 /ea	12,057
VFD w/keypad/disconnect/bypass/NEMA 1 - CHW pumps w/ pump house	ea	/ea	
Equipment hoisting/rigging/setting/start-up	136,600 sf	1.15 /sf	157,090
<b>23-01 HVAC (TS)</b>	<b>136,600 sf</b>	<b>58.33 /sf</b>	<b>7,967,908</b>

**26-01 ELECTRICAL (TS)**

Lull, laborer for cleanup by Consigli (Electrical)	-1 ls	230,000.00 /ls	(230,000)
Trade support - lull, laborer for cleanup (Electrical)	1 ls	230,000.00 /ls	230,000
<i>General requirements</i>	<i>BP#1</i>	<i>/BP#1</i>	
LEED Silver - premium (T.B.D.)	1 ls	9,400.00 /ls	9,400
Temp light stringers & GFCI power	136,600 sf	0.38 /sf	51,362
Temp 480Y/277V electrical service (400A)	3 ea	18,226.22 /ea	54,679
Temp power for welders	2 ea	2,398.27 /ea	4,797
Temp power for trailers	4 ea	1,302.42 /ea	5,210
Temp internet connection for trailers	4 ea	1,854.17 /ea	7,417
Material handling / project mgmt.	250 mh	97.71 /mh	24,428
3D/BIM coordination	500 mh	97.71 /mh	48,856
<i>Permit fee - N.I.C.</i>	<i>ls</i>	<i>/ls</i>	
Record drawings / as-builts	1 ea	5,318.52 /ea	5,319
<i>Bucket truck rental (per mo.)</i>	<i>BP#1</i>	<i>/BP#1</i>	
Seismic & testing (panels, generator, lighting control, fire alarm)	1 ls	18,800.00 /ls	18,800
Coring - patching - firestopping	136,600 sf	0.09 /sf	12,840
Project phasing (re-mobilization)	1 ls	9,400.00 /ls	9,400
Hoisting & rigging (generator & switchboard)	2 ls	7,050.00 /ls	14,100

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Relocate existing emergency call box (provide new concrete base)	BP#1	/BP#1	
Remove existing exterior site light fixture	BP#1	/BP#1	
Remove existing exterior site light fixture	6 ea	672.85 /ea	4,037
M.I. Cable - 4-1/c #3/0 - 200A [generator]	135 lf	126.97 /lf	17,140
Quick term kit - #3/0 4-1/c	2 ea	734.64 /ea	1,469
Brass plate (per hole)	2 ea	92.10 /ea	184
Feeder (PVC/CU) - 600A [generator]	135 lf	82.00 /lf	11,069
Feeder (PVC/CU) - 2500A [secondary]	105 lf	414.00 /lf	43,470
Empty conduit - sch 40 PVC - 4" - 1 way [generator]	135 lf	9.27 /lf	1,251
Empty conduit - sch 40 PVC - 4" - 1 way [secondary / spare]	105 lf	9.27 /lf	973
Empty conduit - sch 40 PVC - 4" - 2 way [primary]	250 lf	16.60 /lf	4,150
Magnetic warning tape - 1/8"	875 lf	4.37 /lf	3,826
Pole riser (GRC - 4"C)	2 ea	2,343.85 /ea	4,688
Electric manhole - 6'x12x7'	1 ea	6,773.56 /ea	6,774
Cast iron manhole frame/cover, 32"D x 6'H grade rings	1 ea	1,140.93 /ea	1,141
17"x30"x12"D ground pullbox (Quazite #PC1730BA12 w/ cover)	BP#1	/BP#1	
17"x30"x12"D ground pullbox (Quazite #PC1730BA12 w/ cover)	11 ea	1,078.60 /ea	11,865
Hand hole & cover - 4'x4'x4'	3 ea	1,937.11 /ea	5,811
Building grounding & bonding	136,600 sf	0.11 /sf	15,408
Manhole / racking grounding & bonding	1 ea	701.05 /ea	701
Exterior (utility) transformer grounding & bonding	1 ea	1,066.05 /ea	1,066
Generator grounding & bonding	1 ea	1,066.05 /ea	1,066
Dry-type transformer grounding	4 ea	213.22 /ea	853
SPD grounding	43 ea	120.29 /ea	5,172
Copper ground bar - 2"x1/4" (ea.)	5 ea	280.03 /ea	1,400
Bare copper wire - #4/0 [duct bank]	875 lf	4.99 /lf	4,368
Furnish & install Fairplay Electronic scoreboards & shot clocks - allowance (l.s.)	1 allw	37,600.00 /allw	37,600
Gas solenoid shutdown wiring	1 allw	11,750.00 /allw	11,750
Kitchen shutdown EPO wiring	1 allw	9,400.00 /allw	9,400
Feeder (MC) - 20A (kitchen equipment - x39)	1,950 lf	5.75 /lf	11,211
Feeder (MC) - 40A (kitchen equipment - x1)	125 lf	5.87 /lf	733
1" PVC - 30A (3#8 & #10G)	250 lf	10.29 /lf	2,573
Feeder (MC) - 50A (kitchen equipment - x1)	100 lf	8.19 /lf	819
Feeder (MC) - 60A (kitchen equipment - x1)	100 lf	10.55 /lf	1,055
Power (120V) for ATC panels	8 ea	460.91 /ea	3,687
Service switch: 20A, 120V, NEMA-1 [dish washer]	1 ea	107.43 /ea	107
Fused Disco: 20AF, 240V/3P, NEMA-1 [kitchen equipment]	5 ea	310.94 /ea	1,555
Fused Disco: 20AF, 240V/1P, NEMA-1 [kitchen equipment]	1 ea	310.93 /ea	311



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Fused Disco's: 600V/3P, NEMA-1 [riser diagram]	10 ea	1,462.06 /ea	14,621
Non-Fused Disco: 20A, 240V/3P, NEMA-1 [kitchen equipment]	9 ea	292.64 /ea	2,634
Wire gymnasium equipment SMC control stations (furnished by others)	8 ea	1,058.23 /ea	8,466
Elec Vehicle Charging Station / dual pedestal / cable mgmt.	3 ea	10,512.40 /ea	31,537
Wire elevator controller and elevator motor (40HP)	2 ea	821.28 /ea	1,643
Wire misc. motors	13 ea	471.74 /ea	6,133
Acid neutralizer - circuit / service switch / connection	1 ea	631.49 /ea	631
Kitchen equipment final connections (includes flexible whip)	20 ea	72.36 /ea	1,447
Mount & wire VFD's (furnished by Div. 23)	10 ea	646.55 /ea	6,465
MAU (5000cfm) - circuit / disconnect (3R) / connection	1 ea	2,503.41 /ea	2,503
RTU's - circuit / disconnect (3R) / connection (small)	4 ea	4,736.19 /ea	18,945
RTU's - circuit / disconnect (3R) / connection (large)	4 ea	7,010.29 /ea	28,041
VAV's - circuit / disconnect / connection	76 ea	374.95 /ea	28,497
Mini-split systems (indoor/outdoor) - circuits / disconnects (3R) / connections	8 ea	3,225.23 /ea	25,802
Chiller (370T) - circuit / disconnect (3R) / connection	1 ea	25,825.56 /ea	25,826
Smoke exhaust fans - circuit / disconnect / connection (100A)	4 ea	2,400.01 /ea	9,600
Kitchen exhaust fan - circuit / disconnect / connection	1 ea	1,420.90 /ea	1,421
Kiln exhaust system - circuit / disconnect / connection	1 ea	3,364.26 /ea	3,364
Dust collectors - circuit / disconnect / connection (40A)	2 ea	2,719.61 /ea	5,439
Fume hood exhaust fans - circuit / disconnect / connection	3 ea	1,214.10 /ea	3,642
Exhaust fans - circuit / disconnect / connection	4 ea	1,214.11 /ea	4,856
Power to electronic trap primers - 120V	10 ea	100.19 /ea	1,002
Power to sensor faucets / flush valves - 120V	142 ea	43.04 /ea	6,112
Hot water pumps - circuit / disconnect / connection	2 ea	1,673.87 /ea	3,348
Boilers - circuit / disconnect / connection	2 ea	1,204.71 /ea	2,409
Chilled water pump - circuit / disconnect / connection	1 ea	1,673.87 /ea	1,674
Hot water heaters - circuit / service switch / connection	4 ea	591.53 /ea	2,366
Cabinet unit heaters - circuit / service switch / connection	14 ea	868.28 /ea	12,156
Unit heaters - circuit / service switch / connection	2 ea	868.28 /ea	1,737
Elevator sump pump - circuit / disconnect (3R) / connection	1 ea	1,247.28 /ea	1,247
Duplex gas booster pumps - circuit / disconnect (3R) / connection	2 ea	1,247.28 /ea	2,495
Recirculation pumps - circuit / disconnect / connection	2 ea	997.87 /ea	1,996
Glycol feed pumps - circuit / disconnect / connection	2 ea	997.87 /ea	1,996
Boiler circulation pumps - circuit / disconnect / connection	2 ea	997.87 /ea	1,996
VAV's - circuit / disconnect / connection	155 ea	298.83 /ea	46,318
On-site programming & startup (manufacturer)	1 ls	3,913.41 /ls	3,913
Single pole switch (120/277V)	9 ea	65.04 /ea	585

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Key op switch (120/277V)	2 ea	72.44 /ea	145
Ceiling PIR occupancy sensor (24VDC)	314 ea	247.23 /ea	77,629
Occupancy sensor power pack (120V)	ea	/ea	
Wall dimmer switch (0-10V)	220 ea	131.04 /ea	28,828
Photocells (daylight harvesting)	82 ea	265.06 /ea	21,735
Universal dimming room controller, 1-channel	50 ea	536.88 /ea	26,844
Plug load controllers (20A/120V)	50 ea	300.80 /ea	15,040
Emergency lighting transfer (bypass relay) - non-dimming	30 ea	236.81 /ea	7,104
Lighting contactor - 12 pole (exterior lighting)	1 ea	1,899.98 /ea	1,900
Astronomical time clock	1 ea	919.97 /ea	920
Time clock - 7 day digital w/ battery backup (Intermatic ET1100)	BP#1	/BP#1	
Dimming rack HDP - in Theater Equipment	-	/-	
Dimming rack SDP - in Theater Equipment	-	/-	
Rough in for Theater Lighting - Allowance	1 allw	9,400.01 /allw	9,400
Power for Theater Lighting - Allowance	1 allw	28,199.87 /allw	28,200
Sub lighting control panels	3 ea	2,394.56 /ea	7,184
Master lighting control panel	1 ea	4,383.41 /ea	4,383
Energy control unit	1 ea	2,157.58 /ea	2,158
System server unit	1 ea	1,316.75 /ea	1,317
Network Ethernet switch	1 ea	2,270.85 /ea	2,271
MC Cable (12/2) - 20A	13,950 lf	3.45 /lf	48,128
MC Cable (12/3) - 20A	5,000 lf	3.87 /lf	19,344
PVC (12/2) - 20A	BP#1	/BP#1	
EMT (12/2) - 20A	2,500 lf	6.70 /lf	16,755
RJ45 Cable, 25LF (plenum-rated)	396 ea	72.10 /ea	28,551
RJ45 Cable, 50LF (plenum rated)	220 ea	111.05 /ea	24,430
Utility meter socket (meter by Util. Co.)	1 ea	289.66 /ea	290
CT meter enclosure for switchboard	1 ea	1,462.26 /ea	1,462
Concrete pads F&I by G.C.	ea	/ea	
Circuit breaker - 20A, 277/480V (panel)	BP#1	/BP#1	
Switchboard: 3000A bus, 2500A rated MCB (100%), 480/277V, 3PH, 65kAIC	1 ea	45,417.04 /ea	45,417
Externally mounted SPD's	5 ea	3,131.70 /ea	15,659
Panelboard - 100A, 42-circuit	15 ea	2,550.41 /ea	38,256
Panelboard - 225A, 42-circuit	10 ea	3,420.66 /ea	34,207
Panelboard - 225A, 84-circuit	9 ea	4,338.66 /ea	39,048
Panelboard - 400A, 42-circuit	3 ea	5,435.74 /ea	16,307
Panelboard - 400A, 84-circuit	1 ea	10,724.46 /ea	10,724
Distribution panel - 600A	2 ea	9,886.92 /ea	19,774
Distribution panel - 800A	2 ea	12,443.25 /ea	24,887



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Transformer: floor/wall - 45kVA, 480V:208V	2 ea	2,721.58 /ea	5,443
K-13 Transformer: floor/wall - 150kVA, 480V:208V	1 ea	9,134.64 /ea	9,135
K-13 Transformer: floor - 225kVA, 480V:208V	1 ea	11,438.39 /ea	11,438
Engineered Services - Training (Manufacturer)	1 ea	4,165.70 /ea	4,166
Engineered Services - Start-Up Assistance (Manufacturer)	1 ea	3,519.08 /ea	3,519
Empty conduit (PVC) - (2) 2.5" [future P.V.]	880 lf	35.04 /lf	30,837
Feeder (EMT/CU) - 20A [BMS to utility meter]	200 lf	7.43 /lf	1,486
Feeder (EMT/CU) - 20A [EP1A to Elevator Controller]	125 lf	7.43 /lf	929
Feeder (EMT/CU) - 60A [MSB to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 60A [2DP1A to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 60A [2DP1B to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 60A [2DP1C to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 60A [4DP1B to SPD]	50 lf	14.69 /lf	735
Feeder (EMT/CU) - 90A [MSB to KPP1A via T-5]	50 lf	15.96 /lf	798
Feeder (EMT/CU) - 100A [MSB to LP1A]	40 lf	20.74 /lf	830
Feeder (EMT/CU) - 100A [4DP1B to LP1B]	50 lf	20.74 /lf	1,037
Feeder (EMT/CU) - 100A [MSB to LP1C]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [4DP1B to LP2B]	50 lf	20.74 /lf	1,037
Feeder (EMT/CU) - 100A [MSB to LP2C]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [4DP1B to LP3B]	150 lf	20.74 /lf	3,111
Feeder (EMT/CU) - 100A [MSB to LP3C]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [MSB to LP1D]	150 lf	20.74 /lf	3,111
Feeder (EMT/CU) - 100A [EHP1A to Elevator Controller]	125 lf	20.74 /lf	2,592
Feeder (EMT/CU) - 100A [TEP1A to TEP2B]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [TEP1A to TEP2C]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [TEP1A to TEP1D]	200 lf	20.74 /lf	4,148
Feeder (EMT/CU) - 100A [TEP1A to UPS]	50 lf	20.74 /lf	1,037
Feeder (EMT/CU) - 100A [2DP1A to MP1A]	50 lf	20.74 /lf	1,037
Feeder (EMT/CU) - 125A [UPS to EP1A]	150 lf	20.99 /lf	3,149
Feeder (EMT/CU) - 150A [2DP1B to MP1B]	50 lf	26.82 /lf	1,341
Feeder (EMT/CU) - 150A [2DP1C to MSB]	200 lf	26.82 /lf	5,365
Feeder (EMT/CU) - 150A [2DP1C to MP3C]	250 lf	26.82 /lf	6,706
Feeder (EMT/CU) - 150A [2DP1B to PP2B]	60 lf	26.82 /lf	1,609
Feeder (EMT/CU) - 150A [2DP1C to PP2C]	100 lf	26.82 /lf	2,682
Feeder (EMT/CU) - 150A [2DP1B to PP1B]	50 lf	26.82 /lf	1,341
Feeder (EMT/CU) - 150A [2DP1C to MP1C]	40 lf	26.83 /lf	1,073
Feeder (EMT/CU) - 150A [2DP1C to PP2C]	125 lf	26.82 /lf	3,353
Feeder (EMT/CU) - 150A [2DP1C to PP3C]	150 lf	26.82 /lf	4,024
Feeder (EMT/CU) - 150A [4DP1C to PP3B]	165 lf	26.82 /lf	4,426

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Feeder (EMT/CU) - 150A [2DP1C to PP1C]	50 lf	26.82 /lf	1,341
Feeder (EMT/CU) - 150A [2DP1A to PP1D]	100 lf	26.82 /lf	2,682
Feeder (EMT/CU) - 200A [MSB to ATS-LS]	100 lf	32.13 /lf	3,213
Feeder (EMT/CU) - 200A [ATS-LS to ELP1A]	40 lf	32.13 /lf	1,285
Feeder (EMT/CU) - 200A [2DP1A to PP1A]	50 lf	32.13 /lf	1,607
Feeder (EMT/CU) - 225A [MSB to Dimming Rack HDP]	250 lf	46.72 /lf	11,679
Feeder (EMT/CU) - 225A [2DP1A to Dimming Rack SDP]	200 lf	46.72 /lf	9,344
Feeder (EMT/CU) - 225A [ATS-OS to EHP3C]	250 lf	46.72 /lf	11,679
Feeder (EMT/CU) - 225A [MP3C to PP3C]	45 lf	46.72 /lf	2,102
Feeder (EMT/CU) - 225A [2DP1B to MP3B]	100 lf	46.72 /lf	4,672
Feeder (EMT/CU) - 400A [MSB to MHP1A]	50 lf	73.75 /lf	3,688
Feeder (EMT/CU) - 400A [MSB to MHP3C]	200 lf	73.75 /lf	14,750
Feeder (EMT/CU) - 400A [EHP1C to EHP1A]	100 lf	73.75 /lf	7,375
Feeder (EMT/CU) - 600A [ATS-OS to EHP1A]	200 lf	108.91 /lf	21,782
Feeder (EMT/CU) - 600A [MSB to ATS-OS]	75 lf	108.91 /lf	8,168
Feeder (EMT/CU) - 600A [MSB to 4DP1B]	200 lf	108.91 /lf	21,782
Feeder (EMT/CU) - 600A [MSB to 2DP1A]	70 lf	108.91 /lf	7,624
Feeder (EMT/CU) - 800A [MSB to 2DP1C]	125 lf	138.78 /lf	17,348
Feeder (EMT/CU) - 800A [MSB to 4DP1C]	200 lf	138.78 /lf	27,757
Empty conduit (EMT) - 3/4" [utility meter to switchboard]	75 lf	6.28 /lf	471
Feeder (MC) - 80A [45kVA]	60 lf	7.95 /lf	477
Feeder (MC) - 150A [45kVA]	120 lf	18.50 /lf	2,220
Feeder (MC) - 300A [150kVA]	30 lf	52.90 /lf	1,587
Feeder (MC) - 400A [225kVA]	30 lf	59.32 /lf	1,780
Feeder (MC) - 500A [150kVA]	30 lf	83.84 /lf	2,515
Feeder (MC) - 800A [225kVA]	30 lf	111.65 /lf	3,349
M.I. Cable - 4-1/c #6 [ELP1B to ELP3A]	150 lf	36.15 /lf	5,422
M.I. Cable - 4-1/c #3 [EP1A to EP3C]	150 lf	65.42 /lf	9,813
M.I. Cable - 4-1/c #3 [ELP1A to EDP]	125 lf	65.42 /lf	8,178
M.I. Cable - 4-1/c #3 [ELP1A to EP1C]	125 lf	65.42 /lf	8,178
M.I. Cable - 4-1/c #2 [EPL1A to ELP1B]	150 lf	72.60 /lf	10,890
Quick term kit - #6 4-1/c	2 ea	359.96 /ea	720
Quick term kit - #3 4-1/c	6 ea	710.21 /ea	4,261
Quick term kit - #2 4-1/c	2 ea	734.64 /ea	1,469
Brass plate (per hole)	10 ea	92.10 /ea	921
MC Cable (12/2) - 20A	10,190 lf	3.45 /lf	35,156
MC Cable (10/2) - 30A	5,900 lf	4.36 /lf	25,746
MC Cable (10/3) - 30A	1,800 lf	4.86 /lf	8,751
EMT (12/2) - 20A	3,850 lf	6.70 /lf	25,802

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
PVC (10/2) - 20A	400 lf	6.68 /lf	2,673
EMT (10/2) - 30A	BP#1	/BP#1	
Duplex receptacle - 20A - tamper resistant	458 ea	78.60 /ea	36,000
Duplex receptacle - 20A - switched with IO module	9 ea	67.78 /ea	610
Simplex receptacle - 20A [scoreboard control]	2 ea	70.18 /ea	140
Duplex receptacle - 20A - GFCI	153 ea	92.44 /ea	14,143
Duplex receptacle - 20A - GFCI - W.P.	23 ea	129.27 /ea	2,973
Duplex receptacle - 20A [kitchen equipment] - circuitry in Equipment Wiring]	26 ea	67.79 /ea	1,763
Duplex receptacle - 20A [A/V]	5 ea	67.79 /ea	339
Exterior pedestal receptacle, GFI type, Wayne Tyler, Inc. #CB-BOX	5 ea	1,292.26 /ea	6,461
Quadruplex receptacle - 20A	283 ea	93.78 /ea	26,541
Quadruplex receptacle - 20A - switched with IO module	8 ea	93.79 /ea	750
Specialty receptacle - 20A - L5-20R	11 ea	101.01 /ea	1,111
Specialty receptacle - 20A - L14-20R	2 ea	104.82 /ea	210
Specialty receptacle - 30A - L5-30R	16 ea	111.69 /ea	1,787
Quadruplex receptacle - 20A - GFCI	2 ea	143.12 /ea	286
Power for motorized shades - allowance (ea.)	25 allw	398.83 /allw	9,971
Floor boxes and poke-thru's - allowance (ea.)	50 allw	1,155.26 /allw	57,763
Hardwired A/C junction (MC) - 20A [A/V]	2 ea	318.93 /ea	638
Power junction w/feed (MC) - 20A [water coolers/bottle fillers]	15 ea	221.21 /ea	3,318
Power junction w/feed (MC) - 20A	20 ea	221.21 /ea	4,424
Trash compactor feed & connection	2 ea	2,243.92 /ea	4,488
Overhead door power & connection	3 ea	1,223.50 /ea	3,671
Dock leveler feed & connection	1 ea	3,532.90 /ea	3,533
Emergency power offs (EPO)	5 ea	295.11 /ea	1,476
Wiremold receptacles - G4 - allowance (ea.)	600 allw	31.05 /allw	18,630
G4000 dual-channel wiremold - 24" spacing - allowance (l.f.)	1,000 allw	63.39 /allw	63,387
Exterior junction boxes: 8"x8"x4", NEMA-3R	BP#1	/BP#1	
LB fitting	BP#1	/BP#1	
Provisions for future P.V. (conduits, breakers, disconnects, grounding & bonding)	136,600 sf	0.47 /sf	64,202
Natural gas generator: 300kW / 312.5kVA	1 ea	115,266.09 /ea	115,266
Generator testing & start-up	1 ea	1,863.20 /ea	1,863
Generator setting & rigging	1 ea	7,286.90 /ea	7,287
Generator annunciator panel	1 ea	1,447.40 /ea	1,447
Battery charger circuit (4#10 & 1#10G in 1"C)	140 lf	20.94 /lf	2,932
Jacket heater circuit	140 lf	34.49 /lf	4,828
Oil heater circuit	140 lf	53.66 /lf	7,512

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Exterior W.P. sound attenuating enclosure	1 ea	16,598.75 /ea	16,599
Remote status panel circuit	140 lf	9.64 /lf	1,349
Starting circuits - 2#14 MI cable	140 lf	12.76 /lf	1,787
Remote annunciator panel - 16#14 (EMT)	100 lf	15.81 /lf	1,581
Quick connect switch, ESL Storm Switch 3020	1 ea	3,668.10 /ea	3,668
UPS: 480-208/120V, 24kW (static ts,manual by-pass, 8min batt.BU)	1 ea	36,417.67 /ea	36,418
ATS-LS: 200A, 277/480V, no iso by-pass - open trans	1 ea	6,347.73 /ea	6,348
ATS-OS: 600A, 277/480V, no iso by-pass - open trans w/ (4) N.O. & (4) N.C. contacts	1 ea	12,190.86 /ea	12,191
Lightning prevention system subcontractor	1 ls	30,000.00 /ls	30,000
LK24: 2'x2' Lay-In Fixture	24 ea	364.96 /ea	8,759
LR2 (emerg): 2' Linear 2" aperature recessed luminaire	153 ea	217.37 /ea	33,258
LR2: 2' Linear 2" aperature recessed luminaire	565 ea	217.37 /ea	122,814
G4: Cree 4' Linear rugged low profile 360 deg adj floor type luminaire	80 ea	288.16 /ea	23,053
LS4: 4' utility fixtre with frosted acrylic diffuser	18 ea	338.16 /ea	6,087
LS4 (emerg): 4' utility fixtre with frosted acrylic diffuser	11 ea	338.16 /ea	3,720
LS8: 8' utility fixtre with frosted acrylic diffuser	8 ea	479.94 /ea	3,840
LS4A (emerg): 4' utility fixtre with frosted acrylic diffuser	12 ea	479.94 /ea	5,759
LS4A: 4' utility fixtre with frosted acrylic diffuser	12 ea	479.94 /ea	5,759
LP8 (emerg): Axis 8' LED Fixture	6 ea	639.94 /ea	3,840
LS8 (emerg): 8' utility fixtre with frosted acrylic diffuser	9 ea	479.94 /ea	4,319
LS4B: 4' utility fixtre with frosted acrylic diffuser	15 ea	295.86 /ea	4,438
PC3: 6" down light fixture with dead-front gasketed trim	189 ea	378.16 /ea	71,472
LRD5 (emerg): 60" dia recessed luminaire	12 ea	1,032.90 /ea	12,395
PC1: 4" down light fixture, 0-10V dimming capable	65 ea	373.16 /ea	24,255
RC1: 6" Downlight fixture	50 ea	439.54 /ea	21,977
RC1 (emerg): 6" Downlight fixture	18 ea	439.54 /ea	7,912
LS2 (emerg): 2' utility fixture	2 ea	655.14 /ea	1,310
LSV4: 4' Linear utility fixture with prismatic polcarbonate lens	4 ea	1,037.90 /ea	4,152
RC2: 4" down light fixture, 0-10V dimming	53 ea	348.56 /ea	18,473
LR4: 4' linear 2" aperature recessed luminaire w/ frosted lens	5 ea	376.45 /ea	1,882
LWS (emerg): 4" aperature LED wall wash fixture	705 lf	202.98 /lf	143,097
LC3 - Linear cove Xeleum lighting	1,992 lf	136.99 /lf	272,879
LR4 (emerg): 4' linear 2" aperature recessed luminaire w/ frosted lens	3 ea	376.45 /ea	1,129
RSH: 6" down light fixture with dead-front gasketed trim	1 ea	519.54 /ea	520
LC2: linear cove fixture with frosted diffuser	84 lf	178.23 /lf	14,971
PC2: 6" down light fixture with dead-front gasketed trim	20 ea	378.16 /ea	7,563

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
SP1: LED flood light, 0-10V dimming	82 ea	602.90 /ea	49,438
UC: Vode Task lighting	18 lf	176.98 /lf	3,186
Exit Sign, Ceiling Mounted, Double Sided	36 ea	313.16 /ea	11,274
Exit Sign, Ceiling Mounted, Single Sided	16 ea	313.16 /ea	5,011
Exit Sign, Wall Mounted	18 ea	313.16 /ea	5,637
Exit Sign, Ceiling Mounted, Single Sided - Handicap	2 ea	413.16 /ea	826
Emergency battery units, dual-head (supplemental)	20 ea	343.16 /ea	6,863
MC Cable (12/2) - 20A (concealed branch)	15,090 lf	3.67 /lf	55,384
MC Cable (10/2) - 20A (concealed homeruns)	9,500 lf	4.64 /lf	44,102
EMT (12/2) - 20A (exposed branch)	4,200 lf	7.13 /lf	29,944
EMT (10/2) - 20A (exposed homeruns)	4,150 lf	8.58 /lf	35,603
SL4: LED egress / perimeter lighting fixture	20 ea	458.36 /ea	9,167
SL1: LED pole mounted luminaires mounted on a 20' pole	23 ea	4,973.00 /ea	114,379
SL2A: exterior bollard	13 ea	1,893.70 /ea	24,618
SL1A: LED pole mounted luminaires mounted on a 20' pole	BP#1	/BP#1	
SL3: wall mounted LED area light with integral photosensor	BP#1	/BP#1	
SL3: exterior bollard 43.3 cast illuminium	9 ea	1,893.70 /ea	17,043
SL5: exterior in-grade luminaire with asymmetrical light distribution	8 ea	776.00 /ea	6,208
SL10: LED mini in-ground flood fixture capable of 0-10V dimming	12 ea	712.60 /ea	8,551
MC Cable (12/2) - 20A	600 lf	3.67 /lf	2,202
MC Cable (12/2) - 20A	600 lf	3.67 /lf	2,202
EMT (10/2) - 20A	BP#1	/BP#1	
3/4" PVC - 20A (2#12 & #12G)	BP#1	/BP#1	
1" PVC - 30A (3#8 & #10G)	BP#1	/BP#1	
1" PVC - 30A (3#8 & #10G)	5,600 lf	10.95 /lf	61,298
3/4" GRC - 90 Deg Sweep	BP#1	/BP#1	
1" GRC - 90 Deg Sweep	BP#1	/BP#1	
1" GRC - 90 Deg Sweep	90 ea	174.22 /ea	15,680
Concrete light pole bases F&I by G.C.	ea	/ea	
Tel/data J-hook system (plenum)	136,600 sf	0.19 /sf	25,681
Backbox (2-gang) w/ 1" EMT above ceiling	344 ea	105.98 /ea	36,458
Cable tray - 18" wide extruded aluminum	500 lf	75.55 /lf	37,774
Empty conduit (PVC) - 1"	BP#1	/BP#1	
Empty conduit (PVC) - 1"	250 lf	8.07 /lf	2,016
Empty conduit (EMT) - 2"	700 lf	11.19 /lf	7,831
Empty conduit (PVC) - 2"	700 lf	6.03 /lf	4,223
Empty conduit (sch 40 PVC) (4) 4"C (CATV, Telephone, Fiber, Spare)	240 lf	32.32 /lf	7,756
Three (3) 1.25" inner ducts for fiber	240 lf	15.50 /lf	3,721
Communications utility pole conduit riser (GRC - 4"C)	4 ea	2,343.84 /ea	9,375
Copper ground bar w/isolators - 2"x1/4"	4 ea	280.03 /ea	1,120

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Conduit sleeve w/ fireproofing - 4"	20 ea	201.11 /ea	4,022
Data outlet - (1) CAT-6A cable	23 ea	264.84 /ea	6,091
Data outlet - (2) CAT-6A cables	112 ea	466.16 /ea	52,210
Tel/data outlet - (3) CAT-6A cables	89 ea	652.82 /ea	58,101
Floor box tel/data outlet - (3) CAT-6A cables	2 ea	652.83 /ea	1,306
Data outlet - (4) CAT-6A cables	1 ea	839.49 /ea	839
Voice outlet - (1) CAT-6A cable (WAP's by Owner)	59 ea	263.70 /ea	15,558
Wireless access point - (1) CAT-6A cable (WAP's by Owner)	150 ea	263.70 /ea	39,555
TVE - Video outlet	58 ea	838.75 /ea	48,647
TVC - Video outlet	2 ea	838.77 /ea	1,678
Double gang. two jbox, with (4) 1" C	55 ea	482.68 /ea	26,548
FO - 12 strand SM	BP#1	/BP#1	
FO - 12 strand SM	1,500 lf	5.27 /lf	7,907
FO - 12 strand SM	250 lf	5.27 /lf	1,318
FO - 12 strand MM	1,500 lf	7.10 /lf	10,642
4-Post Full Height Rack	10 ea	1,170.17 /ea	11,702
Vertical cable wire manager	20 ea	314.09 /ea	6,282
Horizontal cable wire manager	10 ea	80.25 /ea	803
Copper patch panel - 96 port	15 ea	1,244.28 /ea	18,664
Fiber optic patch panel - 24 port	6 ea	570.06 /ea	3,420
Fiber enclosure (rack mtd.)	6 ea	485.85 /ea	2,915
Network switch - 24 port	2 ea	5,390.24 /ea	10,780
Telecom manhole & cover - 4'x6'x7'	1 ea	3,920.36 /ea	3,920
S1: wall mounted loudspeaker - 1 gang metal box w/ cover	3 ea	228.33 /ea	685
S2: ceiling loud speaker - custom backbox	120 ea	308.23 /ea	36,987
S3: ceiling loud speaker - custom backbox	16 ea	308.23 /ea	4,932
S4: ceiling loud speaker - 4" SQ metal box w/ cover	2 ea	251.94 /ea	504
S5: Wall loud speaker - 1-gang deep metal box w/ cover	8 ea	245.27 /ea	1,962
D1: display back box, Chief PAC-526	54 ea	371.35 /ea	20,053
F1: floor box, FSR FL-500P-6 floor box w/ finished cover	1 ea	469.58 /ea	470
V1: wall mounted video projector - 1 gang metal box w/ cover	1 ea	179.47 /ea	179
VP: ceiling mounted video projector, FSR CB-22P	1 ea	1,150.28 /ea	1,150
R1: receptacle panel - 2 gang metal box w/ cover	44 ea	242.43 /ea	10,667
R2: receptacle panel - 2 gang metal box w/ cover	2 ea	242.43 /ea	485
R3: receptacle panel - 2 gang metal box w/ cover	4 ea	242.43 /ea	970
R4: receptacle panel - 08"x08"x4" NEMA-1 enclosure w/ oversized flush	1 ea	377.74 /ea	378
R5: receptacle panel - 2 gang metal box w/ cover	2 ea	242.43 /ea	485

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
R6: receptacle panel - 12"x12"x4" NEMA-1 enclosure w/ oversized flush	2 ea	405.94 /ea	812
BP: wall mounted button panel - 1 gang metal box w/ cover	44 ea	221.77 /ea	9,758
J1: junction box - type 1 - 12"x12"x4" NEMA-1 enclosure w/ oversized flush	2 ea	723.57 /ea	1,447
J2: junction box - type 2 - 18"x18"x4" NEMA-1 enclosure w/ oversized flush	1 ea	844.78 /ea	845
A1: Wall mounted antenna - 1 gang deep metal box w/ cover	4 ea	159.74 /ea	639
A2: Wall mounted antenna - 1 gang deep metal box w/ cover	2 ea	159.74 /ea	319
A3: Ceiling mounted antenna - 4" SQ metal box w/ cover	2 ea	138.32 /ea	277
A4: Ceiling mounted antenna - 4" SQ metal box w/ cover	1 ea	138.31 /ea	138
PS: Production communication speaker station - 4 gang deep metal box w/ cov	5 ea	385.28 /ea	1,926
PC: Production communication - 1 gang deep metal box w/ cover	1 ea	134.38 /ea	134
T1: Wall mounted touch panel - 3 gang metal box w/ cover	2 ea	249.04 /ea	498
VC: Wall mounted audio volume control - 1 gang deep metal box	2 ea	134.39 /ea	269
MC: Motor controller - 4" SQ metal box w/ cover	2 ea	86.46 /ea	173
C1: Wall mounted camera - 2 gang deep metal box w/ cover	1 ea	193.57 /ea	194
A/V Equipment Rack	2 ea	1,001.85 /ea	2,004
M1: Ceiling mounted microphone - 1 gang deep metal box w/ cover	1 ea	134.38 /ea	134
Mass notification - allowance (l.s.)	1 allw	17,860.00 /allw	17,860
Intercom sub-stations	4 ea	1,009.28 /ea	4,037
Intercom master-stations	2 ea	3,327.13 /ea	6,654
Speaker - ceiling mouted	268 ea	433.46 /ea	116,166
Speaker - wall mounted	20 ea	954.85 /ea	19,097
Volume control	27 ea	143.41 /ea	3,872
Power supply (80) units - speakers 24V DC	4 ea	2,661.71 /ea	10,647
PA console	1 ea	14,251.90 /ea	14,252
PA equipment power connection - 120V	1 ea	256.53 /ea	257
AM/FM/CD/DVD tuner	1 ea	694.40 /ea	694
Speaker system testing	1 ea	1,986.71 /ea	1,987
Two way communication call box (recessed)	20 ea	799.75 /ea	15,995
Power supply w/battery back up	1 ea	1,714.28 /ea	1,714
Two way communication base station (28 zone)	1 ea	5,980.66 /ea	5,981
Power junction w/feed (EMT) - 20A	1 ea	337.91 /ea	338
Tel/data outlet - (1) CAT-6A cable	20 ea	264.84 /ea	5,297
Tel/data outlet - (2) CAT-6A cables	1 ea	466.16 /ea	466
Empty conduit (EMT) - 3/4"	2,000 lf	5.11 /lf	10,218
System testing	1 ea	1,016.70 /ea	1,017

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Clock, wall mounted - 12" round	85 ea	350.96 /ea	29,831
Master clock w/ roof mounted antenna	1 ea	3,778.57 /ea	3,779
Wireless clock repeater	1 ea	647.06 /ea	647
Wireless clock transceiver	1 ea	647.06 /ea	647
Program unit	1 ea	991.96 /ea	992
Speaker baffle, clock back box	74 ea	202.78 /ea	15,006
Wire guard	20 ea	57.70 /ea	1,154
Clock wiring (EMT)	700 lf	7.03 /lf	4,923
Clock wiring (RS-485 plenum)	500 lf	3.08 /lf	1,540
System testing	1 ls	33.83 /ls	34
Card readers	17 ea	1,686.94 /ea	28,678
Card readers - W.P.	2 ea	2,368.57 /ea	4,737
Electro-magnetic lock	4 ea	657.91 /ea	2,632
Request to exit motion sensor	22 ea	322.33 /ea	7,091
Electric strike	36 ea	400.49 /ea	14,418
Thermal disconnecting means	18 ea	427.58 /ea	7,696
24V power supply	18 ea	295.11 /ea	5,312
Junction box - 6"x6"x4"	18 ea	130.61 /ea	2,351
Power transfer hinge	18 ea	377.68 /ea	6,798
Intrusion digital keypads	3 ea	984.97 /ea	2,955
Dual tech motion detectors	77 ea	595.80 /ea	45,876
Door contacts	57 ea	465.74 /ea	26,547
Access control panel	1 ea	8,222.56 /ea	8,223
Tie in to lighting control system	1 ea	402.23 /ea	402
Security wiring - cable	6,750 lf	3.80 /lf	25,674
Security wiring (EMT)	1,800 lf	8.53 /lf	15,345
Power junctions - 120V/20A	2 ea	193.20 /ea	386
Connect to CCTV system	1 ea	665.43 /ea	665
Proximity cards	250 ea	2.35 /ea	588
Software / licenses, programming, testing, startup (manufacturer)	1 ea	13,308.52 /ea	13,309
CCTV color monitors	2 ea	815.52 /ea	1,631
360-degree multi-sensor interior cameras	29 ea	1,659.85 /ea	48,136
Dome I.P. camera - exterior - fixed	16 ea	1,996.28 /ea	31,940
Dome I.P. camera - interior - fixed	29 ea	1,471.85 /ea	42,684
360-degree multi-sensor exterior cameras mounted on poles	3 ea	4,509.56 /ea	13,529
Camera monitoring station	1 ea	1,330.85 /ea	1,331
Video recorders	2 ea	3,131.71 /ea	6,263
Video switchers	2 ea	1,627.71 /ea	3,255
Camera wiring (EMT)	1,920 lf	8.76 /lf	16,819





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Camera wiring (PVC)	600 lf	13.34 /lf	8,003
Camera wiring - cable	6,960 lf	4.04 /lf	28,109
Power junction - 120V/20A	2 ea	193.20 /ea	386
Software / licenses, programming, testing, startup (manufacturer)	1 ea	13,308.52 /ea	13,309
Temporary fire alarm heat detection coverage / stairwell pull stations / temp notification - N/A	-	-	
Fire alarm impairment plan (NFPA-101)	1 ls	9,400.00 /ls	9,400
Elevator fire alarm interfacing	1 ls	4,700.00 /ls	4,700
Manual pull stations	21 ea	202.12 /ea	4,245
Smoke detectors	64 ea	220.39 /ea	14,105
Smoke detector w/ elevator recall	3 ea	373.26 /ea	1,120
Smoke detectors (for Atrium)	89 ea	220.39 /ea	19,615
Smoke detectors w/ elevator recall (for Atrium)	3 ea	373.25 /ea	1,120
Carbon monoxide detector (w/ monitor module)	5 ea	367.16 /ea	1,836
Heat detector	10 ea	215.28 /ea	2,153
Beam detector (receiver & transmitter)	5 ea	416.88 /ea	2,084
Duct smoke detector (furnish & wire)	40 ea	838.91 /ea	33,556
Remote test switch w/ indicating light	40 ea	194.88 /ea	7,795
Control modules	20 ea	265.75 /ea	5,315
Addressable monitor modules	30 ea	160.83 /ea	4,825
Tamper switch connection (via monitor module)	10 ea	560.06 /ea	5,601
Flow switch connection (via monitor module)	10 ea	403.67 /ea	4,037
Flow switch connection (via monitor module) - for eye wash stations	7 ea	403.66 /ea	2,826
Door hold device (magnetic)	5 ea	388.88 /ea	1,944
Wire motorized dampers (120V)	14 ea	407.48 /ea	5,705
Wire combination fire/smoke damper (120V & SLC)	20 ea	608.50 /ea	12,170
Strobe only	41 ea	175.36 /ea	7,190
Speaker/strobes	203 ea	246.56 /ea	50,051
Speaker/strobe - W.P.	1 ea	309.72 /ea	310
Exterior beacon (weatherproof)	1 ea	388.83 /ea	389
Wire 120V sprinkler bell	1 ea	207.67 /ea	208
Fire alarm transponder panels	6 ea	928.51 /ea	5,571
Fire alarm annunciators w/ microphones	3 ea	2,107.39 /ea	6,322
FACP w/ 60-minute battery backup (Notifier NFS640)	1 ea	6,999.66 /ea	7,000
Masterbox (local energy)	1 ea	4,212.70 /ea	4,213
Key (Knox) box	1 ea	806.43 /ea	806
Smoke control panel	1 ea	19,502.56 /ea	19,503
Generator monitoring control panel	1 ea	571.80 /ea	572

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>26-01 ELECTRICAL (TS)</b>			
Fire pump/jockey pump connection	1 ea	402.23 /ea	402
Fire alarm graphic maps	3 ea	1,454.56 /ea	4,364
Fire alarm comissioning	1 ea	5,459.52 /ea	5,460
Fire alarm testing (manufacturer)	6 ea	1,338.28 /ea	8,030
Fire alarm system programming	1 ls	10,562.78 /ls	10,563
MC Cable (FA) - #14-4/c (concealed)	lf	/lf	
FPLP cable (red) - #14-4/c	15,350 lf	2.23 /lf	34,231
MC Cable (FA) - #16-2/c (concealed)	lf	/lf	
FPLP cable (red) - #16-2/c	9,900 lf	1.83 /lf	18,117
EMT (red) - 3/4"C w/ #16-2/c (exposed)	3,500 lf	7.19 /lf	25,173
EMT (red) - 3/4"C w/ #14-4/c (exposed)	1,500 lf	7.95 /lf	11,918
Circuit integrity cabling (CIC)	1,500 lf	18.31 /lf	27,465
Ductbank w/ IMSA cable - 2" PVC	320 lf	16.30 /lf	5,217
BDA system - parts & smarts (dual-frequency)	136,600 sf	0.47 /sf	64,202
BDA system - installation & minor material (dual-frequency)	136,600 sf	0.19 /sf	25,681
Directional couplers	20 ea	1,150.35 /ea	23,007
In-Line connectors	20 ea	249.01 /ea	4,980
Lightning protection units	5 ea	1,995.53 /ea	9,978
<b>26-01 ELECTRICAL (TS)</b>	<b>136,600 sf</b>	<b>41.46 /sf</b>	<b>5,663,400</b>

**31-23 SITEWORK**

Demo hydrants	BP#1	/BP#1
Demo bituminous concrete paving	BP#1	/BP#1
Demo bituminous walk	BP#1	/BP#1
Demo Temporary Bituminous Parking & Access Pavement	BP#1	/BP#1
Demo concrete sidewalks/pads/ramps	BP#1	/BP#1
Demo curbing	BP#1	/BP#1
Cut & cap site utilities - water	BP#1	/BP#1
Cut & cap site utilities - sewer	BP#1	/BP#1
Demo utility piping - water	BP#1	/BP#1
Demo utility piping - sewer	BP#1	/BP#1
Demo utility piping - electrical	BP#1	/BP#1
Demo utility piping - drain	BP#1	/BP#1
Demo utility piping - gas	BP#1	/BP#1
Demo drain structures	BP#1	/BP#1
Demo grease trap	BP#1	/BP#1
Demo fencing/guardrail	BP#1	/BP#1
Misc. site demolition	BP#1	/BP#1
Demo utility poles	BP#1	/BP#1
Mobilizations	BP#1	/BP#1



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>31-23 SITEWORK</b>			
Survey/layout	BP#1	/BP#1	
Preconstruction survey and vibration monitoring & compliance - Allowance	BP#1	/BP#1	
Street plates for protection	BP#1	/BP#1	
Police details	BP#1	/BP#1	
Precast Concrete Jersey Barriers for Temp. Parking Lot	BP#1	/BP#1	
Temporary site signage	BP#1	/BP#1	
As-built plan preparation	BP#1	/BP#1	
Localized dewatering	BP#1	/BP#1	
Clear & grub, vegetation removal	BP#1	/BP#1	
Strip & stockpile topsoil/loam	BP#1	/BP#1	
Rough grading	BP#1	/BP#1	
Fine grading - building SOG	BP#1	/BP#1	
Fine grading - paving	BP#1	/BP#1	
Fine grading - conc walks & site pads	BP#1	/BP#1	
Fine grading - bituminous walks	BP#1	/BP#1	
Cut to subgrade @ site	BP#1	/BP#1	
Fill to subgrade from cut @ site	BP#1	/BP#1	
Grind foundations for fill - In Demolition	-	/-	
Fill to subgrade @ site - import	BP#1	/BP#1	
Site cuts to stockpile for temporary parking & access layout	BP#1	/BP#1	
Site surcharge	BP#1	/BP#1	
Site cuts to site fills	BP#1	/BP#1	
Excavation @ foundations	BP#1	/BP#1	
Fill to subgrade @ building footprint - import (structural fill)	BP#1	/BP#1	
Contaminated soil removal - unlined landfill	BP#1	/BP#1	
Crushed stone base beneath S.O.G	BP#1	/BP#1	
Crushed stone base beneath column & wall footings	BP#1	/BP#1	
Excavate for elevator pits	BP#1	/BP#1	
Fine grade under building	BP#1	/BP#1	
Excavate/backfill utilities under SOG by machine	BP#1	/BP#1	
Rock removal - NIC	-	/-	
Dewatering	BP#1	/BP#1	
Construct Phase 2 Temp. Sediment Basins	BP#1	/BP#1	
Additional dewatering - Allowance	BP#1	/BP#1	
SWPPP (Prep of SWPPP by civil engineer) - Allowance	BP#1	/BP#1	
12"diameter Straw Wattles	BP#1	/BP#1	
Silt sacks at catch basin	BP#1	/BP#1	
Construction entrance	BP#1	/BP#1	
Street sweeping	BP#1	/BP#1	
Inspect / repair silt barrier weekly	BP#1	/BP#1	
Remove erosion control measure at project completion	BP#1	/BP#1	

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>31-23 SITEWORK</b>			
Site surcharge/rigid inclusion	BP#1	/BP#1	
Rammed aggregate piers	BP#1	/BP#1	
Rigid inclusions Gym and Auditorium	BP#1	/BP#1	
Gravel base course @ asphalt pavements	BP#1	/BP#1	
Gravel base course @ Raised Stamped asphalt pavement at Flagg Drive	BP#1	/BP#1	
Processed Aggregate base course - bituminous walks	BP#1	/BP#1	
1 1/2" crushed stone base course - concrete walks & site pads	BP#1	/BP#1	
Gravel base course - misc site amenities- (i.e.- curbing, swales,etc.)	BP#1	/BP#1	
Asphalt paving - (Parking Lots & Site Drives)	BP#1	/BP#1	
Asphalt paving - Temp. Parking Layout	BP#1	/BP#1	
Temporary roads and maintenance required during construction	BP#1	/BP#1	
Asphalt paving - top course @ temporary to permanent	BP#1	/BP#1	
Stamped pavement at Flagg Drive	BP#1	/BP#1	
Precast concrete curbs	BP#1	/BP#1	
Vertical granite curbs	BP#1	/BP#1	
Handicapped ramps at curbing	BP#1	/BP#1	
Detectable Warning Plates at Handicapped Ramps	BP#1	/BP#1	
Bituminous sidewalks	BP#1	/BP#1	
Speed bumps - bituminous	BP#1	/BP#1	
Pavement markings	BP#1	/BP#1	
Parking signage	BP#1	/BP#1	
Fire hydrants	BP#1	/BP#1	
Fire hydrant - relocate existing	BP#1	/BP#1	
Gate valves, tees, bends, thrust blocks, restraints	BP#1	/BP#1	
Water distribution connections to existing	BP#1	/BP#1	
Water line - domestic	BP#1	/BP#1	
Water line - hydrant & fire services	BP#1	/BP#1	
Pressure test & chlorinate	BP#1	/BP#1	
Sanitary sewer piping	BP#1	/BP#1	
Sanitary sewer manholes	BP#1	/BP#1	
Connect to existing structures	BP#1	/BP#1	
Utility and sewer tie-in at trailer	BP#1	/BP#1	
Sanitary sewer testing - piping	BP#1	/BP#1	
Video inspect incoming sewer, etc. - Allowance	BP#1	/BP#1	
Sanitary sewer testing - structures	BP#1	/BP#1	
Grease interceptor - In Plumbing	-	/-	
Acid Neutralization - In Plumbing	-	/-	
Catch basins	BP#1	/BP#1	
Granite Curb Inlets	BP#1	/BP#1	
Storm drainage manholes	BP#1	/BP#1	
Outlet control structures	BP#1	/BP#1	

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>31-23 SITEWORK</b>			
Storm headwalls	BP#1	/BP#1	
Stormceptors	BP#1	/BP#1	
Storm drainage piping	BP#1	/BP#1	
Rip Rap Splash Pads	BP#1	/BP#1	
Weir Overflows	BP#1	/BP#1	
Check dams	BP#1	/BP#1	
Foundation drainage piping	BP#1	/BP#1	
Infiltration system	BP#1	/BP#1	
Excavation / backfill for gas line	BP#1	/BP#1	
Excavation/backfill for Emergency Generator ductbank	BP#1	/BP#1	
Excavation/backfill for Primary Electric ductbank	BP#1	/BP#1	
Excavation/backfill for Fire Alarm ductbank	BP#1	/BP#1	
Excavation/backfill for Telcom ductbank	BP#1	/BP#1	
Excavation/backfill for U.G. ductbank	BP#1	/BP#1	
Excavation/backfill for 2"C Power Data ductbank (Amphitheater)	BP#1	/BP#1	
Excavation/backfill for 2"C to IDF ductbank	BP#1	/BP#1	
Concrete and rebar for electrical/telcom ductbanks	BP#1	/BP#1	
Excavation/backfill for site lighting - Allowance	BP#1	/BP#1	
Emergency Call Box base	BP#1	/BP#1	
EV Parking Station bases	BP#1	/BP#1	
Light pole bases	BP#1	/BP#1	
6" Concrete Filled Steel Pipe Bollards at Generator & Transformer Pads	BP#1	/BP#1	
<b>32-10 LANDSCAPING &amp; SITE IMPROVEMENTS</b>			
Bicycle Racks	20 ea	785.00 /ea	15,700
Basketball Poles & Hoops	2 ea	3,000.00 /ea	6,000
Miscellaneous site furnishings - Allowance	1 ls	30,000.00 /ls	30,000
Landscaping maintenance	1 yr	8,000.00 /yr	8,000
Pavers - plaza paving	260 sf	25.00 /sf	6,500
Flag pole	1 ea	9,000.00 /ea	9,000
Bollards - 6" steel w/concrete - BP#1	ea	/ea	
Bollards - architectural	103 ea	2,400.00 /ea	247,200
Bollards - architectural - VM-C01	ea	/ea	
Segmental retaining wall	2,600 sf	50.00 /sf	130,000
Irrigation system @ south sports field - by others	sf	/sf	
Irrigation @ ampitheater	23,435 sf	2.00 /sf	46,870
Irrigation system @ north sports field	81,000 sf	2.00 /sf	162,000
Mulch at trees and planting beds (3")	250 cy	105.00 /cy	26,250
Import loam & spread (6") at Lawns, Athletic Fields & Native Meadows	5,594 cy	40.00 /cy	223,760

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>32-10 LANDSCAPING &amp; SITE IMPROVEMENTS</b>			
Ammend & spread (6") at Lawns, Athletic Fields & Native Meadows	6,000 cy	12.00 /cy	72,000
Import loam & spread (6") at Detention Basins	943 cy	40.00 /cy	37,720
Import loam & spread (12") at Plant Beds	404 cy	40.00 /cy	16,160
Landscape Metal Edging at Building Mow Strip	2,300 lf	15.00 /lf	34,500
Building Mowing Strip- (Peastone)	100 tn	50.00 /tn	5,000
Import loam & spread (6") at Sodded Amphitheater Lawns	564 cy	40.00 /cy	22,560
Fine grade & hydroseed lawn areas	126,492 sf	0.30 /sf	37,948
Fine grade & seed (Native Wildflower Meadow)	98,182 sf	0.25 /sf	24,546
Fine grade & seed (Detention Basin Mix- Hydroseed)	39,153 sf	0.25 /sf	9,788
Fine grade & seed (Natural Turf Fields)	237,269 sf	0.25 /sf	59,317
Sod (100'x170')	17,000 sf	1.50 /sf	25,500
Sod northeast - phase 3 play area	5,000 sf	1.50 /sf	7,500
Sod (Amphitheater Lawns)	23,434 sf	1.50 /sf	35,151
Watering for sod areas	1 ls	7,500.00 /ls	7,500
Trees	123 ea	750.00 /ea	92,250
Shrubs (518 Total)	8,383 sf	8.50 /sf	71,256
Groundcover/perennials	2,372 ea	20.00 /ea	47,440
Rain garden	8,275 sf	10.00 /sf	82,750
<b>32-10 LANDSCAPING &amp; SITE IMPROVEMENTS</b>	<b>136,600 sf</b>	<b>11.71 /sf</b>	<b>1,600,165</b>
<b>32-18 ATHLETIC/SYNTHETIC SURFACING</b>			
Basketball Court Pavement- (3 1/2" Total Paving w/ Gravel Base) - BP#1	sf	/sf	
Basketball Court Pavement Markings	1 ls	2,000.00 /ls	2,000
<b>32-18 ATHLETIC/SYNTHETIC SURFACING</b>	<b>136,600 sf</b>	<b>0.02 /sf</b>	<b>2,000</b>
<b>32-31 FENCING</b>			
Fencing - Allowance - not required	ls	/ls	
24' wide Single Arm Gate	1 ea	3,500.00 /ea	3,500
Wooden Guardrailing - BP#1	lf	/lf	
<b>32-31 FENCING</b>	<b>136,600 sf</b>	<b>0.03 /sf</b>	<b>3,500</b>



**Estimate Totals**

Description	Amount	Totals	Rate	Cost per Unit
<b>Subtotal</b>	<b>53,069,827</b>	<b>53,069,827</b>		<b>388.51 /sf</b>
Design/Estimate Contingency	2,653,491		5.000 %	19.43 /sf
Escalation	835,850		1.500 %	6.12 /sf
<b>Subtotal</b>	<b>3,489,341</b>	<b>56,559,168</b>		<b>414.05 /sf</b>
SDI (Non-Trade Contracts)	352,133		1.400 %	2.58 /sf
Sub Bonds (Trade Contracts)	390,844		1.400 %	2.86 /sf
Contractor's Contingency	1,432,554		2.500 %	10.49 /sf
General Conditions	3,401,447			24.90 /sf
General Requirements	2,652,482			19.42 /sf
<b>Subtotal</b>	<b>8,229,460</b>	<b>64,788,628</b>		<b>474.29 /sf</b>
Builder's Risk Insurance - BP1				
General Liability Insurance	668,571			4.89 /sf
Building Permit - NIC				
Performance & Payment Bond				
<b>Subtotal</b>	<b>668,571</b>	<b>65,457,199</b>		<b>479.19 /sf</b>
Fee	1,337,143			9.79 /sf
Amendment #1 - Sitework	10,957,843			80.22 /sf
<b>Total</b>		<b>77,752,185</b>		<b>569.20 /sf</b>



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5. ASSUMPTIONS &  
QUALIFICATIONS





## ASSUMPTIONS & QUALIFICATIONS

### FULLER MIDDLE SCHOOL

60% CONSTRUCTION DOCUMENT ESTIMATE

JULY 26, 2019

#### GENERAL

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1. Pricing is based on the following:
  - 60% Construction Document Pricing Drawings by Jonathan Levi Architects, dated April 8, 2019.
  - 60% Construction Document Pricing Drawings by Jonathan Levi Architects, dated April 12, 2019.
  - Soil Management Plan by McPhail Associates, dated December 18, 2018.
  - RFI responses issued by Jonathan Levi Architects on July 19, 2019.
2. Pricing is based on current market costs. Escalation is excluded.
3. Cost premiums related to potential steel and aluminum tariffs are excluded.
4. Any tariffs associated with products imposed after 7/26/19 are excluded.
5. Testing and/or inspections are not included.
6. Builders Risk Insurance is included in the Bid Package #1 GMP value.
7. Building permit cost is not included.
8. A Payment and Performance Bond is included in the Bid Package #1 GMP value.
9. Sales tax is not included as this project is assumed to be tax exempt.
10. Subcontractor insurances are included per Consigli standard subcontract.
11. Utility company back charges, user fees, etc. (temporary electric, water, gas, etc.) are excluded.
12. Work hours are assumed to be normal business hours (7:00AM to 3:00PM) Monday to Friday. Overtime, phasing, or off-hours work costs are not included.
13. Breakouts provided are for informational/accounting purposes only. We reserve the right to reprice our estimate if changes are made to the scope of the project.
14. Site Security costs or provisions are not included.
15. Uniform Fire watch is not included.
16. An exterior mockup is included as an allowance.
17. All design is by the owner's Designer. Delegated design is excluded.

#### TRADE SPECIFIC

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18. Hazardous material testing is not included.
19. Removal and/or relocation of furniture is not included.
20. Barrier-1 or similar concrete additives are not included.
21. The concrete floor at the Auditorium is included as power troweled and sealed.
22. Exterior masonry work includes staging.
23. Steel hangers at the Learning Commons is included as AESS.
24. P-lam window sills are included.
25. Fluid applied moisture mitigation is not included.
26. Linoleum base is included as surface applied.
27. The Learning Commons stairs are included with rubber treads, risers, and landings.
28. CMU walls are not painted.



## ASSUMPTIONS & QUALIFICATIONS

### **FULLER MIDDLE SCHOOL**

60% CONSTRUCTION DOCUMENT ESTIMATE

JULY 26, 2019

29. (3) fume hoods are included.
30. We have not included any costs or provisions for FF & E items and assume this will be by the Owner.
31. The orchestra enclosures are not included. These will be FF & E by the Owner.
32. Elevator operator costs are included.
33. Hydrant flow tests are not included and are assumed to have been previously completed to inform the fire protection design.
34. A Fire pump is not included.
35. A Domestic Booster pump is not included.
36. A Compressed Air System is not included.
37. Gas piping is included to (1) science labs.
38. An interior kitchen grease trap is included.
39. Radon venting is not included.
40. Interior under-slab drainage is not included.
41. A rainwater reclaim system is not included.
42. Rectangular, double-walled, internally lined ductwork is included for supply air medium distribution.
43. VAV's do not include hot water re-heat coils.
44. Electrical and fire alarm permit fee costs are excluded (assumed waived by City of Framingham).
45. Primary cable, primary terminations, and exterior pad mount transformer by Utility Co.
46. Concealed lighting, power, and fire alarm branch circuitry is routed in MC Cable (per NEC Article 330).
47. Distribution feeders are routed in EMT and copper wire (where not required to be MI Cable).
48. Incoming generator 200A life-safety feed is routed underground in 2-hour rated MI Cable, per one-line diagram.
49. Power, switch stations, and LV cable for twenty-five (25) motorized window treatment locations are included.
50. VFD's, motor starters, and motor controllers furnished by Division 23, installed and wired by Division 26.
51. Provisions for a future roof mounted photovoltaic (PV) system are included.
52. One (1) central uninterruptible power supply (UPS) - 480V: 208/120V, 24kW (8 min. backup) - is included.
53. Automatic transfer switches are included as open transition.
54. Cable tray / ladder rack is included for MDF and IDF's; all other horizontal cabling routed across j-hooks.
55. Audio-visual devices, jacks, cabling, head end equipment, monitors, terminations and labor by Owner's Vendor.
56. Assistive classroom listening systems are not included.
57. Emergency pull-cord or call-for-aid systems are not included.
58. Theatrical light fixtures, theatrical rigging, and theatrical lighting controls are included with theater equipment.
59. Electrical heat trace cabling system or power connections are not included.
60. Exterior site and building mounted lighting is included as shown on drawings E003-1 and E003-2.
61. Play field equipment is not included.
62. Irrigation is included as an allowance.



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*Est. 1905*

**Fuller**  
Construction Documents 60%  
Fuller Middle School, Framingham, Massachusetts



### 2.3.4 Reconciled Cost Estimate - Designer

Attached is the reconciled Designer Cost Estimate.



**Fuller Middle School**

Framingham, MA

**August 5, 2019**

**60% Construction Documents Estimate**

**Owner's Project Manager**

SMMA

1000 Massachusetts Ave.

Cambridge, MA

**Architect:**

Jonathan Levi Architects

266 Beacon Street

Boston, MA 02116

**Estimator:**

Miyakoda Consulting

PO Box 47

Raynham, MA 02767

(617) 799-5832



## **Fuller Middle School**

Fuller Middle School

### **INTRODUCTION**

#### **Description:**

- 1** Construction of the Framingham Middle School
- 2** The scope of the work includes all related sitework, hardscape/landscape, and underground utilities

#### **Particulars:**

- 1** 60% CD Drawings and Specifications dated July 8, 2019, received from Jonathan Levi Architects
- 2** Detailed quantity takeoff from these documents where possible
- 3** Experience with similar projects of this nature with JLA

#### **Assumptions:**

- 1** The project will be constructed by a Construction Manager
- 2** Our costs assume that there will be at least three subcontractors submitting unrestricted bids in each sub-trade
- 3** Unit rates are based on current dollars
- 4** General Conditions and Requirements value covers Sub-Contractor's bond, site office overheads, and building permit applications
- 5** Fee markup is calculated on a percentage basis of direct construction costs. The value covers Contractor's bond, insurance and profit
- 6** Design and Pricing Contingency markup is an allowance for unforeseen design issues, design detail development and specification clarifications
- 7** Escalation has been included to midpoint of construction. The construction start date is June 2020.

#### **Exclusions:**

- 1** Design fees and other soft costs
- 2** Owner's project administration
- 3** Construction of temporary facilities
- 4** Relocation expenses
- 5** Printing and advertising
- 6** Existing condition surveys and investigations
- 7** Work beyond the boundary of the site
- 8** Testing
- 9** Specialties, loose furnishings, fixtures and equipment beyond those noted
- 10** Preconstruction Fee
- 12** Traffic Improvements



**Fuller Middle School**

Fuller Middle School

137,385 GSF

**MAIN SUMMARY - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>			<b><u>TOTAL</u></b>	<b><u>COST/SF</u></b>
<b>Direct Trade Costs With Site</b>				
New Construction	137,385	GSF	\$46,962,817	\$341.83
Site Development			\$2,787,005	\$20.29
<b>Direct Trade Cost SubTotal</b>			<b>\$49,749,822</b>	<b>\$362.12</b>
Demolish Existing Building	195,400	GSF	\$1,465,500	\$10.67
Hazardous Waste Abatement (Budget provided)			\$1,384,630	\$10.08
<b>Building Cost Subtotal</b>			<b>\$52,599,952</b>	<b>\$382.87</b>
Design and Pricing Contingency	5.00%	\$52,599,952	\$2,629,998	\$19.14
<b>Building Cost Total</b>			<b>\$55,229,950</b>	<b>\$402.01</b>
Escal. to Midpoint of Construction (Consigli %)	1.50%	\$55,229,950	\$828,449	\$6.03
<b>Trade Cost SubTotal</b>			<b>\$56,058,399</b>	<b>\$408.04</b>
General Conditions			\$3,401,447	\$24.76
General Requirements			\$2,652,483	\$19.31
SDI			\$360,000	\$2.62
Sub Bonds			\$410,000	\$2.98
General Liability Insurance			\$668,571	\$4.87
Construction Contingency	2.50%	\$56,058,399	\$1,401,460	\$10.20
CM Fee			\$1,337,143	\$9.73
Early Site BP#1			\$10,957,843	\$79.76
<b>Estimated Construction Cost Total</b>			<b>\$77,247,346</b>	<b>\$562.27</b>

**Fuller Middle School**Fuller Middle School  
137,385 GSF**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV.</u></b>	<b><u>ELEMENTS</u></b>	<b><u>SITWORK</u></b>	<b><u>BUILDING</u></b>	<b><u>TOTAL</u></b>	<b><u>\$/GSF</u></b>
<b><u>A</u></b> <b><u>SUBSTRUCTURES</u></b>					
A10	FOUNDATIONS				
	Foundations		\$1,119,012	\$1,119,012	\$8.15 /GSF
	Slab on Grade		\$594,006	\$594,006	\$4.32 /GSF
	FOUNDATIONS TOTAL		<b>\$1,713,019</b>	<b>\$1,713,019</b>	<b>\$12.47 /GSF</b>
A20	BASEMENT CONSTRUCTION		\$0		
<b>A</b>	<b>SUBSTRUCTURES TOTAL</b>		<b>\$1,713,019</b>	<b>\$1,713,019</b>	<b>\$12.47 /GSF</b>
<b><u>B</u></b> <b><u>SHELL</u></b>					
B10	STRUCTURE				
	Upper Floor Construction		\$2,721,067	\$2,721,067	\$19.81 /GSF
	Roof Construction		\$2,333,165	\$2,333,165	\$16.98 /GSF
	STRUCTURE TOTAL		<b>\$5,054,232</b>	<b>\$5,054,232</b>	<b>\$36.79 /GSF</b>
B20	EXTERIOR CLOSURE				
	Exterior walls		\$4,646,002	\$4,646,002	\$33.82 /GSF
	Exterior windows		\$1,942,628	\$1,942,628	\$14.14 /GSF
	Exterior Doors		\$213,200	\$213,200	\$1.55 /GSF
	EXTERIOR CLOSURE TOTAL		<b>\$6,801,830</b>	<b>\$6,801,830</b>	<b>\$49.51 /GSF</b>
B30	ROOFING				
	Roof Coverngs		\$2,265,314	\$2,265,314	\$16.49 /GSF
	ROOFING TOTAL		<b>\$2,265,314</b>	<b>\$2,265,314</b>	<b>\$16.49 /GSF</b>
<b>B</b>	<b>SHELL TOTAL</b>		<b>\$14,121,376</b>	<b>\$14,121,376</b>	<b>\$102.79 /GSF</b>
<b><u>C</u></b> <b><u>INTERIORS</u></b>					
C10	INTERIOR CONSTRUCTION				
	Partitions		\$4,412,924	\$4,412,924	\$32.12 /GSF
	Interior Doors, frames & Hardware		\$895,898	\$895,898	\$6.52 /GSF
	Fittings		\$915,361	\$915,361	\$6.66 /GSF
	INTERIOR CONSTRUCTION TOTAL		<b>\$6,224,182</b>	<b>\$6,224,182</b>	<b>\$45.30 /GSF</b>
C20	STAIRCASES				
	Staircases		\$590,570	\$590,570	\$4.30 /GSF
	STAIRCASES TOTAL		<b>\$590,570</b>	<b>\$590,570</b>	<b>\$4.30 /GSF</b>

**Fuller Middle School**Fuller Middle School  
137,385 GSF**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV.</u></b>	<b><u>ELEMENTS</u></b>	<b><u>SITWORK</u></b>	<b><u>BUILDING</u></b>	<b><u>TOTAL</u></b>	<b><u>\$/GSF</u></b>
C30	INTERIOR FINISHES				
	Wall finishes		\$1,767,241	\$1,767,241	\$12.86 /GSF
	Floor finishes		\$1,288,200	\$1,288,200	\$9.38 /GSF
	Ceiling finishes		\$1,858,543	\$1,858,543	\$13.53 /GSF
	INTERIOR FINISHES TOTAL		<b>\$4,913,983</b>	<b>\$4,913,983</b>	<b>\$35.77 /GSF</b>
<b>C</b>	<b>INTERIORS TOTAL</b>		<b>\$11,728,735</b>	<b>\$11,728,735</b>	<b>\$85.37 /GSF</b>
<b><u>D</u></b>	<b><u>SERVICES</u></b>				
D10	VERTICAL MOVEMENT				
	Conveying System		\$213,400	\$213,400	\$1.55 /GSF
	VERTICAL MOVEMENT TOTAL		<b>\$213,400</b>	<b>\$213,400</b>	<b>\$1.55 /GSF</b>
D20	PLUMBING				
	Plumbing		\$2,126,673	\$2,126,673	\$15.48 /GSF
	PLUMBING TOTAL		<b>\$2,126,673</b>	<b>\$2,126,673</b>	<b>\$15.48 /GSF</b>
D30	HVAC				
	HVAC		\$7,842,369	\$7,842,369	\$57.08 /GSF
	HVAC TOTAL		<b>\$7,842,369</b>	<b>\$7,842,369</b>	<b>\$57.08 /GSF</b>
D40	FIRE PROTECTION				
	Fire Protection		\$852,994	\$852,994	\$6.21 /GSF
	FIRE PROTECTION TOTAL		<b>\$852,994</b>	<b>\$852,994</b>	<b>\$6.21 /GSF</b>
D50	ELECTRICAL				
	Service and distribution		\$5,110,258	\$5,110,258	\$37.20 /GSF
	ELECTRICAL TOTAL		<b>\$5,110,258</b>	<b>\$5,110,258</b>	<b>\$37.20 /GSF</b>
<b>D</b>	<b>SERVICES TOTAL</b>		<b>\$16,145,693</b>	<b>\$16,145,693</b>	<b>\$117.52 /GSF</b>
<b><u>E</u></b>	<b><u>EQUIPMENT AND FURNISHINGS</u></b>				
E10	EQUIPMENT				
	Institutional Equipment		\$1,644,448	\$1,644,448	\$11.97 /GSF
	EQUIPMENT TOTAL		<b>\$1,644,448</b>	<b>\$1,644,448</b>	<b>\$11.97 /GSF</b>
E20	FURNISHINGS				

**Fuller Middle School**Fuller Middle School  
137,385 GSF**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV.</u></b>	<b><u>ELEMENTS</u></b>	<b><u>SITWORK</u></b>	<b><u>BUILDING</u></b>	<b><u>TOTAL</u></b>	<b><u>\$/GSF</u></b>
	Specialties / Millwork		\$1,609,546	\$1,609,546	\$11.72 /GSF
	FURNISHINGS TOTAL		<b>\$1,609,546</b>	<b>\$1,609,546</b>	<b>\$11.72 /GSF</b>
<b>D</b>	<b>EQUIPMENT AND FURNISHINGS TOTAL</b>		<b>\$3,253,994</b>	<b>\$3,253,994</b>	<b>\$23.69 /GSF</b>
<b><u>F SPECIAL CONSTRUCTION &amp; DEMOLITION</u></b>					
F10	SPECIAL CONSTRUCTION				
	Special construction		\$0	\$0	\$0.00 /GSF
	SPECIAL CONSTRUCTION TOTAL		<b>\$0</b>	<b>\$0</b>	<b>\$0.00 /GSF</b>
F20	SELECTIVE DEMOLITION				
	Selectice Demolition		\$0	\$0	\$0.00 /GSF
	SELECTIVE DEMOLITION TOTAL		<b>\$0</b>	<b>\$0</b>	<b>\$0.00 /GSF</b>
<b>D</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION TOTAL</b>		<b>\$0</b>	<b>\$0</b>	<b>\$0.00 /GSF</b>
<b><u>G BUILDING SITEWORK</u></b>					
G10	G10 SITE PREPARATION				
	G1010 Site Clearing	\$0	\$0	\$0	\$0.00 /GSF
	G1020 Site Demolition and Relocation	\$0	\$0	\$0	\$0.00 /GSF
	G1030 Site Earthwork	\$281,158	\$281,158	\$281,158	\$2.05 /GSF
	G10 SITE PREPARATION TOTAL	<b>\$281,158</b>	<b>\$281,158</b>	<b>\$281,158</b>	<b>\$2.05 /GSF</b>
G20	G20 SITE IMPROVEMENTS				
	G2020 Roadways	\$0	\$0	\$0	\$0.00 /GSF
	G2030 Pedestrian Paving	\$227,154	\$227,154	\$227,154	\$1.65 /GSF
	G2040 Site Development	\$975,872	\$975,872	\$975,872	\$7.10 /GSF
	G2050 Landscaping	\$826,078	\$826,078	\$826,078	\$6.01 /GSF
	G20 SITE IMPROVEMENTS TOTAL	<b>\$2,029,104</b>	<b>\$2,029,104</b>	<b>\$2,029,104</b>	<b>\$14.77 /GSF</b>
G30	G30 SITE CIVIL/MECHANICAL UTILITIES				
	G3010 Water Supply	\$0	\$0	\$0	\$0.00 /GSF
	G3020 Sanitary Sewer	\$0	\$0	\$0	\$0.00 /GSF
	G3030 Storm Sewer	\$0	\$0	\$0	\$0.00 /GSF
	G3040 Heating Distribution	\$0	\$0	\$0	\$0.00 /GSF
	G30 SITE CIVIL/MECHANICAL UTILITIES TOTAL	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0.00 /GSF</b>
G40	G40 SITE ELECTRICAL UTILITIES				
	G4010 Site Electrical Utilities	\$476,743	\$476,743	\$476,743	\$3.47 /GSF
	G40 SITE ELECTRICAL UTILITIES TOTAL	<b>\$476,743</b>	<b>\$476,743</b>	<b>\$476,743</b>	<b>\$3.47 /GSF</b>

**Fuller Middle School**

Fuller Middle School

137,385 GSF

**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV. ELEMENTS</u></b>	<b><u>SITWORK</u></b>	<b><u>BUILDING</u></b>	<b><u>TOTAL</u></b>	<b><u>\$/GSF</u></b>
G BUILDING SITEWORK TOTAL	\$2,787,005	\$0	\$2,787,005	\$20.29 /GSF
<b>CONSTRUCTION TRADE TOTAL</b>	<b>\$2,787,005</b>	<b>\$46,962,817</b>	<b>\$49,749,821</b>	<b>\$362.12 /GSF</b>

**Fuller Middle School**

Framingham, MA  
137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>10</b> <b>A10 FOUNDATIONS</b>				
<b>11</b>				
<b>12</b> <b>A1010 FOUNDATIONS</b>				
<b>13</b> <i>Earthwork</i>				
<b>14</b> Slab-on-Grade platform preparation in Sitework Tab	66,213	SF		
<b>15</b> Continuous footing w/foundation wall	2,049	LF		
<b>16</b> Excavation	4,905	CY	\$12.00	See below
<b>17</b> Backfill from import	4,215	CY	\$22.00	See below
<b>18</b> Spread footings	133	EA		
<b>19</b> Excavation	977	CY	\$12.00	See below
<b>20</b> Backfill from import		CY	\$22.00	See below
<b>21</b> Elevator pit	1	EA		
<b>22</b> Excavation	47	CY	\$12.00	See below
<b>23</b> Backfill from import	18	CY	\$22.00	See below
<b>24</b> Disposal				
<b>25</b> Cast to off-site waste	1,696	CY	\$22.00	See below
<b>26</b> Grade & compact	66,213	SF	\$1.00	See below
<b>27</b> 12" base course sand & gravel below slab on grade	2,452	CY	\$35.00	See below
<b>28</b>				
<b>29</b> Building overexcavation:				
<b>30</b> Over-excavation to remove topsoil	12,262	CY	\$9.00	
<b>31</b> Over-excavation	11,649	CY	\$8.50	
<b>32</b> Dispose materials	6,131	CY	\$18.00	
<b>33</b> Structural fill	5,242	CY	\$25.00	
<b>34</b>				
<b>35</b> Building Area				
<b>36</b> Cut and fill for building	2,452.33	CY	\$8.00	
<b>37</b> 1' Gravel base to building	2,452	CY	\$35.00	
<b>38</b>				
<b>39</b> <i>Concrete</i>				
<b>40</b> <i>Continuous footings; 3' x 1' 0" typ.</i>	2,049	LF		
<b>41</b> <i>4' x 1' 0"</i>				
<b>42</b> <i>5' x 1' 0"</i>				
<b>43</b> Concrete; material	247	CY	\$130.00	\$32,110
<b>44</b> Concrete; place (combination of pumping/trucking)	247	CY	\$85.00	\$20,995
<b>45</b> Reinforcement w/ftn wall dowels (10#/lf)	20,490	LB	\$1.10	\$22,539
<b>46</b> Formwork	8,196	SF	\$9.00	\$73,764
<b>47</b> <i>Spread footings</i>	133	EA		
<b>48</b> Concrete; material	465	CY	\$130.00	\$60,450
<b>49</b> Concrete; place	465	CY	\$85.00	\$39,525
<b>50</b> Reinforcement (100#/cy)	46,500	LB	\$1.10	\$51,150
<b>51</b> Formwork	6,406	SF	\$8.00	\$51,251
<b>52</b> Pilasters	133	EA	\$1,100.00	\$146,300
<b>53</b> <i>Grade beam GB-1, GB-2</i>	288	LF		
<b>54</b> Concrete; material	57	CY	\$130.00	\$7,410



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>55</b> Concrete; place (combination of pumping/trucking)	57	CY	\$85.00	\$4,845
<b>56</b> Reinforcement (125#/cy)	7,125	LB	\$1.10	\$7,838
<b>57</b> Formwork	1,940	SF	\$9.00	\$17,460
<b>58</b> <i>Foundation and frost walls; 16" thick x 4' 0" high typ.</i>	8,551	SF		
<b>59</b> Concrete; material	443	CY	\$130.00	\$57,590
<b>60</b> Concrete; place	443	CY	\$85.00	\$37,655
<b>61</b> Reinforcement (150#/cy)	66,450	LB	\$1.00	\$66,450
<b>62</b> Formwork	17,212	SF	\$8.00	\$137,696
<b>63</b> <i>Foundation walls; 21" thick x 4' 0" high typ.</i>	1,645	SF		
<b>64</b> Concrete; material	112	CY	\$130.00	\$14,560
<b>65</b> Concrete; place	112	CY	\$85.00	\$9,520
<b>66</b> Reinforcement (150#/cy)	16,800	LB	\$1.00	\$16,800
<b>67</b> Formwork	3,289	SF	\$8.00	\$26,312
<b>68</b> Brick shelf	2,049	LF	\$5.00	\$10,245
<b>69</b> Elevator pit; slab and walls	1	EA	\$5,000.00	\$5,000
<b>70</b> Anchor bolts	532	SET	\$35.00	\$18,620
<b>71</b> 6" Ø hole through wall, backfill w/crushed stone	4	EA	\$500.00	\$2,000
<b>72</b>				
<b>73</b> <u>Bandshell</u>				
<b>74</b> Footing	46	lf		
<b>75</b> Concrete; material	7	CY	\$135.00	\$945
<b>76</b> Concrete; place	7	CY	\$85.00	\$595
<b>77</b> Reinforcing	455	LBS	\$1.10	\$501
<b>78</b> Formwork	96	SF	\$9.00	\$864
<b>79</b> Wall	182	sf		
<b>80</b> Concrete	10	CY	\$130.00	\$1,300
<b>81</b> Placing	10	CY	\$85.00	\$850
<b>82</b> Reinforcing	1,500	LBS	\$1.10	\$1,650
<b>83</b> Formwork	382	SF	\$8.00	\$3,056
<b>84</b> Concrete steps	340	LFR	\$150.00	\$51,000
<b>85</b> Concrete steps , amphitheatre steps	206	LFR	\$125.00	\$25,750
<b>86</b> Miscellaneous concrete	1	LS	\$19,000.00	\$19,000
<b>87</b> Ground improvements	1	AL	\$50,000.00	BP#1
<b>88</b>				
<b>89</b> <i>Special Foundation Conditions</i>				
<b>90</b> Dewatering during excavation	1	LS	\$100,000.00	BP#1
<b>91</b>				
<b>92</b> <i>Thermal &amp; Moisture Protection</i>				
<b>93</b> 2" rigid insulation at foundation walls	10,195	SF	\$2.50	\$25,488
<b>94</b> Waterproofing elevator pit	225	SF	\$18.00	\$4,050
<b>95</b> Damp proofing to foundation walls	10,195	SF	\$4.50	\$45,879
<b>96</b> <b>A1010 FOUNDATIONS TOTAL</b>				<b>\$1,119,012</b>
<b>97</b>				
<b>98</b> <b>A1030 SLAB ON GRADE</b>				



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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>99</b> Concrete				
<b>100</b> Slab on grade, 5" thick, WWF, top of slab 314' 0"	<b>66,213</b>	SF		
<b>101</b> Concrete; material	<b>1,030</b>	CY	\$130.00	\$133,897
<b>102</b> Concrete; place & finish	<b>66,213</b>	SF	\$2.25	\$148,979
<b>103</b> Reinforcement (6x6 mesh)	<b>76,145</b>	SF	\$0.75	\$57,109
<b>104</b> Slab depressions	<b>1,243</b>	LF	\$65.00	\$80,795
<b>105</b> Slab thickening at stair 5'x2'x1' deep	<b>9</b>	LOC	\$2,500.00	\$22,500
<b>106</b> Slab on grade at loading dock, 6" thick, #4 bars	<b>350</b>	SF		
<b>107</b> Concrete; material	<b>6</b>	CY	\$125.00	\$810
<b>108</b> Concrete; place & finish	<b>350</b>	SF	\$2.50	\$875
<b>109</b> Reinforcement; #4@12"bew	<b>469</b>	LBS	\$1.10	\$516
<b>110</b> Miscellaneous				
<b>111</b> Concrete ramp @ Auditorium	<b>2,440</b>	SF	\$15.00	\$36,600
<b>112</b> Sloped walkway @ Cohort/Learning Common/Stage	<b>320</b>	SF	\$15.00	\$4,800
<b>113</b> Housekeeping & mechanical equipment pads	<b>1</b>	LS	\$5,000.00	\$5,000
<b>114</b> Miscellaneous concrete	<b>1</b>	LS	\$10,000.00	\$10,000
<b>115</b>				
<b>116</b> Thermal & Moisture Protection				
<b>117</b> 2" rigid insulation to perimeter of slab	<b>6,392</b>	SF	\$2.50	\$15,980
<b>118</b> Vapor retarder under slab	<b>76,145</b>	SF	\$1.00	\$76,145
<b>119</b> <b>A1030 SLAB ON GRADE TOTAL</b>				<b>\$594,006</b>
<b>120</b>				
<b>121</b> <b>A10 FOUNDATIONS TOTAL</b>				<b>\$1,713,019</b>
<b>122</b>				
<b>123</b>				
<b>124</b> <b>A20 BASEMENT</b>				
<b>125</b>				
<b>126</b> No anticipated work				
<b>127</b>				
<b>128</b> <b>TOTAL SYSTEM A20 BASEMENT</b>				<b>\$0</b>
<b>129</b>				
<b>130</b>				
<b>131</b> <b>B10 STRUCTURE</b>				
<b>132</b>				
<b>133</b> <b>B1010 UPPER FLOOR CONSTRUCTION</b>				
<b>134</b> Concrete				
<b>135</b> Slab on deck topping, 3 1/4" light weight, WWF	<b>69,572</b>	SF		
<b>136</b> Concrete; material	<b>966</b>	CY	\$130.00	\$125,616
<b>137</b> Reinforcement (6x6 mesh)	<b>76,529</b>	SF	\$1.00	\$76,529
<b>138</b> Rebar at corners and openings	<b>3,826</b>	LBS	\$1.10	\$4,209
<b>139</b> Concrete; place & finish	<b>69,572</b>	SF	\$5.00	\$347,860
<b>140</b> Beam pocket	<b>23</b>	EA	\$750.00	\$17,250
<b>141</b>				
<b>142</b> Concrete				





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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>143</b> Slab on deck topping, 3 1/4" light weight, WWF	1,600	SF		
<b>144</b> Concrete; material	22	CY	\$130.00	\$2,889
<b>145</b> Reinforcement (6x6 mesh)	1,760	SF	\$1.00	\$1,760
<b>146</b> Rebar at corners and openings	88	LBS	\$1.10	\$97
<b>147</b> Concrete; place & finish	1,600	SF	\$5.00	\$8,000
<b>148</b>				
<b>149</b> Structural Steel Framing	793	TNS		
<b>150</b> Steel floor framing				
<b>151</b> Wide flange beams	233	TNS	\$3,650.00	\$850,450
<b>152</b> Wide flange beams > 100	34	TNS	\$3,900.00	\$132,600
<b>153</b> HSS-shapes	43	TNS	\$4,100.00	\$176,300
<b>154</b> W-shapes ; columns	14	TNS	\$3,900.00	\$54,600
<b>155</b> HSS-shapes; columns	101	TNS	\$4,100.00	\$414,100
<b>156</b> HSS brace frames	40	TNS	\$4,200.00	\$168,000
<b>157</b> Remainder of steel framing; beams, columns, bridging	42	TNS	\$4,100.00	\$172,200
<b>158</b> Plates, bent plates and angles	133	EA	\$75.00	\$9,975
<b>159</b> Moment connections	157	EA	\$750.00 w/roof	
<b>160</b> Shear studs	10,170	EA	\$5.50	\$55,935
<b>161</b> 3" deep x 18ga galv composite floor deck	71,172	SF	\$4.25	\$302,481
<b>162</b> Delete structural hangers	(1)	LS	\$8,000.00	(\$8,000)
<b>163</b> Eliminate floor elevaton change	(1)	LS	\$90,000.00	(\$90,000)
<b>164</b> Eliminate tube column at span WF at Classroom corridor wall	(1)	LS	\$91,000.00	(\$91,000)
<b>165</b> Simplify admin clerestory pop-up	(1)	LS	\$52,000.00	(\$52,000)
<b>166</b> Thermal & Moisture Protection				
<b>167</b> Firestopping	137,385	GSF	\$0.30	\$41,216
<b>168</b> Intumescent fireproofing	See Roof			
<b>169</b> B1010 UPPER FLOOR CONSTRUCTION TOTAL				<b>\$2,721,067</b>
<b>170</b>				
<b>171</b> B1020 ROOF CONSTRUCTION				
<b>172</b> Structural steel roof framing	286	TNS		
<b>173</b> Wide flange beams	124	TNS	\$3,650.00	\$452,600
<b>174</b> Wide flange beams > 100	87	TNS	\$3,900.00	\$339,300
<b>175</b> HSS-shape	18	TNS	\$4,100.00	\$73,800
<b>176</b> Support post HSS7.625x0.375; RTU screen	2	TNS	\$4,100.00	\$8,200
<b>177</b> L- ledger; L4x4x1/4 anchored to CMU, roof	1	TNS	\$3,550.00	\$3,550
<b>178</b> Roof steel framing incl's hanger support beam, 52DLH17, HSS trusses, 1"x10" 50KSI steel plate, etc.	42	TNS	\$4,100.00	\$172,200
<b>179</b> Add reinforcement 7#/sf hot dip galv steel @ RTU	12	TNS	\$4,100.00	\$49,200
<b>180</b> Moment connections	241	EA	\$750.00	\$180,750
<b>181</b> Roof hanger @ main roof	47	EA	\$1,500.00	\$70,500
<b>182</b> 3/4" rod hanger @ Gym and Auditorium roof	11	EA	\$1,500.00	\$16,500
<b>183</b> Other misc plates, connections	65,560	SF	\$4.50	\$295,020
<b>184</b> Premium for galv steel framing	14	TNS	\$500.00	\$7,000
<b>185</b> 3" deep x 18ga galv comp roof deck (w/conc topping)	40,380	SF	\$4.25	\$171,615



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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>186</b> R3; 3" 18 ga roof deck above Learning Commons	<b>8,610</b>	SF	\$4.25	\$36,593
<b>187</b> R3A; 3" Cellular acoustic 18/16 ga roof deck, galv at Auditorium	<b>7,615</b>	SF	\$6.50	\$49,498
<b>188</b> R1.5; 1.5" 20 ga roof deck, Gym equipment storage	<b>835</b>	SF	\$6.00	\$5,010
<b>189</b> R1.5A; 1.5" Cellular acoustic 20 ga roof deck, galv at Gym	<b>8,120</b>	SF	\$6.50	\$52,780
<b>190</b> 1 hr spray fireproofing @ raised roof area over Learning Commons	<b>8,610</b>	SF	\$5.00	\$43,050
<b>191</b> Intumescent fireproofing	<b>1</b>	LS	\$65,000.00	\$65,000
<b>192</b> Rough blocking to roof				Div B3010
<b>193</b> Roof dunnage (SS)	<b>7</b>	TNS	\$7,500.00	\$52,500
<b>194</b> Roof screen, galv; HSS shapes	<b>15</b>	TNS	\$3,900.00	\$58,500
<b>195</b> Galvanized bar grating	<b>1,000</b>	SF	\$55.00	\$55,000
<b>196</b> Roof soffit/fascia framing	<b>500</b>	LF	\$150.00	\$75,000
<b>197</b> <b>B1020 ROOF CONSTRUCTION TOTAL</b>				<b>\$2,333,165</b>
<b>198</b>				
<b>199</b> <b>TOTAL SYSTEM B10 SUPERSTRUCTURE</b>				<b>\$5,054,232</b>
<b>200</b>				
<b>201</b>				
<b>202</b> <b>B20 EXTERIOR CLOSURE</b>	<b>70,150</b>	SF		
<b>203</b>				
<b>204</b> <b>B2010 EXTERIOR WALLS</b>	<b>56,243</b>			
<b>205</b>				
<b>206</b> Exterior brick wall; scored brick veneer, "modular" 8x8x4 , and "utility" 4x12x4, iron spot finish	<b>17,333</b>	SF	\$35.00	\$606,655
<b>207</b> 3" Faced rigid cellular polyiso insulation	<b>17,333</b>	SF	\$4.00	\$69,332
<b>208</b> Fluid applied air vapor barrier	<b>17,333</b>	SF	\$5.50	\$95,332
<b>209</b> Exterior CMU wall; scored ground face CMU, 8x12x16 , 4x8x16, and "utility" 4x12x4	<b>24,140</b>	SF	\$32.00	\$772,480
<b>210</b> 3" Faced rigid cellular polyiso insulation	<b>24,140</b>	SF	\$4.00	\$96,560
<b>211</b> Fluid applied air vapor barrier	<b>24,140</b>	SF	\$5.50	\$132,770
<b>212</b> ½" Fiberglass faced gypsum sheathing	<b>26,668</b>	SF	\$2.00	\$53,336
<b>213</b> 10" Cold formed metal framing	<b>26,668</b>	SF	\$10.50	\$280,014
<b>214</b> ⅝" GWB interior of exterior wall	<b>26,668</b>	SF	\$2.50	\$66,670
<b>215</b> 12" Reinforced ground face CMU wall backup @ Auditorium & Gym	<b>14,805</b>	SF	\$28.00	\$414,540
<b>216</b> Caulking and sealants at brick & CMU	<b>41,473</b>	SF	\$0.65	\$26,957
<b>217</b> 4" Utility brick, both sides @ parapet wall, Main Entrance	<b>175</b>	SF	\$32.00	\$5,600
<b>218</b> Precast colored coping on top of parapet wall	<b>26</b>	LF	\$150.00	\$3,900
<b>219</b> Premium for custom brick and CMU @ lintels & shelves	<b>1,128</b>	LF	\$50.00	\$56,400
<b>220</b> Corrugated metal panel w/exposed fasteners	<b>4,578</b>	SF	\$45.00	\$206,010
<b>221</b> 5" Fiberglass thermal Z-furring	<b>4,578</b>	SF	\$3.50	\$16,023
<b>222</b> 4" Mineral fiber insulation	<b>4,578</b>	SF	\$4.50	\$20,601
<b>223</b> Fluid applied air vapor barrier	<b>4,578</b>	SF	\$5.50	\$25,179
<b>224</b> ½" Fiberglass faced gypsum sheathing	<b>4,578</b>	SF	\$2.00	\$9,156
<b>225</b> 10" Cold formed metal framing	<b>4,578</b>	SF	\$10.50	\$48,069
<b>226</b> ⅝" GWB interior of exterior wall	<b>4,578</b>	SF	\$2.50	\$11,445



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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
227 Caulking and sealants at corrugated metal panel	4,578	SF	\$0.65	\$2,976
228 Composite metal panel w/exposed fasteners	2,413	SF	\$75.00	\$180,975
229 5" Fiberglass thermal Z-furring	2,413	SF	\$3.50	\$8,446
230 4" Mineral fiber insulation	2,413	SF	\$4.50	\$10,859
231 Fluid applied air vapor barrier	2,413	SF	\$5.50	\$13,272
232 ½" Fiberglass faced gypsum sheathing	2,413	SF	\$2.00	\$4,826
233 10" Cold formed metal framing	2,413	SF	\$10.50	\$25,337
234 ⅝" GWB interior of exterior wall	2,413	SF	\$2.50	\$6,033
235 Caulking and sealants at composite metal panel	2,413	SF	\$0.65	\$1,568
236 Wood grain phenolic panel - Trespa @ ext wall incl's projections/window bay	6,354	SF	\$80.00	\$508,320
237 5" Fiberglass thermal Z-furring	6,354	SF	\$3.50	\$22,239
238 4" Mineral fiber insulation at Trespa cladding -	6,354	SF	\$4.50	\$28,593
239 Fluid applied air vapor barrier	6,354	SF	\$5.50	\$34,947
240 ½" Fiberglass faced gypsum sheathing	6,354	SF	\$2.00	\$12,708
241 10" Cold formed metal framing	6,354	SF	\$10.50	\$66,717
242 ⅝" GWB interior of exterior wall	6,354	SF	\$2.50	\$15,885
243 Caulking and sealants at Trespa cladding	6,354	SF	\$0.65	\$4,130
244				
245 Phenolic panel; Ext soffit at projection/window bay	1,250	SF	\$80.00	\$100,000
246 Furring	1,250	SF	\$3.50	\$4,375
247 4" mineral fiber insulation at Trespa cladding - Exterior soffit	1,250	SF	\$4.00	\$5,000
248 Air vapor barrier at Trespa cladding - Exterior soffit	1,250	SF	\$5.50	\$6,875
249 1/2" sheathing at Trespa cladding - Exterior soffit	1,250	SF	\$2.00	\$2,500
250 6" Metal stud at Trespa cladding - Exterior soffit	1,250	SF	\$10.50	\$13,125
251 5/8 GWB at Trespa cladding - Exterior soffit	1,250	SF	\$2.50	\$3,125
252 Caulking and sealants at Trespa cladding - Ext. soffit	1,250	SF	\$0.65	\$813
253				
254 <i>Miscellaneous</i>				
255 Sand blasted cast in place concrete walls	1	LS	\$50,000.00	\$50,000
256 Precast concrete at planter w/galv steel connection & cross bracing	212	SF	\$75.00	\$15,900
257 Precast planter	50	LF	\$750.00	\$37,500
258 Cont galv relieving angle at masonry wall	1,038	LF	\$100.00	\$103,800
259 Loose lintel @ exterior wall openings	90	LF	\$200.00	\$18,000
260 Miscellaneous metals in exterior closure	56,068	SF	\$1.50	\$84,102
261 Window caulking				Div B2020
262 Through wall sheet metal flashing	1,424	LF	\$25.00	\$35,600
263 Corrugated perforated metal; mechanical RTU screen	1,678	SF	\$60.00	\$100,680
264 Metal louver	625	SF	\$70.00	\$43,750
265 Exterior mockup	1	LS	\$50,000.00	\$50,000
266 Temporary enclosures	1	LS	\$50,000.00	\$50,000
267 CMU veneer extend at east and west end	(1)	LS	\$44,000.00	(\$44,000)
268 <b>B2010 EXTERIOR WALLS TOTAL</b>				<b>\$4,646,002</b>
269				



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<b>270 B2020 EXTERIOR WINDOWS</b>	<b>14,082</b>	<b>SF</b>		
<b>271</b> Aluminum storefronts, double glazed w/security insul glazing, school guard glass, laminated interior glass	888	SF		
<b>272</b> Type 10A; 24'-8 1/4" x 12'-0"	1	EA	\$34,300.00	\$34,300
<b>273</b> Type 11A; 9'-6 1/4" x 12'-0"	1	EA	\$13,200.00	\$13,200
<b>274</b> Type 12A; 9'-7 1/2" x 12'-0"	2	EA	\$13,200.00	\$26,400
<b>275</b> Type 13A; 7'-6" x 12'-0"	1	EA	\$10,400.00	\$10,400
<b>276</b> Type 16A; 12'-0" x 13'-0 1/2"	1	EA	\$17,900.00	\$17,900
<b>277</b> Bay windows	3,576	SF		
<b>278</b> Type 1; 9'-3" x 12'-0"	10	EA	\$13,300.00	\$133,000
<b>279</b> Type 2; 9'-3" x 12'-0"	11	EA	\$13,300.00	\$146,300
<b>280</b> Type 2A; 9'-3" x 11'-0 1/4"	2	EA	\$12,200.00	\$24,400
<b>281</b> Type 3; 9'-3" x 11'-6"	9	EA	\$12,800.00	\$115,200
<b>282</b> Type 3C; 7'-0" x 12'-0"	1	EA	\$10,100.00	\$10,100
<b>283</b> Curtain wall/Windows	9,618	SF		
<b>284</b> Type 4; 3'-0" x 10'-1"	57	EA	\$3,500.00	\$199,500
<b>285</b> Type 5A; 3'-11" x 12'-0"	6	EA	\$5,500.00	\$33,000
<b>286</b> Type 5B; 3'-11" x 11'-6"	22	EA	\$5,300.00	\$116,600
<b>287</b> Type A1; 1'-4" x 3'-0"	1	EA	\$400.00	\$400
<b>288</b> Type A2; 2'-0" x 4'-0"	1	EA	\$900.00	\$900
<b>289</b> Type A3; 2'-0" x 12'-0"	27	EA	\$2,800.00	\$75,600
<b>290</b> Type B1; 3'-4" x 12'-0"	10	EA	\$4,600.00	\$46,000
<b>291</b> Type B1A; 3'-4" x 5'-10"	2	EA	\$2,100.00	\$4,200
<b>292</b> Type B3; 3'-4" x 7'-0"	1	EA	\$2,600.00	\$2,600
<b>293</b> Type B4; 3'-4" x 12'-0"	9	EA	\$4,600.00	\$41,400
<b>294</b> Type C1; 3'-4" x 12'-0"	14	EA	\$4,600.00	\$64,400
<b>295</b> Type D1; 5'-4" x 6'-2"	2	EA	\$3,600.00	\$7,200
<b>296</b> Type D3; 5'-4" x 12'-0"	12	EA	\$7,400.00	\$88,800
<b>297</b> Type E1; 5'-4" x 10'-0"	3	EA	\$6,100.00	\$18,300
<b>298</b> Type E2; 5'-4" x 12'-0"	6	EA	\$7,400.00	\$44,400
<b>299</b> Type F1; 7'-4" x 6'-2"	1	EA	\$5,000.00	\$5,000
<b>300</b> Type F2; 7'-4" x 10'-0"	3	EA	\$8,400.00	\$25,200
<b>301</b> Type F3; 7'-4" x 12'-0"	7	EA	\$10,100.00	\$70,700
<b>302</b> Type G1; 7'-4" x 12'-0"	11	EA	\$10,100.00	\$111,100
<b>303</b> Type H1; 9'-4" x 6'-0"	1	EA	\$6,400.00	\$6,400
<b>304</b> Type H2; 9'-4" x 10'-0"	1	EA	\$10,700.00	\$10,700
<b>305</b> Type H3; 9'-4" x 12'-0"	1	EA	\$12,900.00	\$12,900
<b>306</b> Type I1; 9'-4" x 6'-0"	1	EA	\$6,400.00	\$6,400
<b>307</b> Type I2; 9'-4" x 10'-0"	1	EA	\$10,700.00	\$10,700
<b>308</b> Type I3; 9'-4" x 12'-0"	1	EA	\$12,900.00	\$12,900
<b>309</b> Type K1; 11'-4" x 12'-0"	2	EA	\$15,600.00	\$31,200
<b>310</b> Type L1; 13'-4" x 12'-0"	1	EA	\$18,400.00	\$18,400
<b>311</b> Type M1; 10'-4" x 6'-2"	1	EA	\$7,300.00	\$7,300
<b>312</b> Type N1; 6'-4" x 4'-4"	2	EA	\$3,000.00	\$6,000



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>313</b> Type N2; 6'-4" x 5'-10"	2	EA	\$4,100.00	\$8,200
<b>314</b> Type O1; 6'-4" x 12'-0"	2	EA	\$8,700.00	\$17,400
<b>315</b> Type Q1; 4'-4" x 7'-0"	1	EA	\$3,300.00	\$3,300
<b>316</b> Type R1; 3'-4" x 6'-11" irregular shape	1	EA	\$2,900.00	\$2,900
<b>317</b> Horizontal aluminum sun shades attached to CW/windows @ south elevation; allow	1,755	LF	\$175.00	NIC
<b>318</b> Blocking for openings	8,448	LF	\$8.00	\$67,584
<b>319</b> Window caulking	8,448	LF	\$3.00	\$25,344
<b>320</b> Add premium cost for translucent	360	SF	\$25.00	\$9,000
<b>321</b> Allow for premium cost for security glazing	570	SF	\$350.00	\$199,500
<b>322 B2020 EXTERIOR WINDOWS TOTAL</b>				<b>\$1,942,628</b>
<b>323</b>				
<b>324 B2030 EXTERIOR DOORS</b>				
<b>325</b> OH door, 12'-0" x 10'-6" motor operated @ Makerspace	1	EA	\$8,000.00	\$8,000
<b>326</b> Exterior HM doors; complete	45	LEAF		
<b>327</b> Type A, single	1	LEAF	\$1,800.00	\$1,800
<b>328</b> Type B1, single	5	LEAF	\$1,800.00	\$9,000
<b>329</b> Type B2, pair	9	PR	\$3,600.00	\$32,400
<b>330</b> Type B2, 10'-0" x 8'-6" @ Receiving	1	PR	\$5,000.00	\$5,000
<b>331</b> Aluminum entry doors including hardware	17	LEAF		
<b>332</b> Type SF1, single	7	LEAF	\$3,500.00	\$24,500
<b>333</b> Type SF2, pair	5	PR	\$7,000.00	\$35,000
<b>334</b> School guard premium	5	LVS	\$10,000.00	\$50,000
<b>335</b> Card reader	3	EA	\$2,500.00	\$7,500
<b>336</b> RDL; Remote door un/lock	16	EA	\$2,500.00	\$40,000
<b>337 B2030 EXTERIOR DOORS TOTAL</b>				<b>\$213,200</b>
<b>338</b>				
<b>339 TOTAL SYSTEM B20 EXTERIOR CLOSURE</b>				<b>\$6,801,830</b>
<b>340</b>				
<b>341</b>				
<b>342 B30 ROOFING</b>				
<b>343</b>				
<b>344 B3010 ROOF COVERINGS</b>				
<b>345</b>				
<b>346</b> Roofing				
<b>347</b> Rough carpentry/wood blocking to roof	5,138	LF	\$13.50	\$69,363
<b>348</b> Single-ply PVC membrane roofing system	65,560	SF		
<b>349</b> Type 1; Main roof, lower roof	36,386	SF	\$13.25	\$482,115
<b>350</b> Type 2; Gym & Auditorium	16,570	SF	\$13.25	\$219,553
<b>351</b> Type 3; Raised roof above Learning Commons	8,610	SF	\$13.25	\$114,083
<b>352</b> Type 4; Entry walkway & Terrace	1,258	SF	\$13.25	\$16,669
<b>353</b> Vertical roof membrane, 5'-6" h at raised roof	2,736	SF	\$14.25	\$38,988
<b>354</b> ½" roof cover board	65,560	SF	\$2.25	\$147,510
<b>355</b> 6" insulation	65,560	SF	\$2.50	\$163,900



**Fuller Middle School**

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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>356</b> Vapor retarder	<b>65,560</b>	SF	\$1.50	\$98,340
<b>357</b> Add ½" fire rated roof board @ Auditorium, Gym & raised roof area over Learning Commons	<b>25,180</b>	SF	\$2.75	\$69,245
<b>358</b> Add acoustic insulation in flutes @ Auditorium & Gym roof deck	<b>16,570</b>	SF	\$1.50	\$24,855
<b>359</b> Precast concrete pavers over adjustable deck pedestal system @ roof type 4	<b>1,258</b>	SF	\$45.00	\$56,610
<b>360</b> Polycarbonate entrance canopy	<b>420</b>	SF	\$185.00	\$77,700
<b>361</b> Prefinished aluminum fascia/roof edge	<b>3,054</b>	LF	\$65.00	\$198,510
<b>362</b> Roof expansion joint	<b>1</b>	AL	\$25,000.00	\$25,000
<b>363</b> Remove roof vapor barrier	<b>(1)</b>	LS	\$144,000.00	(\$144,000)
<b>364</b> Reduce entrance canopy	<b>(1)</b>	LS	\$42,000.00	(\$42,000)
<b>365</b>				
<b>366</b> <i>Roofing Accessories</i>				
<b>367</b> Miscellaneous roof accessories	<b>1</b>	LS	\$22,000.00	\$22,000
<b>368</b> Roof hatch	<b>2</b>	EA	\$3,000.00	\$6,000
<b>369</b> Paver walkway	<b>745</b>	SF	\$25.00	\$18,625
<b>370</b>				
<b>371</b> <i>Roof openings</i>				
<b>372</b> Glazed aluminum-framed skylight	<b>4,015</b>	SF	\$150.00	\$602,250
<b>373</b> <b>B3010 ROOF COVERINGS TOTAL</b>				<b>\$2,265,314</b>
<b>374</b>				
<b>375</b> <b>TOTAL SYSTEM B30 ROOFING</b>				<b>\$2,265,314</b>
<b>376</b>				
<b>377</b>				
<b>378</b> <b>C10 INTERIOR CONSTRUCTION</b>				
<b>379</b>				
<b>380</b> <b>C1010 PARTITIONS</b>				
<b>381</b> <u>04 00 00 Masonry</u>				
<b>382</b> 12" CMU wall reinforced; Gym & Auditorium, double hgt	<b>7,942</b>	SF	\$32.00	\$254,144
<b>383</b> 8" CMU wall, load bearing wall @ Auditorium	<b>1,284</b>	SF	\$22.00	\$28,248
<b>384</b> Stairs/elevator CMU wall	<b>3,266</b>	SF	\$22.00	\$71,852
<b>385</b>				
<b>386</b> <i>Gypsum board partitions</i>	<b>115,966</b>	SF		
<b>387</b> Type B3; 3 5/8" metal stud, 5/8" GWB	<b>203</b>	SF	\$6.70	\$1,360
<b>388</b> Type B4; same as type B3, add batt insulation	<b>7,845</b>	SF	\$8.20	\$64,329
<b>389</b> Type C2; 3 5/8" metal stud, 2x 5/8" GWB	<b>5,600</b>	SF	\$8.90	\$49,840
<b>390</b> Type C3; 3 5/8" metal stud, 2x 5/8" GWB, batt insulation	<b>6,483</b>	SF	\$10.40	\$67,423
<b>391</b> Type C4; same as type C3, add 1hr fire rated	<b>3,165</b>	SF	\$10.90	\$34,499
<b>392</b> Type C6; 6" metal stud, 2x 5/8" GWB, batt insulation	<b>1,118</b>	SF	\$12.40	\$13,863
<b>393</b> Type C7; same as type C6, add 1hr fire rated	<b>5,507</b>	SF	\$12.90	\$71,040
<b>394</b> Type C8; 8" metal stud, 2x 5/8" GWB, batt insulation	<b>172</b>	SF	\$14.40	\$2,477
<b>395</b> Type C10; 10" metal stud, 2x 5/8" GWB, batt insulation	<b>222</b>	SF	\$16.40	\$3,641
<b>396</b> Type D3; 3 5/8" metal stud, 2x 5/8" GWB, batt insulation	<b>1,526</b>	SF	\$10.40	\$15,870
<b>397</b> Type D6; 6" metal stud, 2x 5/8" GWB, batt insulation	<b>1,266</b>	SF	\$12.40	\$15,698



**Fuller Middle School**Framingham, MA  
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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>398</b> Type E3; 3 5/8" metal stud, 3x 5/8" GWB, batt insulation	<b>23,327</b>	SF	\$12.60	\$293,920
<b>399</b> Type E4; same as type E3, add 1hr fire rated	<b>780</b>	SF	\$13.10	\$10,218
<b>400</b> Type E6; 6" metal stud, 3x 5/8" GWB, batt insulation	<b>1,158</b>	SF	\$14.80	\$17,138
<b>401</b> Type E7; 10" metal stud, 3x 5/8" GWB, batt insulation	<b>1,022</b>	SF	\$18.80	\$19,214
<b>402</b> Type E8; 8" metal stud, 3x 5/8" GWB, batt insulation	<b>18,060</b>	SF	\$16.80	\$303,408
<b>403</b> Type E9; same as type E8, add 1hr fire rated	<b>2,710</b>	SF	\$17.30	\$46,883
<b>404</b> Type F1; 3 5/8" metal stud, 4x 5/8" GWB, batt insulation	<b>4,988</b>	SF	\$14.80	\$73,822
<b>405</b> Type F2; same as type F1, add 1hr fire rated	<b>1,834</b>	SF	\$15.30	\$28,060
<b>406</b> Type F6; 6" metal stud, 4x 5/8" GWB, batt insulation	<b>9,646</b>	SF	\$16.80	\$162,053
<b>407</b> Type F7; 8" metal stud, 4x 5/8" GWB, batt insulation	<b>227</b>	SF	\$18.80	\$4,268
<b>408</b> Type F8; same as type F7, add 1hr fire rated	<b>1,065</b>	SF	\$19.30	\$20,555
<b>409</b> Type H4; 4" metal C-H stud, 3x 5/8" GWB, batt insulation, 2hr rated	<b>67</b>	SF	\$14.60	\$978
<b>410</b> Type H6; 6" metal C-H stud, 3x 5/8" GWB, batt insulation, 2hr rated @ Elevator	<b>1,561</b>	SF	\$16.60	\$25,913
<b>411</b> Type J1; 2 x (3 5/8" metal stud, 5/8" GWB, batt insulation)	<b>6,552</b>	SF	\$16.40	\$107,453
<b>412</b> Type J2; same as type J1	<b>1,157</b>	SF	\$16.40	\$18,975
<b>413</b> Type K1; 2 x (3 5/8" metal stud, 2x5/8" GWB, batt insulation)	<b>6,245</b>	SF	\$20.80	\$129,896
<b>414</b> Type K2; same as typeK1, add 1hr fire rated	<b>2,460</b>	SF	\$21.30	\$52,398
<b>415</b> High Impact GWB premium (allowance agreed upon)	<b>1</b>	AL	\$50,000.00	\$50,000
<b>416</b> Rough carpentry internal partitions and ceilings	<b>137,385</b>	GSF	\$1.25	\$171,731
<b>417</b> Misc metals for interior construction	<b>137,385</b>	GSF	\$1.25	\$171,731
<b>418</b>				
<b>419</b> Operable partition				
<b>420</b> Operable partitions	<b>5,440</b>	SF	\$90.00	\$489,600
<b>421</b> Framing support beam to operable partitions	<b>633</b>	LF	\$175.00	\$110,775
<b>422</b>				
<b>423</b> Interior windows				
<b>424</b> Interior	<b>5,215</b>	SF	\$35.00	\$182,525
<b>425</b> Glazed film	<b>4,332</b>	SF	\$60.00	\$259,920
<b>426</b> Ballistic glass sliding window @ Admin	<b>1</b>	EA	\$2,500.00	\$2,500
<b>427</b> Mirror frameless	<b>1,454</b>	SF	\$45.00	\$65,430
<b>428</b> Graduated glass; premium	<b>2,359</b>	SF	\$50.00	\$117,950
<b>429</b> Acoustical glass premium	<b>505</b>	SF	\$250.00	\$126,250
<b>430</b> Interior storefront				
<b>431</b> Storefront @ vestibule	<b>3,115</b>	SF	\$85.00	\$264,775
<b>432</b> Breakout Space-A, B & C; Glazed partition/wood panel closure	<b>3</b>	EA	\$125,000.00	\$375,000
<b>433</b> Remove folding markerboard panesl	<b>(1)</b>	LS	\$74,000.00	<b>(\$74,000)</b>
<b>434</b> Interior penetration firestopping				
<b>435</b> Interior caulking	<b>137,385</b>	GSF	\$0.50	\$68,693
<b>436</b> Top-of-partition firestopping	<b>137,385</b>	GSF	\$0.15	\$20,608
<b>437</b> <b>C1010 PARTITIONS TOTAL</b>				<b>\$4,412,924</b>
<b>438</b>				
<b>439</b> <b>C1020 INTERIOR DOORS, FRAMES &amp; HARDWARE</b>				



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>440</b> 08 10 00 Hollow Metal Doors and Frames:				
<b>441</b> Security gate 7'-0" x 7'-10", steel @ 1st Floor Corridors	2	EA	\$900.00	\$1,800
<b>442</b> Hollow Metal Doors:				
<b>443</b> type B1, single	41	EA	\$300.00	\$12,300
<b>444</b> type B2, pair	6	EA	\$600.00	\$3,600
<b>445</b> HM frames	260	EA	\$225.00	\$58,500
<b>446</b> HM frames for pair doors	29	EA	\$275.00	\$7,975
<b>447</b> Wood Doors:				
<b>448</b> type B1, single, wood	91	EA	\$300.00	\$27,300
<b>449</b> same as above w/applied surface both sides	13	EA	\$750.00	\$9,750
<b>450</b> type B1, 5'-0" x 26'-0" swinging panel @ AV rooms	2	EA	\$25,000.00	\$50,000
<b>451</b> type B2, pair, wood	13	EA	\$600.00	\$7,800
<b>452</b> type C1, single, wood w/full height glass	111	EA	\$375.00	\$41,625
<b>453</b> type C2, pair, w/full height glass	9	EA	\$750.00	\$6,750
<b>454</b> type C3, pair, w/vision panel 0'-5" x 6'-0"	1	EA	\$750.00	\$750
<b>455</b> Premium cost for acoustical doors	40	LOC	\$250.00	\$10,000
<b>456</b>				
<b>457</b> Coiling drapery, security screen				
<b>458</b> Cafeteria/Learning Commons; 21'-0" x 8'-0" (2 ea)	336	SF	\$55.00	\$18,480
<b>459</b> Kitchen; 40'-0" x 8'-0" (1 ea)	320	SF	\$55.00	\$17,600
<b>460</b> Admin area; 21'-0" x 5'-6" (1 ea)	116	SF	\$55.00	\$6,353
<b>461</b>				
<b>462</b> Aluminum-Framed Entrances and Storefronts, interior				
<b>463</b> type SF1, single, aluminum/glass	3	EA	\$2,500.00	\$7,500
<b>464</b> type SF2, pair, aluminum/glass	2	PR	\$5,000.00	\$10,000
<b>465</b> School guard doors, premium	5	LVS	\$10,000.00	\$50,000
<b>466</b>				
<b>467</b> Access Doors and Frames				
<b>468</b> Access doors	100	EA	\$250.00	\$25,000
<b>469</b>				
<b>470</b> Door sidelights	900	SF	\$50.00	\$45,000
<b>471</b> Glazing to doors	1,554	SF	\$50.00	\$77,700
<b>472</b>				
<b>473</b> Hardware	318	SET	\$650.00	\$206,700
<b>474</b> Powered door openers	4	LOC	\$3,000.00	\$12,000
<b>475</b> CR; Card reader	15	EA	\$2,500.00	\$37,500
<b>476</b> RDL; Remote door un/lock	14	EA	\$2,500.00	\$35,000
<b>477</b> Paint door frames	318	EA	\$85.00	\$27,030
<b>478</b> Paint door	318	EA	\$65.00	\$20,670
<b>479</b>				
<b>480</b> Blocking at doors	5,406	LF	\$2.50	\$13,515
<b>481</b> Door Installation	318	EA	\$150.00	\$47,700
<b>482</b> <b>C1020 INTERIOR DOORS, FRAMES &amp; HARDWARE TOTAL</b>				<b>\$895,898</b>
<b>483</b>				





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<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>484 C1030 FITTINGS</b>				
<b>485</b> Miscellaneous metals	<b>137,385</b>	GSF	\$1.00	\$137,385
<b>486</b>				
<b>487</b> Tackboards	<b>2,688</b>	SF	\$12.00	\$32,256
<b>488</b> Markerboards	<b>5,376</b>	SF	\$18.00	\$96,768
<b>489</b> Tackable wall; allow	<b>3,000</b>	SF	\$10.50	\$31,500
<b>490</b>				
<b>491</b> Window stools - Solid surfacing material	<b>1,250</b>	LF	\$35.00	\$43,750
<b>492</b> Toilets				
<b>493</b> Vanity counter; Toilets	<b>319</b>	LF	\$200.00	\$63,800
<b>494</b> Vanity counter; Dressing	<b>33</b>	LF	\$200.00	\$6,600
<b>495</b> Folding panel shutter w/w/magnetic writable surface both side:	<b>40</b>	EA	\$1,000.00	\$40,000
<b>496</b>				
<b>497</b> Signage				
<b>498</b> Commerative plaque	<b>2</b>	LOC	\$1,500.00	\$3,000
<b>499</b> Dimensional characters; School name	<b>1</b>	AL	\$5,000.00	\$5,000
<b>500</b> Plastic panel signs for room idenfication, way finding, hazard identification	<b>1</b>	AL	\$7,500.00	\$7,500
<b>501</b> Framed paper signs	<b>1</b>	AL	\$2,180.00	\$2,180
<b>502</b> Miscellaneous signage	<b>137,385</b>	GSF	\$0.35	\$48,085
<b>503</b>				
<b>504</b> Wall & corner guards				
<b>505</b> Stainless steel corner guards	<b>1</b>	LS	\$10,000.00	\$10,000
<b>506</b>				
<b>507</b> Toilet compartments (plastic laminate)				
<b>508</b> Toilet compartments	<b>20</b>	EA	\$1,200.00	\$24,000
<b>509</b> Toilet compartments - ADA	<b>14</b>	EA	\$1,400.00	\$19,600
<b>510</b> Urinal screen	<b>20</b>	EA	\$800.00	VE
<b>511</b>				
<b>512</b> Lockers				
<b>513</b> Angled glass display cabinets above lockers	<b>365</b>	LF	\$275.00	NIC
<b>514</b> Athletic / PE lockers: metal 2-tier 30"h. x 15"w x 15"d	<b>50</b>	EA	\$250.00	\$12,500
<b>515</b> Kitchen staff lockers, single tier, 12" x 12" x 6' high	<b>6</b>	EA	\$250.00	\$1,500
<b>516</b> Student lockers 15"x12"x36" w/angled top, phenolic w/plam finish and wd veneer sides and back	<b>660</b>	EA	\$385.00	\$254,100
<b>517</b> Angles at lockers	<b>825</b>	LF	\$35.00	\$28,875
<b>518</b> Toilet accessories				
<b>519</b> Combination PTD/WR unit	<b>8</b>	EA	\$150.00	\$1,200
<b>520</b> Towel dispenser/waste receptacle	<b>45</b>	EA	\$100.00	\$4,500
<b>521</b> Soap dispensers	<b>45</b>	EA	\$35.00	\$1,575
<b>522</b> Toilet paper dispensers	<b>48</b>	EA	\$65.00	\$3,120
<b>523</b> Sanitary napkin disposal units	<b>21</b>	EA	\$250.00	\$5,250
<b>524</b> Robe hook	<b>15</b>	EA	\$25.00	\$375
<b>525</b> Fold-down shower seat	<b>1</b>	EA	\$200.00	\$200



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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
526 Grab bars	28	PR	\$160.00	\$4,480
527 Mirrors - in private bathrooms	14	EA	\$150.00	\$2,100
528 Mop holder w/shelf (Janitors)	6	EA	\$180.00	\$1,080
529				
530 <i>Fire extinguisher cabinets</i>				
531 Fully recessed/non-rated	14	EA	\$450.00	\$6,182
532 Semi-recessed/non-rated	6	EA	\$300.00	\$1,800
533				
534 <i>Other fittings</i>				
535 Wood cantilevered benches at classroom glazed partitions	42	EA	\$350.00	\$14,700
536 Curtain track, carriers and curtains	2	EA	\$200.00	\$400
537 <b>C1030 FITTINGS TOTAL</b>				<b>\$915,361</b>
538				
539 <b>TOTAL SYSTEM C10 INTERIOR CONSTRUCTION</b>				<b>\$6,224,182</b>
540				
541				
542 <b>C20 STAIRCASES</b>				
543				
544 <b>C2010 STAIRCASES</b>				
545 <i>Interior stairs</i>				
546 Egress stairs	6	FLT	\$25,000.00	\$150,000
547 Monumental/open stairs	3	FLT	\$65,000.00	\$195,000
548				
549 <i>Stair finishes</i>				
550 Railings	1	LS	\$150,000.00	\$150,000
551 Linoleum treads & risers with rubber nosing	828	LFR	\$15.50	\$12,834
552 Linoleum tile at landings	1,717	SF	\$8.00	\$13,736
553 Monumental/open stairs	920	LFR	\$75.00	\$69,000
554 <b>C2010 STAIRCASES TOTAL</b>				<b>\$590,570</b>
555				
556 <b>TOTAL C20 STAIRCASES</b>				<b>\$590,570</b>
557				
558				
559 <b>C30 INTERIOR FINISHES</b>				
560				
561 <b>C3010 WALL FINISHES</b>				
562 <i>Auditorium walls:</i>				
563 Plam wall panel to augitorium	2,900	SF	\$38.00	\$110,200
564 FRP; fiber reinforced panels in Kitchen	1,921	SF	\$15.00	\$28,815
565 Epoxy paint wainscot @ Locker/Toilet	8,234	SF	\$2.00	\$16,468
566 Solid epoxy backsplash	650	SF	\$18.00	\$11,700
567 Linoleum base	12,630	LF	\$7.00	\$88,410
568 Metal trim detail	12,630	LF	\$8.00	\$101,040
569 Vented rubber wall base	375	LF	\$3.00	\$1,125



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>570</b> Metal trim detail	375	LF	\$5.00	\$1,875
<b>571</b> Exposed column covers; allowance	1	LS	\$35,000.00	\$35,000
<b>572</b> P.lam panel wall cover	330	SF	\$25.00	\$8,250
<b>573</b> <i>Academic areas:</i>				
<b>574</b> Magnetic writing surface	6,400	SF	\$25.00	\$160,000
<b>575</b> Plam bumper w/HD wood marker tray	2,915	LF	\$90.00	\$262,350
<b>576</b> Maple rail	1,600	LF	\$30.00	\$48,000
<b>577</b> over curved gwb partition at curved wall	3,156	SF	\$27.50	\$86,790
<b>578</b> Fabric wrapped acoustic wall panels @ Music areas	1,443	SF	\$22.00	\$31,746
<b>579</b> sloped fabric wrapped acoustic panel	8,359	SF	\$24.50	\$204,796
<b>580</b> Cementitious wood fiber acoustical wall panel @ Gym	6,255	SF	\$15.00	\$93,825
<b>581</b> Mural panorama wall cover; angeled @ Media, Admin Install	1,575	SF	\$1.50	\$2,363
<b>582</b> Wall pads with cutout for MEH units; allow	1	AL	\$1,500.00	\$1,500
<b>583</b> Cafeteria fixed sound absorbing panel, wood fiber; allow	2,000	SF	\$25.00	\$50,000
<b>584</b> Wall panels at auditorium	1,500	SF	\$85.00	\$127,500
<b>585</b> Wall epoxoy	1,100	SF	\$18.00	\$19,800
<b>586</b> Paint CMU wall	12,492	SF	\$1.10	\$13,741
<b>587</b> Paint drywall partitions	275,734	SF	\$0.95	\$261,947
<b>588</b> <b>C3010 WALL FINISHES TOTAL</b>				<b>\$1,767,241</b>
<b>589</b>				
<b>590</b> <b>C3020 FLOOR FINISHES</b>	124,516	SF		
<b>591</b> <i>Tile:</i>				
<b>592</b> EP; epoxy flooring at Toilets	7,940	SF	\$13.00	\$103,220
<b>593</b> Quarry tile at Kitchen	1,705	SF	\$16.00	\$27,280
<b>594</b>				
<b>595</b> <i>Flooring</i>				
<b>596</b> Underlayment under resilient flooring	52,962	SF	\$2.75	\$145,646
<b>597</b> Linoleum flooring	86,664	SF	\$7.00	\$606,648
<b>598</b> Plank linoleum flooring	7,500	SF	\$10.00	\$75,000
<b>599</b> Wood athletic flooring at Gym	8,405	SF	\$25.00	\$210,125
<b>600</b> Stage wood flooring: 4" hardboard assembly- recessed:	1,590	SF	\$30.50	\$48,495
<b>601</b> 1/4" double tempered smooth both sides hardboard				
<b>602</b> (2) layers 3/4" plywood on sleepers with insulation				
<b>603</b> <i>Auditorium:</i>				
<b>604</b> slab on grade power troweled concrete at seats	2,240	SF	\$9.00	\$20,160
<b>605</b> carpet at aisles	2,770	SF	\$5.00	\$13,850
<b>606</b> PC; power troweled concrete @ Makerspace, Auditorium, AV	2,018	SF	\$9.00	\$18,162
<b>607</b> <i>Painting</i>				
<b>608</b> SC; sealed concrete at back of house	3,288	SF	\$1.75	\$5,754
<b>609</b> <i>Entrance mats</i>				
<b>610</b> RG; Vestibule	396	SF	\$35.00	\$13,860
<b>611</b> <b>C3020 FLOOR FINISHES TOTAL</b>				<b>\$1,288,200</b>
<b>612</b>				
<b>613</b> <b>C3030 CEILING FINISHES</b>	116,094	SF		



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
614 ACT ceilings at Corridors, Public, Admin areas, Teacher Pl	50,004	SF	\$5.00	\$250,020
615 ACT ceiling, washable in kitchen	1,705	SF	\$5.25	\$8,951
616 <i>Academic areas: classrooms, science, media, art, music, etc</i>				
617 E1; Exposed deck, painted @ Classrooms	24,380	SF	\$1.50	\$36,570
618 Circulation Corridors ceiling	13,581	SF	\$32.00	\$434,592
619 GWB soffit, light cove	1,320	LF	\$35.00	\$46,200
620 GWB ceiling/soffit in classrooms	16,127	SF	\$32.00	\$516,064
621 GWB - MR ceiling at Toilets	6,869	SF	\$12.50	\$85,866
622 Sloped GWB soffit @ Art.	175	SF	\$18.00	\$3,150
623 Lay in ACT ceiling at band/chorus	4,550	SF	\$5.00	\$22,750
624 Auditorium ceiling; painted exposed metal deck	6,600	SF	\$2.50	\$16,500
625 50% suspended plam clouds (part of VE)	3,300	SF	\$55.00	\$181,500
626 Gym ceiling; suspended lay in pre painted tegular edge tectum plank	2,101	SF	\$15.00	\$31,519
627 B1; GWB ceiling @ Atrium	6,402	SF	\$15.00	\$96,030
628 Gym exposed deck, painted	8,405	SF	\$2.00	\$16,810
629 Remove GWB ceilings	(1)	LS	\$10,000.00	(\$10,000)
630 Paint	137,385	GSF	\$0.75	\$103,039
631 Paint GWB ceilings w/high performance coating at Toilets	30,893	SF	\$1.10	\$33,983
632 Change wood grain plam in auditorium to ACT	(1)	LS	\$15,000.00	(\$15,000)
633 <b>C3030 CEILING FINISHES TOTAL</b>				<b>\$1,858,543</b>
634				
635 <b>TOTAL SYSTEM C30 INTERIOR FINISHES</b>				<b>\$4,913,983</b>
636				
637				
638 <b>D10 CONVEYING SYSTEMS</b>				
639				
640 <b>D1010 CONVEYING SYSTEMS</b>				
641 Elevators; 3,500#, 4 stops	1	EA	\$205,000.00	\$205,000
642 Elevator pit ladder	1	EA	\$1,500.00	\$1,500
643 Elevator vent	1	EA	\$1,200.00	\$1,200
644 Sill angles	4	EA	\$175.00	\$700
645 Hoist beam	1	EA	\$5,000.00	\$5,000
646 <b>D1010 CONVEYING SYSTEMS TOTAL</b>				<b>\$213,400</b>
647				
648 <b>TOTAL SYSTEM D10 CONVEYING SYSTEMS</b>				<b>\$213,400</b>
649				
650				
651 <b>D15 MECHANICAL</b>				
652				
653 <b>D20 PLUMBING</b>				
654 6" Water Service w/ sub metera	1	EA	\$9,500.00	\$9,500
655 Hot Water Heater & Storage				
656 - WH-1	1	EA	\$65,000.00	\$65,000



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<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
657 - WH-2	1	EA	\$5,500.00	\$5,500
658 Mixing Valves	1	EA	\$2,450.00	\$2,450
659 Circulating Pumps	2	EA	\$1,050.00	\$2,100
660 Expansion Tank	1	EA	\$2,200.00	\$2,200
661 4" Backflow Preventers	1	EA	\$5,560.00	\$5,560
662 Pressure Reducing Station	1	EA	\$3,650.00	\$3,650
663 1" Backflow Preventers	2	EA	\$1,850.00	\$3,700
664 Grease Interceptor System 8,000 gal	1	EA	\$48,500.00	\$48,500
665 Grease Trap	1	EA	\$3,850.00	\$3,850
666 Oily Water Separator	1	EA	\$4,580.00	\$4,580
667 Acid Neutralization Tank	2	EA	By Others	\$0
668 Condensate Pump:				
669 - CP-1 5 GPH	1	EA	\$950.00	\$950
670 Heat Tracing	1	LS	\$5,000.00	\$5,000
671 Elevator Sump Pump:				
672 - SP-1	1	EA	\$1,850.00	\$1,850
673 Reducer Pressure Backflow Preventer:				
674 - RBP-1	1	EA	\$2,500.00	\$2,500
675 Emergency Gas Shut Off Valve	2	EA	\$1,250.00	\$2,500
676 <i>Fixtures</i>				
677 Water Closet P-1	20	EA	\$2,455.00	\$49,100
678 Water Closet P-1A	31	EA	\$2,455.00	\$76,105
679 Urinal P-2	17	EA	\$2,510.00	\$42,670
680 Urinal P-2A	8	EA	\$2,510.00	\$20,080
681 Lavatory P-3	49	EA	\$2,365.00	\$115,885
682 Lavatory P-3A	28	EA	\$2,365.00	\$66,220
683 Drinking Fountain P-4	11	EA	\$3,250.00	\$35,750
684 Mop Sink P-5	5	EA	\$2,850.00	\$14,250
685 Shower P-6	2	EA	\$3,850.00	\$7,700
686 Science Room Sink P-7	40	EA	\$3,650.00	\$146,000
687 Science Room Sink P-7A	2	EA	\$3,650.00	\$7,300
688 Classroom Sink P-8	7	EA	\$2,565.00	\$17,955
689 Art Sink P-9	3	EA	\$3,250.00	\$9,750
690 Art Sink P-9A	1	EA	\$3,250.00	\$3,250
691 Eyewash/Shower P-10	5	EA	\$2,250.00	\$11,250
692 Fume Hood	3	EA	\$5,000.00	\$15,000
693 Lab Equipment	1	LS	\$25,000.00	\$25,000
694 labs & Consumer Science)	36	LS	\$385.00	\$13,860
695 Floor Clean Outs:				
696 - FCO-1	54	EA	\$725.00	\$39,150
697 Floor Drains:				
698 - 3" FD-A	14	EA	\$1,050.00	\$14,700
699 - 3" FD-B	8	EA	\$1,065.00	\$8,520
700 - 4" FD-B	5	EA	\$1,165.00	\$5,825



**Fuller Middle School**

Framingham, MA  
137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>701</b> Trap Primers	16	EA	\$1,250.00	\$20,000
<b>702</b> Roof Drain:				
<b>703</b> - 8 RD-0	2	EA	\$1,650.00	\$3,300
<b>704</b> - 6" RD-1	12	EA	\$1,410.00	\$16,920
<b>705</b> - 5" RD-2	4	EA	\$1,220.00	\$4,880
<b>706</b> - 4" RD-3	8	EA	\$1,010.00	\$8,080
<b>707</b> Cup Sinks	8	EA	\$1,850.00	\$14,800
<b>708</b> Wall Hydrant				
<b>709</b> - WHYD-1	18	EA	\$375.00	\$6,750
<b>710</b> Hose Bibbs:				
<b>711</b> - HB-1	12	EA	\$285.00	\$3,420
<b>712</b> VTR	9	EA	\$650.00	\$5,850
<b>713</b>				
<b>714</b> Storm piping, below grade:				
<b>715</b> - 12"	120	LF	\$125.00	\$15,000
<b>716</b> - 8"	50	LF	\$85.25	\$4,263
<b>717</b> - 6"	110	LF	\$62.55	\$6,881
<b>718</b> - 4"	40	LF	\$43.75	\$1,750
<b>719</b> Storm piping, above grade:				
<b>720</b> - 10"	155	LF	\$110.00	\$17,050
<b>721</b> - 8"	510	LF	\$92.35	\$47,099
<b>722</b> - 6"	1,010	LF	\$65.05	\$65,701
<b>723</b> - 4"	165	LF	\$45.10	\$7,442
<b>724</b> Waste and vent piping, below grade:				
<b>725</b> - 5"	650	LF	\$59.61	\$38,747
<b>726</b> - 4"	560	LF	\$43.75	\$24,500
<b>727</b> - 3"	265	LF	\$32.25	\$8,546
<b>728</b> - 2"	110	LF	\$26.85	\$2,954
<b>729</b> Waste and vent piping, above grade:				
<b>730</b> - 4"	685	LF	\$43.10	\$29,524
<b>731</b> - 3"	785	LF	\$31.55	\$24,767
<b>732</b> - 2"	850	LF	\$26.25	\$22,313
<b>733</b> Kitchen Waste Below grade:				
<b>734</b> - 4"	510	LF	\$32.00	\$16,320
<b>735</b> - 3"	40	LF	\$28.95	\$1,158
<b>736</b> - 2"	290	LF	\$22.50	\$6,525
<b>737</b> Acid Waste below grade:				
<b>738</b> - 4"	425	LF	\$32.00	\$13,600
<b>739</b> - 2"	290	LF	\$18.00	\$5,220
<b>740</b> Acid Waste below grade:				
<b>741</b> - 4"	295	LF	\$32.00	\$9,440
<b>742</b> - 3"	210	LF	\$28.25	\$5,933
<b>743</b> - 2"	265	LF	\$18.00	\$4,770
<b>744</b> Potable Water Piping:				



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>RATE/UNIT</u>	<u>TOTAL</u>
<b>745</b> - 2-1/2"	<b>620</b>	LF	\$48.95	\$30,349
<b>746</b> - 2"	<b>780</b>	LF	\$35.75	\$27,885
<b>747</b> - 1-1/2"	<b>550</b>	LF	\$30.45	\$16,748
<b>748</b> - 1-1/4"	<b>475</b>	LF	\$28.35	\$13,466
<b>749</b> - Branch	<b>8,500</b>	LF	\$25.75	\$218,875
<b>750</b> Insulate Potable Water Piping:				
<b>751</b> - 2-1/2"	<b>620</b>	LF	\$16.40	\$10,168
<b>752</b> - 2"	<b>780</b>	LF	\$15.65	\$12,207
<b>753</b> - 1-1/2"	<b>550</b>	LF	\$14.75	\$8,113
<b>754</b> - 1-1/4"	<b>475</b>	LF	\$14.05	\$6,674
<b>755</b> - Branch	<b>8,500</b>	LF	\$13.75	\$116,875
<b>756</b> Gas Piping				
<b>757</b> - 6"	<b>50</b>	LF	\$56.25	\$2,813
<b>758</b> - 4"	<b>80</b>	LF	\$48.95	\$3,916
<b>759</b> - 3"	<b>120</b>	LF	\$42.25	\$5,070
<b>760</b> - Branch	<b>980</b>	LF	\$29.65	\$29,057
<b>761</b> Gas Hook-ups	<b>4</b>	EA	\$850.00	\$3,400
<b>762</b> Master Gas Valves	<b>2</b>	EA	\$2,850.00	\$5,700
<b>763</b> Pump	<b>1</b>	LS	\$25,000.00	\$25,000
<b>764</b> Flues to water heater	<b>120</b>	LF	\$65.00	\$7,800
<b>765</b> Generator Gas Connection	<b>1</b>	EA	\$5,000.00	\$5,000
<b>766</b> Kitchen	<b>1</b>	LS	\$50,000.00	\$50,000
<b>767</b> Storm Piping Insulation	<b>1</b>	LS	\$25,000.00	\$25,000
<b>768</b> Seismic Restraints	<b>1</b>	LS	\$10,500.00	\$10,500
<b>769</b> Lift & Hoisting	<b>1</b>	LS	\$18,500.00	\$18,500
<b>770</b> General Requirements	<b>1</b>			\$0
<b>771</b> Coring, cutting and sleeves	<b>1</b>	LS	\$15,000.00	\$15,000
<b>772</b> Commissioning	<b>1</b>	LS	\$25,000.00	\$25,000
<b>773</b> Valves and specialties	<b>1</b>	LS	\$12,500.00	\$12,500
<b>774</b> Permits & Fees	<b>1</b>	LS	\$7,850.00	\$7,850
<b>775</b> Test and sterilize	<b>1</b>	LS	\$18,500.00	\$18,500
<b>776</b> Shop drawings	<b>1</b>	LS	\$16,500.00	\$16,500
<b>777</b> <b>D20 PLUMBING TOTAL</b>				<b>\$2,126,673</b>
<b>778</b>				
<b>779</b> <b>D30 HVAC</b>				
<b>780</b> Boilers:				
<b>781</b> - B-1 & 2 3,844 MBH	<b>2</b>	EA	\$84,568.00	\$169,136
<b>782</b> Expantion Tank:				
<b>783</b> - ET-1 Thru 3	<b>3</b>	EA	\$2,150.00	\$6,450
<b>784</b> Air Separator:				
<b>785</b> - AS-1 & 2 8"	<b>2</b>	EA	\$3,950.00	\$7,900
<b>786</b> Buffer Tank:				
<b>787</b> - BT-1	<b>1</b>	EA	\$2,500.00	\$2,500
<b>788</b> Pumps:				



**Fuller Middle School**

Framingham, MA  
137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

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<b>789</b> - P-1 & 2 HP 790 GPM	2	EA	\$12,500.00	\$25,000
<b>790</b> - P-3 & 4 HP 800 GPM	2	EA	Pump House	\$0
<b>791</b> - BP-1	2	EA	\$2,500.00	\$5,000
<b>792</b> - CP-1 5 GPH	5	EA	\$450.00	\$2,250
<b>793</b> Pumps House	1	EA	\$185,000.00	\$185,000
<b>794</b>				
<b>795</b> Chillers:				
<b>796</b> - CH-1 350 Ton	1	EA	\$367,500.00	\$367,500
<b>797</b> Rooftop Units:				
<b>798</b> - RTU-1 22,000 CFM	1	EA	\$264,000.00	\$264,000
<b>799</b> - RTU-2 22,000 CFM	1	EA	\$264,000.00	\$264,000
<b>800</b> - RTU-3 22,000 CFM	1	EA	\$264,000.00	\$264,000
<b>801</b> - RTU-4 22,000 CFM	1	EA	\$264,000.00	\$264,000
<b>802</b> - RTU-5 15,000 CFM	1	EA	\$180,000.00	\$180,000
<b>803</b> - RTU-6 12,000 CFM	1	EA	\$144,000.00	\$144,000
<b>804</b> - RTU-7 2,000 CFM	1	EA	\$28,000.00	\$28,000
<b>805</b> Make Up Units:				
<b>806</b> - MAU-1 5,000 CFM	1	EA	\$32,500.00	\$32,500
<b>807</b> Exhaust Fans:				
<b>808</b> - EF-1 2,500 CFM	1	EA	\$3,250.00	\$3,250
<b>809</b> - EF-2 2,500 CFM	1	EA	\$3,250.00	\$3,250
<b>810</b> - EF-3 500 CFM	1	EA	\$980.00	\$980
<b>811</b> - EF-4 500 CFM	1	EA	\$980.00	\$980
<b>812</b> - EF-5 250 CFM	1	EA	\$685.00	\$685
<b>813</b> - EF-6 250 CFM	1	EA	\$685.00	\$685
<b>814</b> - SEF-1 50,000 CFM	1	EA	\$32,500.00	\$32,500
<b>815</b> - SEF-2 50,000 CFM	1	EA	\$32,500.00	\$32,500
<b>816</b> - SEF-3 50,000 CFM	1	EA	\$32,500.00	\$32,500
<b>817</b> - SEF-4 50,000 CFM	1	EA	\$32,500.00	\$32,500
<b>818</b> - KEF-1 4,170 CFM	1	EA	\$4,500.00	\$4,500
<b>819</b> - FEF-1 1,200 CFM	1	EA	\$2,100.00	\$2,100
<b>820</b> - FEF-2 1,200 CFM	1	EA	\$2,100.00	\$2,100
<b>821</b> - FEF-3 1,200 CFM	1	EA	\$2,100.00	\$2,100
<b>822</b> VAV Boxes:				
<b>823</b> - VAV-8	150	EA	\$1,050.00	\$157,500
<b>824</b> Radiant Heat Panels:				
<b>825</b> - R1	2,525	LF	\$135.00	\$340,875
<b>826</b> Fin-Tube Radiators:				
<b>827</b> - FT-1	100	LF	\$90.00	\$9,000
<b>828</b> Cabinet & Unit Heaters:				
<b>829</b> - CUH-1,2, 7 thru 16 350 MBH	12	EA	\$895.00	\$10,740
<b>830</b> - CUH-3 1050 MBH	1	EA	\$1,150.00	\$1,150
<b>831</b> - CUH-4 thru 6 450 MBH	3	EA	\$925.00	\$2,775
<b>832</b> Ductless Split Units:				





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<b>833</b> - DCUe-1 1 Ton	1	EA	\$2,950.00	\$2,950
<b>834</b> - DCUe-2 2 Ton	1	EA	\$4,425.00	\$4,425
<b>835</b> - DCUe-3 2 Ton	1	EA	\$4,425.00	\$4,425
<b>836</b> - DCUe-4 1.5 Ton	1	EA	\$3,850.00	\$3,850
<b>837</b> - DCUe-5 1.5 Ton	1	EA	\$3,850.00	\$3,850
<b>838</b> - DCUe-6 1.5 Ton	1	EA	\$3,850.00	\$3,850
<b>839</b> - DCUe-7 1.5 Ton	1	EA	\$3,850.00	\$3,850
<b>840</b> Register & Diffusers:				
<b>841</b> - DD-1	22	EA	\$985.00	\$21,670
<b>842</b> - DD-2	18	EA	\$985.00	\$17,730
<b>843</b> - DD-3	16	EA	\$985.00	\$15,760
<b>844</b> - DD-4	1	EA	\$985.00	\$985
<b>845</b> - DD-5	42	EA	\$985.00	\$41,370
<b>846</b> - DD-6	2	EA	\$985.00	\$1,970
<b>847</b> - DD-7	4	EA	\$985.00	\$3,940
<b>848</b> - Slot	750	LF	\$45.00	\$33,750
<b>849</b> - E	80	EA	\$225.00	\$18,000
<b>850</b> Misc Diffusers, grills and registers	1	LS	\$5,000.00	\$5,000
<b>851</b> Fire & Motor Dampers	30	LS	\$1,850.00	\$55,500
<b>852</b> Volume Dampers	1	EA	\$42,000.00	\$42,000
<b>853</b> Flex Duct	1	LS	\$32,500.00	\$32,500
<b>854</b> Misc. Duct Accessories	1	LS	\$25,000.00	\$25,000
<b>855</b> Double Wall Galvanized Duct (Auditorium)	8,500	LBS	\$20.25	\$172,125
<b>856</b> Galvanized Duct	130,000	LBS	\$12.50	\$1,625,000
<b>857</b> Ductsox	680	LF	\$45.00	\$30,600
<b>858</b> Duct Insulation	45,000	SF	\$4.65	\$209,250
<b>859</b> Duct Insulation @ Kitchen area	1	LS	\$35,000.00	\$35,000
<b>860</b> Black iron at kitchen	2,125	LBS	\$18.50	\$39,313
<b>861</b> Duct S/S	5,000	LBS	\$20.20	\$101,000
<b>862</b> Seal Ductwork	7,500	LF	\$1.60	\$12,000
<b>863</b> Dust Collection System	1	LS	\$25,000.00	\$25,000
<b>864</b> Sound Attenuators				
<b>865</b> - SA-1S	1	EA	\$6,500.00	\$6,500
<b>866</b> - SA-1R	1	EA	\$6,500.00	\$6,500
<b>867</b> - SA-2S	1	EA	\$6,500.00	\$6,500
<b>868</b> - SA-2R	1	EA	\$6,500.00	\$6,500
<b>869</b> - SA-3S	1	EA	\$6,500.00	\$6,500
<b>870</b> - SA-3R	1	EA	\$6,500.00	\$6,500
<b>871</b> - SA-4S	1	EA	\$6,500.00	\$6,500
<b>872</b> - SA-4R	1	EA	\$6,500.00	\$6,500
<b>873</b> - SA-5S	1	EA	\$6,500.00	\$6,500
<b>874</b> - SA-5R	1	EA	\$6,500.00	\$6,500
<b>875</b> - SA-6S	1	EA	\$7,800.00	\$7,800
<b>876</b> - SA-6R	1	EA	\$6,200.00	\$6,200



**Fuller Middle School**

Framingham, MA  
137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>877</b> - SA-7S	1	EA	\$3,850.00	\$3,850
<b>878</b> - SA-7R	1	EA	\$3,850.00	\$3,850
<b>879</b> - SA-8	1	EA	\$4,250.00	\$4,250
<b>880</b> Hot & Chilles Water Piping				
<b>881</b> - Large Bore	9,000	LF	\$42.00	\$378,000
<b>882</b> - Small Bore	10,500	LF	\$28.00	\$294,000
<b>883</b> Insulate Hot Water Piping				
<b>884</b> - Large Bore	9,000	LF	\$16.95	\$152,550
<b>885</b> - Small Bore	10,500	LF	\$12.50	\$131,250
<b>886</b> Equipment Hook-Ups:				
<b>887</b> - 4" Boilers	2	EA	\$8,950.00	\$17,900
<b>888</b> - 8" Pump	-	EA	Pump House	\$0
<b>889</b> - 4" Pump	3	EA	\$2,100.00	\$6,300
<b>890</b> - 8" Chiller	1	EA	\$14,500.00	\$14,500
<b>891</b> - RCP	95	EA	\$1,075.00	\$102,125
<b>892</b> - CUH	12	EA	\$1,025.00	\$12,300
<b>893</b> - FT	2	EA	\$1,075.00	\$2,150
<b>894</b> - DD	105	EA	\$285.00	\$29,925
<b>895</b> - VAV	140	EA	\$1,105.00	\$154,700
<b>896</b> - 4" RTU Coils	6	EA	\$6,500.00	\$39,000
<b>897</b> - 2" RTU Coils	3	EA	\$2,650.00	\$7,950
<b>898</b> VFD	1	LS	\$20,000.00	\$20,000
<b>899</b> Glycol:				
<b>900</b> - GF-1 & 2	2	EA	\$6,500.00	\$13,000
<b>901</b> Combustion	1	LS	\$30,000.00	\$30,000
<b>902</b> Flues S/S boiler	380	LF	\$120.00	\$45,600
<b>903</b> Fin tube with plam valance	-1	LS	\$80,000.00	-\$80,000
<b>904</b> Seismic Restraints	1	LS	\$10,500.00	\$10,500
<b>905</b> Misc. Valves & specialties	1	LS	\$15,000.00	\$15,000
<b>906</b> Commissioning support	1	LS	\$32,000.00	\$32,000
<b>907</b> Controls	1	LS	\$775,000.00	\$775,000
<b>908</b> Testing & Balancing	1	LS	\$35,600.00	\$35,600
<b>909</b> Rigging & Lifting	1	LS	\$12,500.00	\$12,500
<b>910</b> Permits & Fees	1	LS	\$8,500.00	\$8,500
<b>911</b> Shop Drawing	1	LS	\$15,500.00	\$15,500
<b>912</b> <b>D30 HVAC TOTAL</b>				<b>\$7,842,369</b>
<b>913</b>				
<b>914</b> <b>D40 FIRE PROTECTION</b>				
<b>915</b> Upright Sprinkler Heads	260	EA	\$390.00	\$101,400
<b>916</b> Pendent Sprinkler Heads	817	EA	\$415.00	\$339,055
<b>917</b> Pendent/Upright Sprinkler Heads	120	EA	\$510.00	\$61,200
<b>918</b> Upright Sprinkler Heads ( Gym)	70	EA	\$425.00	\$29,750
<b>919</b> Upright Sprinkler Heads ( Auditorium)	40	EA	\$425.00	\$17,000
<b>920</b> Upright Sprinkler Heads ( Skylights)	16	EA	\$440.00	\$7,040



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
921 Sidewall Sprinkler Heads	121	EA	\$514.00	\$62,194
922 Window Sprinkler Heads	22	EA	\$650.00	\$14,300
923 Dry Sprinkler Heads	16	EA	\$495.00	\$7,920
924 8" Water Service	1	EA	\$6,250.00	\$6,250
925 6" Alarm Valves w/ trim	1	EA	\$5,560.00	\$5,560
926 6" Backflow Preventer	1	EA	\$8,500.00	\$8,500
927 Zone control w/ standpipe (SCVA)	14	EA	\$3,650.00	\$51,100
928 6" Riser Valves	2	EA	\$950.00	\$1,900
929 6" FSP W/ Standpipe	5	EA	\$2,250.00	\$11,250
930 4" FSP W/ Standpipe	3	EA	\$2,045.00	\$6,135
931 Fire Dept. Connections	1	EA	\$2,650.00	\$2,650
932 Riser Valve w/ tamper switch	2	EA	\$750.00	\$1,500
933 Main piping:				
934 - 6"	1,108	LF	\$80.00	\$88,640
935 Misc. Valves	1	LS	\$4,500.00	\$4,500
936 Deduct sprinkler heads	-1	LS	\$11,000.00	-\$11,000
937 Commissioning	1	LS	\$1,250.00	\$1,250
938 Lifting	1	LS	\$3,800.00	\$3,800
939 Testing	1	LS	\$3,650.00	\$3,650
940 Coordination	1	LS	\$8,100.00	\$8,100
941 Coring, Sleeves & sleeves	1	LS	\$5,450.00	\$5,450
942 Seismic Restraints	1	LS	\$5,900.00	\$5,900
943 Shop drawings/hydraulic calculations	1	LS	\$8,000.00	\$8,000
944 <b>D40 FIRE PROTECTION TOTAL</b>				<b>\$852,994</b>
945				
946 <b>TOTAL SYSTEM D15 MECHANICAL</b>				<b>\$10,822,035</b>
947				
948				
949 <b>D50 ELECTRICAL</b>				
950				
951 <b>D5011 SERVICE &amp; DISTRIBUTION</b>				
952 <i>Switchgear, Panelboards, Transformers</i>				
953 3000/2500 Amp Main Switchboard	1	LS	\$110,739.20	\$110,739
954 Meter Pan	1	EA	\$738.10	\$738
955 SPD @ Swbd	1	EA	\$2,855.60	\$2,856
956 SPD @ Panelboard	43	EA	\$1,113.20	\$47,868
957 100 Amp Panel Board	14	EA	\$4,048.66	\$56,681
958 225 Amp Panel Board	9	EA	\$6,749.38	\$60,744
959 225 Amp Panel Board, 2-Section	9	EA	\$11,521.62	\$103,695
960 400 Amp Panel Board	4	EA	\$9,571.10	\$38,284
961 400 Amp Panel Board, 2-Section	1	EA	\$16,443.90	\$16,444
962 600 Amp Panel Board	2	EA	\$13,013.55	\$26,027
963 800 Amp Panel Board	2	EA	\$16,577.00	\$33,154
964 45 Kva Transformer	8	EA	\$6,062.10	\$48,497
965 75 Kva Transformer	5	EA	\$7,550.40	\$37,752



**Fuller Middle School**

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<b>966</b> 112 Kva Transformer	1	EA	\$10,490.70	\$10,491
<b>967</b> 150 Kva Transformer K13	1	EA	\$36,844.50	\$36,845
<b>968</b> 225 Kva Transformer	1	EA	\$17,061.00	\$17,061
<b>969</b> 225 Kva Transformer K13	1	EA	\$42,713.00	\$42,713
<b>970</b> 100 Amp Disconnect @ Xfmr	3	EA	\$1,432.64	\$4,298
<b>971</b> 200 Amp Disconnect @ Xfmr	1	EA	\$1,923.90	\$1,924
<b>972</b> 400 Amp Disconnect @ Xfmr	1	EA	\$4,017.20	\$4,017
<b>973</b> 800 Amp Disconnect @ Xfmr	1	EA	\$7,381.00	\$7,381
<b>974</b> <i>Emergency Generator, UPS</i>				
<b>975</b> 300 Kw Emergency Generator, WP/Sound	1	LS	\$131,043.00	\$131,043
<b>976</b> Autotransfer Sw 200A	1	EA	\$8,639.40	\$8,639
<b>977</b> Autotransfer Sw 600A	1	EA	\$17,387.70	\$17,388
<b>978</b> 200 Amp Encl Ckt Brkr	1	EA	\$1,923.90	\$1,924
<b>979</b> 600 Amp Encl Ckt Brkr	1	EA	\$5,771.70	\$5,772
<b>980</b> 24KW/30Kva UPS, batteries	1	LS	\$47,432.00	\$47,432
<b>981</b> 200 Amp Disconnect @ UPS	1	EA	\$1,923.90	\$1,924
<b>982</b> Generator Annunciator	1	EA	\$1,621.40	\$1,621
<b>983</b> <i>Motors:</i>				
<b>984</b> Install Limit Switch FBO	3	EA	\$121.00	\$363
<b>985</b> Install Misc Gym CP FBO	8	EA	\$465.85	\$3,727
<b>986</b> Motor Backbd Conn's, Switch	8	EA	\$779.24	\$6,234
<b>987</b> Scoreboard Conn's, Switch	1	EA	\$779.24	\$779
<b>988</b> Bleach Motor 20/3A Conn, Switch	7	EA	\$779.24	\$5,455
<b>989</b> 20/2 Amp Disconnect	12	EA	\$444.07	\$5,329
<b>990</b> 30/1 Amp Disconnect, Elev Cab	1	EA	\$444.07	\$444
<b>991</b> 30/2 Amp Disconnect, mech	10	EA	\$584.43	\$5,844
<b>992</b> 30 Amp Disconnect, mech,kit	10	EA	\$779.24	\$7,792
<b>993</b> 60 Amp Disconnect, mech, kit	7	EA	\$1,333.42	\$9,334
<b>994</b> 100 Amp Disconnect	10	EA	\$1,452.00	\$14,520
<b>995</b> 100 Amp Disconnect, Elev	1	EA	\$1,627.45	\$1,627
<b>996</b> 200 Amp Disconnect WP	4	EA	\$2,214.30	\$8,857
<b>997</b> 800 Amp Disconnect CH, WP	1	EA	\$8,845.10	\$8,845
<b>998</b> Junc Box, mech controls by others	13	EA	\$66.55	\$865
<b>999</b> Install Nema 0 Motor Starter FBO	11	EA	\$356.95	\$3,926
<b>1000</b> Install Nema 1 Motor Starter FBO	2	EA	\$471.90	\$944
<b>1001</b> Install <=10HP VFD FBO	9	EA	\$1,367.30	\$12,306
<b>1002</b> Install 25-30HP VFD FBO	4	EA	\$2,734.60	\$10,938
<b>1003</b> Install 40HP VFD FBO	4	EA	\$2,734.60	\$10,938
<b>1004</b> Chiller CP Conn's	2	EA	\$3,509.00	\$7,018
<b>1005</b>				
<b>1006</b> <i>Power Circuitry</i>				
<b>1007</b> 3/4" Emt, empty	520	LF	\$10.61	\$5,518
<b>1008</b> 3/4" Emt, 4#12	3,320	LF	\$13.85	\$45,981
<b>1009</b> 3/4" Emt, 4#10	2,400	LF	\$14.98	\$35,957
<b>1010</b> 1" Emt, 4#8	840	LF	\$21.47	\$18,031
<b>1011</b> 1 1/4" Emt, 4#4	200	LF	\$29.05	\$5,810
<b>1012</b> 1 1/4" Emt, 4#2	3,270	LF	\$32.34	\$105,763



**Fuller Middle School**

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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>1013</b> 1 1/2" Emt, 4#1	<b>50</b>	LF	\$38.81	\$1,941
<b>1014</b> 2" Emt, 4 1/0	<b>1,660</b>	LF	\$44.39	\$73,696
<b>1015</b> 2" Emt, 4 3/0	<b>70</b>	LF	\$53.49	\$3,745
<b>1016</b> 2 1/2" Emt, 4 250Mcm	<b>60</b>	LF	\$66.48	\$3,989
<b>1017</b> 3" Emt, 4 350Mcm	<b>580</b>	LF	\$81.49	\$47,266
<b>1018</b> 3 1/2" Emt, 4 500 Mcm	<b>1,080</b>	LF	\$105.02	\$113,417
<b>1019</b> 4#6 MI Cable	<b>50</b>	LF	\$41.27	\$2,064
<b>1020</b> 4#2 MI Cable	<b>200</b>	LF	\$83.99	\$16,797
<b>1021</b>				
<b>1022</b> Service Grounding	<b>1</b>	LS	\$5,033.60	\$5,034
<b>1023</b> Lightning Protection System (Preventor)	<b>1</b>	LS	\$34,485.00	\$34,485
<b>1024</b>				
<b>1025</b> <i>Light Fixtures</i>				
<b>1026</b> Type G4	<b>80</b>	EA	\$886.93	\$70,954
<b>1027</b> Type LP4	<b>6</b>	EA	\$592.90	\$3,557
<b>1028</b> Type LP4S	<b>ZERO</b>	EA	\$592.90	
<b>1029</b> Type LP8	<b>6</b>	EA	\$1,185.80	\$7,115
<b>1030</b> Type LR2	<b>640</b>	EA	\$411.40	\$263,296
<b>1031</b> Type LR2A	<b>10</b>	EA	\$411.40	\$4,114
<b>1032</b> Type LRD5	<b>12</b>	EA	\$1,536.70	\$18,440
<b>1033</b> Type LRS 8'	<b>ZERO</b>	EA	\$895.40	
<b>1034</b> Type LS2	<b>117</b>	EA	\$411.40	\$48,134
<b>1035</b> Type LS4	<b>27</b>	EA	\$310.97	\$8,396
<b>1036</b> Type LS4A	<b>22</b>	EA	\$310.97	\$6,841
<b>1037</b> Type LS4B	<b>15</b>	EA	\$310.97	\$4,665
<b>1038</b> Type LS8	<b>12</b>	EA	\$621.94	\$7,463
<b>1039</b> Type LS8A	<b>5</b>	EA	\$621.94	\$3,110
<b>1040</b> Type LUL	<b>52</b>	EA	\$310.97	\$16,170
<b>1041</b> Type PC1	<b>8</b>	EA	\$381.15	\$3,049
<b>1042</b> Type PC2	<b>20</b>	EA	\$381.15	\$7,623
<b>1043</b> Type PC3	<b>190</b>	EA	\$381.15	\$72,419
<b>1044</b> Type RC1	<b>68</b>	EA	\$381.15	\$25,918
<b>1045</b> Type RC2	<b>51</b>	EA	\$381.15	\$19,439
<b>1046</b> Type SC1	<b>ZERO</b>	EA	\$508.20	
<b>1047</b> Type SP1	<b>83</b>	EA	\$617.10	\$51,219
<b>1048</b> Misc Utility WP Jelly Jar	<b>10</b>	EA	\$308.55	\$3,086
<b>1049</b> Type SL4 Exterior Wallpack	<b>20</b>	EA	\$701.80	\$14,036
<b>1050</b> Type Exit	<b>45</b>	EA	\$332.75	\$14,974
<b>1051</b> Type LC2	<b>88</b>	LF	\$114.35	\$10,062
<b>1052</b> Type LC3	<b>1,488</b>	LF	\$114.35	\$170,145
<b>1053</b> Type LWS	<b>674</b>	LF	\$124.03	\$83,593
<b>1054</b> Type UC	<b>64</b>	LF	\$99.83	\$6,389
<b>1055</b>				
<b>1056</b> <i>Branch Circuitry</i>				
<b>1057</b> 3/4" Emt, 4#12	<b>13,627</b>	LF	\$12.65	\$172,382
<b>1058</b> MC Cable	<b>40,882</b>	LF	\$5.18	\$211,718
<b>1059</b> 3/4" Emt, 4#10	<b>600</b>	LF	\$16.66	\$9,997

**Fuller Middle School**

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<b>1060</b> Plenum Cable	<b>7,410</b>	LF	\$1.59	\$11,746
<b>1061</b> Controls	<b>1</b>	LS	\$175,000.00	\$175,000
<b>1062</b>				
<b>1063</b> <i>Wiring Devices</i>				
<b>1064</b> Switches	<b>12</b>	EA	\$78.65	\$944
<b>1065</b> Switches WP	<b>10</b>	EA	\$101.64	\$1,016
<b>1066</b> Momentary Contact Switches	<b>6</b>	EA	\$124.03	\$744
<b>1067</b> Key Switches	<b>1</b>	EA	\$90.75	\$91
<b>1068</b> OS, PS Power Pack	<b>102</b>	EA	\$181.50	\$18,513
<b>1069</b> Local Switch/Dimming Station L	<b>187</b>	EA	\$151.25	\$28,284
<b>1070</b> Occupancy Sensor	<b>238</b>	EA	\$202.68	\$48,237
<b>1071</b> Photo Sensor	<b>69</b>	EA	\$202.68	\$13,985
<b>1072</b> Receptacles	<b>368</b>	EA	\$78.65	\$28,943
<b>1073</b> Junc Boxes, Misc	<b>37</b>	EA	\$64.13	\$2,373
<b>1074</b> Receptacles GFI	<b>102</b>	EA	\$96.80	\$9,874
<b>1075</b> Receptacles Quad	<b>236</b>	EA	\$129.47	\$30,555
<b>1076</b> Receptacles GFI WP	<b>16</b>	EA	\$177.87	\$2,846
<b>1077</b> Receptacles w/ I/O Module	<b>10</b>	EA	\$96.80	\$968
<b>1078</b> Receptacles Quad w/ I/O Modules	<b>6</b>	EA	\$181.50	\$1,089
<b>1079</b> Wiring Devices Not Shown - ALLOW	<b>194</b>	EA	\$78.65	\$15,258
<b>1080</b> Cond Pump Conn	<b>22</b>	EA	\$133.10	\$2,928
<b>1081</b> Install Leak Det FBO	<b>22</b>	EA	\$121.00	\$2,662
<b>1082</b> Sol Valve Conn	<b>2</b>	EA	\$121.00	\$242
<b>1083</b> FS Conn	<b>5</b>	EA	\$121.00	\$605
<b>1084</b> GSM Conn	<b>7</b>	EA	\$121.00	\$847
<b>1085</b> Floor Power Outlet	<b>2</b>	EA	\$399.30	\$799
<b>1086</b> 4-Pole Lighting Contactor	<b>1</b>	EA	\$635.25	\$635
<b>1087</b> 12-Pole Lighting Contactor	<b>1</b>	EA	\$1,500.40	\$1,500
<b>1088</b> EPO Pushbutton	<b>3</b>	EA	\$229.90	\$690
<b>1089</b> Fume Hood Conn	<b>1</b>	EA	\$157.30	\$157
<b>1090</b> Manual Snap Switch Starter VRF, VAV,misc	<b>130</b>	EA	\$181.50	\$23,595
<b>1091</b> 20/1 Amp Receptacle L5-20	<b>11</b>	EA	\$84.70	\$932
<b>1092</b> 20/1 Amp Eqpt Conn	<b>14</b>	EA	\$66.55	\$932
<b>1093</b> 30/1 Amp Receptacle L5-30	<b>11</b>	EA	\$117.98	\$1,298
<b>1094</b> 30 Amp Receptacle	<b>4</b>	EA	\$130.08	\$520
<b>1095</b>				
<b>1096</b> <i>Fire Alarm</i>				
<b>1097</b> Teflon Cable	<b>31,860</b>	LF	\$2.34	\$74,634
<b>1098</b> 3" Rigid, Riser Cables	<b>60</b>	LF	\$114.95	\$6,897
<b>1099</b> Pull Station	<b>23</b>	EA	\$229.90	\$5,288
<b>1100</b> Audible/Visual	<b>204</b>	EA	\$347.88	\$70,967
<b>1101</b> Smoke Detector	<b>156</b>	EA	\$387.20	\$60,403
<b>1102</b> CO Detector	<b>5</b>	EA	\$350.90	\$1,755
<b>1103</b> Beam-Type Smoke Detector	<b>11</b>	EA	\$1,052.70	\$11,580
<b>1104</b> Strobe	<b>44</b>	EA	\$229.90	\$10,116
<b>1105</b> WP Beacon	<b>1</b>	EA	\$287.38	\$287
<b>1106</b> Duct Detector	<b>40</b>	EA	\$889.35	\$35,574



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>1107</b> Central Equipment, testing, Voice Command	1	LS	\$62,508.60	\$62,509
<b>1108</b> Radio Box, Antenna, wiring	1	EA	\$4,549.60	\$4,550
<b>1109</b> Fused Disc	1	EA	\$738.10	\$738
<b>1110</b> Door Release DH	6	EA	\$459.80	\$2,759
<b>1111</b> Ansul Conn's	1	LS	\$895.40	\$895
<b>1112</b> Remote Mic EVAC	1	EA	\$580.80	\$581
<b>1113</b> Annunciator Panel	3	EA	\$2,323.20	\$6,970
<b>1114</b> Misc Connections, Relays	6	EA	\$272.25	\$1,634
<b>1115</b> Knox Box	1	EA	\$520.30	\$520
<b>1116</b> Fire alarm VE	-1	LS	\$42,000.00	-\$42,000
<b>1117</b>				
<b>1118</b> <i>Communications System</i>				
<b>1119</b> MDF Rack, PP's, Terms	1	EA	\$14,762.00	\$14,762
<b>1120</b> IDF Rack, PP's, Terms	3	EA	\$7,381.00	\$22,143
<b>1121</b> 4" Floor Sleeves	16	EA	\$229.90	\$3,678
<b>1122</b> 4" Wall Sleeves	16	EA	\$229.90	\$3,678
<b>1123</b> Main Ground Bar	1	EA	\$1,476.20	\$1,476
<b>1124</b> Tel Ground Bar	3	EA	\$738.10	\$2,214
<b>1125</b> #3/0G Wire	600	LF	\$9.19	\$5,511
<b>1126</b> Cable Tray 24" Alum	1,570	LF	\$41.62	\$65,350
<b>1127</b> 12 Strand Multi-Mode Fiber	600	LF	\$6.18	\$3,710
<b>1128</b> 6 Strand Multi-Mode Fiber	600	LF	\$4.30	\$2,577
<b>1129</b> Cu Distr Cable	600	LF	\$10.29	\$6,171
<b>1130</b> 1" EMT CDT	172	LF	\$14.40	\$2,477
<b>1131</b> 2" EMT CDT	1,040	LF	\$22.90	\$23,819
<b>1132</b> 4" EMT Cdt	200	LF	\$34.64	\$6,928
<b>1133</b> Cat 6 Cable	95,250	LF	\$1.59	\$150,981
<b>1134</b> WAP Outlet AN 2c	14	EA	\$89.54	\$1,254
<b>1135</b> Tel Outlet	55	EA	\$72.60	\$3,993
<b>1136</b> Data Outlet	2	EA	\$72.60	\$145
<b>1137</b> Data Duplex Outlet 2c	68	EA	\$89.54	\$6,089
<b>1138</b> Tel/Data Outlet 3c	66	EA	\$111.93	\$7,387
<b>1139</b> Floor Tel/Data Outlet 3c	6	EA	\$399.30	\$2,396
<b>1140</b> Tel/Data Outlet T 2c	47	EA	\$89.54	\$4,208
<b>1141</b> TVE 2c	50	EA	\$169.40	\$8,470
<b>1142</b> TVC 2c	2	EA	\$169.40	\$339
<b>1143</b>				
<b>1144</b> <i>Clock/ Public Address System:</i>				
<b>1145</b> 2 1/2" Emt, Riser Cables	50	LF	\$66.74	\$3,337
<b>1146</b> 3/4" EMT Cdt	2,730	LF	\$11.93	\$32,571
<b>1147</b> 1" EMT Cdt	2,530	LF	\$14.40	\$36,429
<b>1148</b> Comm Cable	14,100	LF	\$1.59	\$22,350
<b>1149</b> Main Sound Rack	1	LS	\$48,884.00	\$48,884
<b>1150</b> Local Sound System Rack	2	EA	\$7,792.40	\$15,585
<b>1151</b> Outlet S Speaker	232	EA	\$254.10	\$58,951
<b>1152</b> Outlet S Speaker WP	19	EA	\$344.85	\$6,552
<b>1153</b> Volume Control	26	EA	\$181.50	\$4,719



**Fuller Middle School**

Framingham, MA  
137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>1154</b> Master Clock GPS	1	EA	\$5,493.40	\$5,493
<b>1155</b> Clock Antenna	1	EA	\$1,863.40	\$1,863
<b>1156</b> Wireless Clock Transceiver	1	EA	\$2,855.60	\$2,856
<b>1157</b> Wireless Clock Repeater	4	EA	\$1,427.80	\$5,711
<b>1158</b> Clock, wireless	73	EA	\$254.10	\$18,549
<b>1159</b>				
<b>1160</b> A/V System:				
<b>1161</b> 1" EMT Cdt	1,600	LF	\$14.40	\$23,038
<b>1162</b> BP Button Panel	41	EA	\$99.83	\$4,093
<b>1163</b> R1 Receptacle Panel	41	EA	\$99.83	\$4,093
<b>1164</b> V1 Video Projector	41	EA	\$99.83	\$4,093
<b>1165</b> S1 Speaker	82	EA	\$99.83	\$8,186
<b>1166</b> AV Eqpt, Inst, LV Wiring - Proj/Assist List	41	RM	FF&E	
<b>1167</b> J1	2	EA	\$99.83	\$200
<b>1168</b> Data Outlet P Projector	1	EA	\$99.83	\$100
<b>1169</b> Screen	1	EA	\$99.83	\$100
<b>1170</b> R2 Receptacle Panel	4	EA	\$169.40	\$678
<b>1171</b> R3 Receptacle Panel	4	EA	\$169.40	\$678
<b>1172</b> Speaker S1 Backbox	4	EA	\$99.83	\$399
<b>1173</b> Speaker S2 Backbox	4	EA	\$99.83	\$399
<b>1174</b> Speaker S3 Backbox	14	EA	\$99.83	\$1,398
<b>1175</b> AV Rack Enclosure	1	EA	\$459.80	\$460
<b>1176</b> AV Eqpt, Installation, LV Wiring - ALLOW	1	LS	FF&E	
<b>1177</b> Gym Sound System Mat'l Package	1	LS	\$75,000.00	\$75,000
<b>1178</b> Auditorium AV Roughin	1	LS	\$75,000.00	\$75,000
<b>1179</b>				
<b>1180</b> Theater Lighting & Control System:ALLOW, systems not clearly shown				
<b>1181</b> Lighting and Controls included in "Equipment Section"				
<b>1182</b> Theat Lighting & Power Roughin	1	LS	\$30,000.74	\$30,001
<b>1183</b> Theat Lighting Controls Roughin	1	LS	\$10,000.25	\$10,000
<b>1184</b>				
<b>1185</b> Security Intrusion Alarm System:				
<b>1186</b> Power Supply Junc Box, 120v	1	EA	\$459.80	\$460
<b>1187</b> Central Eqpt	1	EA	\$14,713.60	\$14,714
<b>1188</b> 3/4" Emt, 4#12	40	LF	\$13.85	\$554
<b>1189</b> Plenum Cables	4,400	LF	\$1.59	\$6,974
<b>1190</b> 3/4" Emt	660	LF	\$11.93	\$7,874
<b>1191</b> CR Card Reader	9	EA	\$810.70	\$7,296
<b>1192</b> K Keypad	2	EA	\$810.70	\$1,621
<b>1193</b> EL Electric Lock	3	EA	\$490.05	\$1,470
<b>1194</b> EH Electric Hinge	28	EA	\$490.05	\$13,721
<b>1195</b> Intercom	2	EA	\$520.30	\$1,041
<b>1196</b> PT Install Power Transfer Hinge FBO	14	EA	\$411.40	\$5,760
<b>1197</b> REX Req to Exit	17	EA	\$290.40	\$4,937
<b>1198</b> DC Door Position Sw	50	EA	\$199.65	\$9,983
<b>1199</b> M Motion Sensor	71	EA	\$411.40	\$29,209
<b>1200</b> TS Door Switch	14	EA	\$181.50	\$2,541





**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>1201</b> DJ Door Junc Box	<b>16</b>	EA	\$139.15	\$2,226
<b>1202</b>				
<b>1203</b> CCTV System:				
<b>1204</b> 3/4" EMT Cdt	<b>870</b>	LF	\$11.41	\$9,927
<b>1205</b> Signal Cables	<b>11,400</b>	LF	\$1.59	\$18,070
<b>1206</b> Monitoring/Recording Eqpt	<b>1</b>	LS	\$33,577.50	\$33,578
<b>1207</b> Viewing Console	<b>2</b>	EA	\$1,161.60	\$2,323
<b>1208</b> Data Outlet CAM, Camera	<b>55</b>	EA	\$1,294.70	\$71,209
<b>1209</b> Data Outlet CAM, Camera WP	<b>15</b>	EA	\$1,996.50	\$29,948
<b>1210</b>				
<b>1211</b> BDA System	<b>1</b>	LS	\$200,000.00	\$200,000
<b>1212</b> Area of Rescue Assistance	<b>1</b>	LS	\$50,000.00	\$50,000
<b>1213</b>				
<b>1214</b> Temp Power and Lighting	<b>1</b>	LS	\$80,000.00	\$80,000
<b>1215</b> <b>D5011 SERVICE &amp; DISTRIBUTION TOTAL</b>				<b>\$5,110,258</b>
<b>1216</b>				
<b>1217</b> <b>TOTAL SYSTEM D50 ELECTRICAL</b>				<b>\$5,110,258</b>
<b>1218</b>				
<b>1219</b>				
<b>1220</b> <b>E10 EQUIPMENT</b>				
<b>1221</b>				
<b>1222</b> <b>E1020 INSTITUTIONAL EQUIPMENT</b>				
<b>1223</b> Projection Screens				
<b>1224</b> Motorized projection screen; Auditorium	<b>1</b>	EA	\$17,000.00	\$17,000
<b>1225</b> Projection screen - Media Center, room 1250	<b>2</b>	EA	\$3,000.00	\$6,000
<b>1226</b> Residential Appliances				
<b>1227</b> Refrigerator/Freezer, microwave oven	<b>5</b>	RMS	\$1,700.00	\$8,500
<b>1228</b> Dishwasher	<b>1</b>	EA	\$1,200.00	\$1,200
<b>1229</b> Undercounter refrigerator @ Nurse	<b>1</b>	EA	\$1,200.00	\$1,200
<b>1230</b> Food service equipment				
<b>1231</b> Dining & Food Service (Budget provided, July 19, 2019)	<b>1</b>	AL	\$415,270.00	\$415,270
<b>1232</b> Auditorium/Theatre Equipment				
<b>1233</b> AV	<b>1</b>	AL	\$200,000.00	\$200,000
<b>1234</b> Lighting	<b>1</b>	AL	\$129,018.00	\$129,018
<b>1235</b> Dimming	<b>1</b>	AL	\$95,749.00	\$95,749
<b>1236</b> Rigging	<b>1</b>	AL	\$158,300.00	\$158,300
<b>1237</b> Curtains	<b>1</b>	AL	\$33,854.00	\$33,854
<b>1238</b> Orchestra	<b>1</b>	AL	\$175,000.00	FF&E
<b>1239</b> Gym AV sound system	<b>1</b>	AL	\$120,000.00	\$120,000
<b>1240</b> Cafeteria AV	<b>1</b>	AL	\$50,000.00	\$50,000
<b>1241</b> Band and chorus AV	<b>1</b>	AL	\$60,000.00	\$60,000
<b>1242</b> Aud. seating; stacked (48), fixed (321), removeable (46)	<b>1</b>	AL	\$106,445.00	\$106,445
<b>1243</b> Science Room Equipment				
<b>1244</b> Fume hoods	<b>6</b>	EA	\$10,000.00	NIC
<b>1245</b> Gymnasium equipment				



**Fuller Middle School**Framingham, MA  
137,385 GSF**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>1246</b> Electronic scoreboard	1	EA	\$7,500.00	\$7,500
<b>1247</b> Shot clock/shot timer	1	EA	\$1,250.00	\$1,250
<b>1248</b> Pull up bar	1	EA	\$850.00	\$850
<b>1249</b> Stall bar	1	EA	\$850.00	\$850
<b>1250</b> Vertical ladder	1	EA	\$550.00	\$550
<b>1251</b> Rope hoist	1	EA	\$500.00	\$500
<b>1252</b> Overhead mounted folding backstops w/glass backboards	6	EA	\$6,500.00	\$39,000
<b>1253</b> Gym motorized divider curtains	1	EA	\$20,000.00	\$20,000
<b>1254</b> Sleeves & floor plates for badminton & volleyball uprights; allo	2	SETS	\$4,000.00	\$8,000
<b>1255</b> Gym equipment controls-power touch	1	LS	\$5,000.00	\$5,000
<b>1256</b> Gym wall safety pads to be 8'-8" high	2,634	SF	\$18.00	\$47,412
<b>1257</b> Motorized telescoping bleachers, motorized	760	SEAT	\$100.00	\$76,000
<b>1258</b> Shop equipment	1	LS	\$25,000.00	\$25,000
<b>1259</b> Loading dock equipment	1	LS	\$10,000.00	\$10,000
<b>1260</b> <b>E1020 INSTITUTIONAL EQUIPMENT TOTAL</b>				<b>\$1,644,448</b>
<b>1261</b>				
<b>1262</b> <b>TOTAL SYSTEM E10 FITTINGS &amp; EQUIPMENT</b>				<b>\$1,644,448</b>
<b>1263</b>				
<b>1264</b>				
<b>1265</b> <b>E20 FURNISHINGS</b>				
<b>1266</b>				
<b>1267</b> <b>E2020 SPECIALTIES / MILLWORK</b>				
<b>1268</b> <i>Interior guardrails</i>				
<b>1269</b> Handrailing	150	LF	\$200.00	\$30,000
<b>1270</b> Guardrail in Common areas	365	LF	\$103.00	\$37,595
<b>1271</b> Guardrails at lockers	1,000	LF	\$550.00	\$550,000
<b>1272</b> Railings in auditorium	1	LS	\$35,000.00	\$35,000
<b>1273</b> Vertical duct enclosure	4,200	LF	\$90.00	NIC
<b>1274</b>				
<b>1275</b> <i>Miscellaneous metals</i>				
<b>1276</b> Furnishings; miscellaneous metals	137,385	GSF	\$0.35	\$48,085
<b>1277</b>				
<b>1278</b> Furnishings; miscellaneous wood blocking	137,385	GSF	\$0.25	\$34,346
<b>1279</b>				
<b>1280</b> <i>Academic areas: classrooms, science, media, music, vocational, sped</i>				
<b>1281</b> Bench; wood veneer cantilevered w/ptd supports	69	LF	\$350.00	\$24,150
<b>1282</b> Epoxy counter 24" wide	325	LF	\$325.00	\$105,625
<b>1283</b> Plam admin desk, curved @ Admin	20	LF	\$500.00	\$10,000
<b>1284</b> Plam base cabinet	35	LF	\$205.00	\$7,175
<b>1285</b> Plam base cabinet; mobile on casters	175	EA	\$550.00	\$96,250
<b>1286</b> Plam counter 24" wide	1,425	LF	\$200.00	\$285,000
<b>1287</b> Plam tall cabinets	4	EA	\$1,000.00	\$4,000
<b>1288</b> Plam tall cabinets w/tackable surface	3	EA	\$1,250.00	\$3,750
<b>1289</b> Plam upper cabinet	197	LF	\$175.00	\$34,475



**Fuller Middle School**Framingham, MA  
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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>1290</b> Plam work counter oval @ Admin	<b>10</b>	LF	\$350.00	\$3,500
<b>1291</b> Shadow relief	<b>125</b>	LF	\$1,200.00	\$150,000
<b>1292</b> Administration areas, Offices, Medical:				
<b>1293</b> plam custom base & upper cabinets w/plam counter	<b>20</b>	LF	\$665.00	\$13,300
<b>1294</b> tackable surface backsplash	<b>160</b>	SF	\$24.00	\$3,840
<b>1295</b> Interior panel grille	<b>450</b>	LF	\$150.00	\$67,500
<b>1296</b> (4) Adj shelves 12" wide melamine	<b>602</b>	LF	\$140.00	\$84,280
<b>1297</b> (6) Adj shelves 12" wide melamine @ Media	<b>56</b>	LF	\$210.00	\$11,760
<b>1298</b> Remove casework (only 1/2 of VE Consigli total -\$88K)	<b>(1)</b>	LS	\$44,000.00	(\$44,000)
<b>1299</b> Other areas:				
<b>1300</b> Mail slots, melamine	<b>16</b>	LF	\$250.00	\$4,000
<b>1301</b> Window treatment, manually operated roller shades	<b>11,439</b>	SF	\$6.00	\$68,634
<b>1302</b> motorized roller shades @ exterior CW and SF	<b>1,788</b>	SF	\$10.00	\$17,880
<b>1303</b> motorized shade units at skylights	<b>4,015</b>	SF	\$10.00	\$40,150
<b>1304</b> roller shade at interior doors w/lites & glazed partitions	<b>5,569</b>	SF	\$4.00	\$22,276
<b>1305</b> Delete GFRG relief	<b>(1)</b>	LS	\$56,000.00	(\$56,000)
<b>1306</b> Remove breakout glass	<b>(1)</b>	LS	\$76,000.00	(\$76,000)
<b>1307</b> CMU at gym unpainted	<b>(1)</b>	LS	\$81,000.00	(\$81,000)
<b>1308</b> Perforated arch grille curved @ Classrooms 1' h	<b>1,345</b>	LF	\$55.00	\$73,975
<b>1309</b> E2020 SPECIALTIES / MILLWORK TOTAL				<b>\$1,609,546</b>
<b>1310</b>				
<b>1311</b> TOTAL SYSTEM E20 FURNISHINGS				<b>\$1,609,546</b>
<b>1312</b>				
<b>1313</b>				
<b>1314</b> F10 SPECIAL CONSTRUCTION				
<b>1315</b>				
<b>1316</b> F1010 SPECIAL CONSTRUCTION				
<b>1317</b> No work in this section				
<b>1318</b> F1010 SPECIAL CONSTRUCTION TOTAL				<b>\$0</b>
<b>1319</b>				
<b>1320</b> TOTAL SYSTEM F10 SPECIAL CONSTRUCTION				<b>\$0</b>
<b>1321</b>				
<b>1322</b>				
<b>1323</b> F20 SELECTIVE DEMOLITION				
<b>1324</b>				
<b>1325</b> F2020 SELECTIVE DEMOLITION				
<b>1326</b> Demolition of existing building allowance	<b>195,400</b>	SF		
<b>1327</b> Haz mat removal allowance				
<b>1328</b> F2020 SELECTIVE DEMOLITION TOTAL				<b>\$0</b>
<b>1329</b>				
<b>1330</b> TOTAL SYSTEM F20 DEMOLITION				<b>\$0</b>
<b>1331</b>				



**Fuller Middle School**Framingham, MA  
137,385 GSF**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>10 G10 SITE PREPARATION</b>				
<b>11</b>				
<b>12 G1010 Site Clearing</b>				
<b>13 31 10 00 Site Clearing</b>				
<b>14</b> Site clearing	7.3	ACRE	\$5,000.00	BP#1
<b>15</b> Safety barricade	1	AL	\$60,000.00	BP#1
<b>16</b> Construction fence, install, maintain, remove & reinstall; for all phases	11,344	LF	\$12.00	BP#1
<b>17</b> Double construction gate	2	PR	\$2,500.00	BP#1
<b>18</b> Temporary construction entrance	2	LOC	\$7,000.00	BP#1
<b>19</b> Add premium for moving and reinstalling for 3 phases	1	LS	\$37,385.00	BP#1
<b>20</b> Temporary Jersey Barriers; purchase and install	3,145	LF	\$65.00	BP#1
<b>21</b> Temp signs	1	LS	\$3,000.00	BP#1
<b>22</b> Wash down/re-fueling/parking allowance	3,000	SF	\$2.00	BP#1
<b>23 31 23 19 Dewatering and Drainage</b>				
<b>24</b> Dewatering for sitework excavation; allow	1	LS	\$100,000.00	BP#1
<b>25 31 25 00 Erosion and Sedimentation Controls</b>				
<b>26</b> Erosion control barrier	1,206	LF	\$14.00	BP#1
<b>27</b> Stockpile area (all phases), qty provided	35,000	CY	\$2.50	BP#1
<b>28</b> FM; discharge temp basin to existing DMH	271	LF	\$75.00	BP#1
<b>29</b> Stormwater basin	3,547	SF	\$2.50	BP#1
<b>30</b> Temporary pavement	47,106	SF	\$3.00	BP#1
<b>31</b> Temporary sedimentation and runoff basin	7,348	SF	\$2.00	BP#1
<b>32 G1010 Site Clearing Total</b>				<b>\$0</b>
<b>33</b>				
<b>34 G1020 Site Demolition and Relocation</b>				
<b>35 02 41 00 Demolition</b>				
<b>36</b> BP#1				BP#1
<b>37 G1020.01 Building Demolition</b>				
<b>38 02 30 00 Building Demolition</b>				
<b>39</b> Building demoltion				See Main Summary
<b>40 G1020 Site Demolition and Relocation Total</b>				<b>\$0</b>
<b>41</b>				
<b>42 G1030 Site Earthwork</b>				
<b>43 32 18 00 Athletic and Recreational Surfacing</b>				
<b>44</b> Site prep	267,073	SF	\$1.00	\$267,073
<b>243</b> Trench and backfill only	313	LF	\$45.00	\$14,085
<b>45</b> Baseball field				Existing to Remain
<b>58 G1030 Site Earthwork Total</b>				<b>\$281,158</b>
<b>59</b>				
<b>60 G10 SITE PREPARATION TOTAL</b>				<b>\$281,158</b>
<b>61</b>				
<b>62</b>				



**Fuller Middle School**Framingham, MA  
137,385 GSF**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>63 <u>G20 SITE IMPROVEMENTS</u></b>				
<b>64</b>				
<b>65 G2020 Roadways</b>				
<b>66 32 12 00 Flexible Paving</b>				
<b>67 Existing public roadway 'Flagg Drive' to remain</b>		SF		ETR
<b>68 Vehicular asphalt pavement, incl's temporary pavement</b>	<b>202,060</b>	SF	\$3.00 BP#1	
<b>69 Raised bituminous pavement (stamped)</b>	<b>11,716</b>	SF	\$15.00 BP#1	
<b>70 Gravel base to roadway &amp; parking lot</b>	<b>9,445</b>	CY	\$35.00 BP#1	
<b>71 32 16 00 Curbs and Gutters</b>				BP#1
<b>72 VGC; vertical granite curb</b>	<b>3,965</b>	LF	\$42.00 BP#1	
<b>73 SGC; sloped granite curb</b>	<b>191</b>	LF	\$43.50 BP#1	
<b>74 PCC; precast concrete curb</b>	<b>8,105</b>	LF	\$25.00 BP#1	
<b>75 Bit. berm curb</b>	<b>1,336</b>	LF	\$5.00 BP#1	
<b>76 32 17 00 Paving Specialties</b>				BP#1
<b>77 Crosswalk</b>	<b>2,350</b>	SF	\$2.50 BP#1	
<b>78 Parking stall painting</b>	<b>302</b>	EA	\$15.00 BP#1	
<b>79 Parking stall painting; HC</b>	<b>12</b>	EA	\$75.00 BP#1	
<b>80 Crosswalk striping, temporary</b>	<b>2,440</b>	SF	\$2.50 BP#1	
<b>81 Temporary parking spaces, incl's HC bus</b>	<b>162</b>	EA	\$75.00 BP#1	
<b>82 Jersey barrier between vehicle parking, temporary</b>	<b>745</b>	LF	\$10.00 BP#1	
<b>83 Misc. marking other than above</b>	<b>1</b>	LS	\$50,000.00 BP#1	
<b>84 G2020 Roadways Total</b>				<b>\$0</b>
<b>85</b>				
<b>86 G2030 Pedestrian Paving</b>				
<b>87 32 13 10 Rigid Paving</b>				
<b>88 Concrete paving/Conc sidewalk</b>	<b>21,021</b>	SF	\$9.00	\$189,189
<b>89 Bituminous conc sidewalk</b>	<b>26,443</b>	SF	\$2.25 BP#1	
<b>90 Gravel base to concrete pavement</b>	<b>879</b>	CY	\$35.00	\$30,765
<b>91 Curb cut</b>	<b>16</b>	EA	\$450.00	\$7,200
<b>92 Concrete pad</b>	<b>1</b>	AL	\$24,000.00 BP#1	
<b>93 Handicap ramp</b>	<b>402</b>	SF	\$20.00 BP#1	
<b>94 Temporary modular handicap ramp</b>	<b>138</b>	SF	\$20.00 BP#1	
<b>95 G2030 Pedestrian Paving Total</b>				<b>\$227,154</b>
<b>96</b>				
<b>97 G2040 Site Development</b>				
<b>98 <u>G2040.01 Fences and Gates</u></b>				
<b>99 32 31 00 Fences and Gates</b>				
<b>100 Vehicular guardrail</b>	<b>271</b>	LF	\$250.00	\$67,750
<b>101 Railing</b>	<b>1,000</b>	LF	\$75.00	\$75,000
<b>102 <u>Unit block retaining wall</u></b>				
<b>103 Footing</b>	<b>472</b>	lf		
<b>104 Concrete</b>	<b>37</b>	CY	\$135.00	\$4,995
<b>105 Concrete; place</b>	<b>37</b>	CY	\$85.00	\$3,145



**Fuller Middle School**

Framingham, MA  
137,385 GSF

**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>106</b> Reinforcing	<b>2,405</b>	LBS	\$1.10	\$2,646
<b>107</b> Formwork	<b>2,832</b>	SF	\$12.00	\$33,984
<b>108</b> Wall				
<b>109</b> Concrete	<b>55</b>	CY	\$135.00	\$7,425
<b>110</b> Concrete; place	<b>55</b>	CY	\$85.00	\$4,675
<b>111</b> Reinforcing	<b>8,250</b>	LBS	\$1.10	\$9,075
<b>112</b> Formwork	<b>2,832</b>	SF	\$12.00	\$33,984
<b>113</b> Wall	<b>1,652</b>	SF	\$28.00	\$46,256
<b>114</b> Segmented wall	<b>2,000</b>	SF	\$55.00	\$110,000
<b>127</b>				
<b>127</b> Wooden guardrail det 7/L3.0	<b>420</b>	LF	\$75.00	\$31,500
<b>127</b> Galvanized handrails, ramps and steps	<b>310</b>	LF	\$250.00	\$77,463
<b>127</b> Wood benches	<b>25</b>	LF	\$200.00	\$5,000
<b>127</b> Phenolic bench w/sloped back	<b>7</b>	LF	\$225.00	\$1,575
<b>127</b> Flagpole	<b>2</b>	EA	\$7,500.00	\$15,000
<b>127</b> Bandshell	<b>1</b>	AL	\$200,000.00	\$200,000
<b>128</b> Traffic signs	<b>1</b>	AL	\$10,000.00	BP#1
<b>129</b> Bollards	<b>103</b>	EA	\$800.00	\$82,400
<b>130</b> Premium for architectural featured bollards	<b>1</b>	LS	\$75,000.00	\$75,000
<b>131</b> Signage	<b>1</b>	AL	\$15,000.00	BP#1
<b>132</b> Bicycle racks	<b>20</b>	EA	\$950.00	\$19,000
<b>132</b> Basketball pavement				BP#1
<b>133</b> Basketball court; fence, gate, court marking	<b>2,000</b>	SF	\$35.00	\$70,000
<b>134</b> <b>G2040 Site Development Total</b>				<b>\$975,872</b>
<b>135</b>				
<b>136</b> <b>G2050 Landscaping</b>				
<b>137</b> <u>G2050.02 Lawns and Grasses</u>				
<b>138</b> 32 92 00 Turfs and Grasses				
<b>139</b> Topsoil for planting beds, shrubs and perennials	<b>308</b>	CY	\$25.00	\$7,699
<b>140</b> Meadow mix seed	<b>111,408</b>	SF	\$0.50	\$55,704
<b>141</b> Lawn	<b>180,759</b>	SF	\$0.35	\$63,266
<b>142</b> Sod at ampitheater	<b>24,294</b>	SF	\$1.50	\$36,441
<b>143</b> Sod at play areas	<b>24,038</b>	SF	\$1.50	\$36,057
<b>144</b> Plant bed	<b>5,384</b>	SF	\$10.00	\$53,840
<b>145</b> Mulch	<b>1</b>	LS	\$30,000.00	\$30,000
<b>147</b> Remove and install new irrigation System	<b>82,000</b>	SF	\$1.25	\$102,500
<b>147</b> South Sports Field				By Others
<b>148</b> Irrigation in front of Ampitheater	<b>24,294</b>	SF	\$2.00	\$48,588
<b>148</b> Irrigation at play areas	<b>24,038</b>	SF	\$2.00	\$48,076
<b>149</b>				
<b>150</b> Fine grading	<b>180,759</b>	SF	\$0.75	\$135,569
<b>152</b>				
<b>153</b> <u>G2050.03 Trees, Plants and Ground Covers</u>				



**Fuller Middle School**Framingham, MA  
137,385 GSF**SITWORK: NEW CONSTRUCTION**

	<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>154</b>	32 93 00 Plants				
<b>155</b>	Trees				
<b>156</b>	AL; Allegheny Serviceberry 2½ - 3" Cal	12	EA	\$900.00	\$10,800
<b>157</b>	AC; Shadblow Serviceberry 2½ - 3" Cal	1	EA	\$900.00	\$900
<b>158</b>	AR; Red Maple 3 - 3½" Cal	6	EA	\$850.00	\$5,100
<b>159</b>	CK; American Yellowwood 3 - 3½" Cal	28	EA	\$800.00	\$22,400
<b>160</b>	FG; American Beech 3 - 3½" Cal	11	EA	\$850.00	\$9,350
<b>161</b>	LT; Tulip Tree 3 - 3½" Cal	8	EA	\$900.00	\$7,200
<b>162</b>	NS; Black Tupelo 3 - 3½" Cal	16	EA	\$850.00	\$13,600
<b>163</b>	OA; Sourwood 2½-3" Cal	3	EA	\$750.00	\$2,250
<b>164</b>	PA; London Plain Tree 3 - 3½" Cal	24	EA	\$850.00	\$20,400
<b>165</b>	QP; Pin Oak 3 - 3½" Cal	7	EA	\$900.00	\$6,300
<b>166</b>	QR; Red Oak 3 - 3½" Cal	7	EA	\$950.00	\$6,650
<b>167</b>	Shrubs				
<b>168</b>	CA; Sweet Pepperbush 3½ - 4' HT	28	EA	\$95.00	\$2,660
<b>169</b>	HQ; Oak-leaf Hydrangea 3 - 3½' HT	48	EA	\$95.00	\$4,560
<b>170</b>	HV; Witch Hazel 7- 8' B+B	3	EA	\$350.00	\$1,050
<b>171</b>	IG; Compact Incberry 2½ - 3' HT	62	EA	\$125.00	\$7,750
<b>172</b>	IV; Winterberry 2 - 2½ HT	58	EA	\$95.00	\$5,510
<b>173</b>	JC; Common Juniper 24" SPD	7	EA	\$75.00	\$525
<b>174</b>	JH; Creeping Juniper 15-24" SPD	69	EA	\$75.00	\$5,175
<b>175</b>	JV; Eastern Red Cedar 7- 8' HT	26	EA	\$205.00	\$5,330
<b>176</b>	MG; Sweetgale 3½ - 4' HT	40	EA	\$95.00	\$3,800
<b>177</b>	PF; Pink Beauty Potentilla 24" SPD	13	EA	\$75.00	\$975
<b>178</b>	RA; Grow Low Sumac 2 - 2½' SPD	63	EA	\$115.00	\$7,245
<b>179</b>	RT; Staghorn Sumac 3 Gal	13	EA	\$115.00	\$1,495
<b>180</b>	RV; Virginia Rose 2½ - 3' SPD	14	EA	\$75.00	\$1,050
<b>181</b>	VA; Lowbush Blueberry 15-24" SPD	31	EA	\$75.00	\$2,325
<b>182</b>	VD; Arrowwood 4 - 4½' HT	31	EA	\$150.00	\$4,650
<b>183</b>	VT; Dwarf Cranberry Bush 3 - 3½' HT	12	EA	\$115.00	\$1,380
<b>184</b>	Groundcover				
<b>185</b>	CP; Sweet Fern 1 Gal	2,372	EA	\$15.00	\$35,580
<b>186</b>	Grass at temporary parking area	6,650	SF	\$0.35	\$2,328
<b>187</b>	Maintenance of landscaping	1	LS	\$10,000.00	\$10,000
<b>188</b>	<b>G2050 Landscaping Total</b>				<b>\$826,078</b>
<b>189</b>					
<b>190</b>	<b>G20 SITE IMPROVEMENTS TOTAL</b>				<b>\$2,029,104</b>
<b>191</b>					
<b>192</b>					
<b>193</b>	<b><u>G30 SITE CIVIL/MECHANICAL UTILITIES</u></b>				Early Bid package
<b>194</b>					
<b>195</b>	<b>G3010 Water Supply</b>				
<b>196</b>	33 10 00 Water Distribution				



**Fuller Middle School**

Framingham, MA

137,385 GSF

**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>197</b> 2" Domestic water service	<b>120</b>	LF	\$60.00	BP#1
<b>198</b> 6" Fire water service	<b>170</b>	LF	\$70.00	BP#1
<b>199</b> Water service; not sized	<b>680</b>	LF	\$95.00	BP#1
<b>200</b> Hydrant	<b>5</b>	EA	\$4,500.00	BP#1
<b>201</b> Miscellaneous gates, valves, etc. (gate valve 8x8x6)	<b>1</b>	LS	\$10,000.00	BP#1
<b>202 G3010 Water Supply Total</b>				<b>\$0</b>
<b>203</b>				
<b>204 G3020 Sanitary Sewer</b>				
<b>205</b> 33 31 00 Sanitary Sewerage				
<b>206</b> All incl. trench and backfill				
<b>207</b> 6" DI	<b>78</b>	LF	\$70.00	BP#1
<b>208</b> 6" PVC	<b>42</b>	LF	\$70.00	BP#1
<b>209</b> 8" PVC	<b>472</b>	LF	\$75.00	BP#1
<b>210</b> SMH; Sewer manhole	<b>4</b>	EA	\$4,500.00	BP#1
<b>211</b> CO; Cleanout	<b>1</b>	EA	\$600.00	BP#1
<b>212</b> Connect to existing	<b>1</b>	EA	\$3,500.00	BP#1
<b>213</b> Acid neutralization tank	<b>2</b>	EA	\$7,500.00	BP#1
<b>214</b> Grease trap	<b>1</b>	EA	\$15,000.00	BP#1
<b>215 G3020 Sanitary Sewer Total</b>				<b>\$0</b>
<b>216</b>				
<b>217 G3030 Storm Sewer</b>				
<b>218</b> 33 41 00 Storm Utility Drainage				
<b>219</b> All incl. trench and backfill				
<b>220</b> 6" PVC	<b>47</b>	LF	\$35.00	BP#1
<b>221</b> 12" HDPE	<b>2,435</b>	LF	\$42.00	BP#1
<b>222</b> 15" HDPE	<b>635</b>	LF	\$45.00	BP#1
<b>223</b> 18" HDPE	<b>548</b>	LF	\$48.00	BP#1
<b>224</b> 24" HDPE	<b>371</b>	LF	\$50.00	BP#1
<b>225</b> 30" HDPE	<b>547</b>	LF	\$60.00	BP#1
<b>226</b> DMH; Manhole	<b>9</b>	EA	\$3,500.00	BP#1
<b>227</b> CB; catch basin	<b>19</b>	EA	\$4,500.00	BP#1
<b>228</b> Temporary CB, convert to DMH	<b>3</b>	EA	\$4,500.00	BP#1
<b>229</b> Headwall @ 24" HDPE end	<b>2</b>	EA	\$1,500.00	BP#1
<b>230</b> Allowances for:				BP#1
<b>231</b> Water quality structures	<b>4</b>	EA	\$15,000.00	BP#1
<b>232</b> Gravel and sod buffer for pretreatment	<b>1</b>	LS	\$10,000.00	BP#1
<b>233</b> Stormceptors:				BP#1
<b>234</b> 450i	<b>2</b>	EA	\$10,000.00	BP#1
<b>235</b> 3600	<b>1</b>	EA	\$35,000.00	BP#1
<b>236</b> 6000	<b>1</b>	EA	\$60,000.00	BP#1
<b>237</b> Outlet structure	<b>1</b>	EA	\$5,000.00	BP#1
<b>238</b> Perimeter drainage				Bldg Tab
<b>239 G3030 Storm Sewer Total</b>				<b>\$0</b>





**Fuller Middle School**

Framingham, MA

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<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>240</b>				
<b>241 G3040 Heating Distribution</b>				
<b>242 33 50 00 Gas Service</b>				
<b>244</b> Connection to existing gas main				By Other
<b>245</b> Gas line piping, incl's valves (2)				By Other
<b>246 G3040 Heating Distribution Total</b>				<u>\$0</u>
<b>247</b>				
<b>248 G30 SITE CIVIL/MECHANICAL UTILITIES TOTAL</b>				<b>\$0</b>
<b>249</b>				
<b>250</b>				
<b>251 G40 SITE ELECTRICAL UTILITIES</b>				
<b>252</b>				
<b>253 G4010 Site Electrical Utilities</b>				
<b>254 33 70 00 Electrical Utilities</b>				
<b>255</b> Site Lighting, Site Eqpt				
<b>256</b> Type SL1, 1-Fixt, 30' pole	33	EA	\$4,767.40	BP#1
<b>257</b> Type SL1A, 1-Fixt, 30' pole	0	EA	\$4,767.40	BP#1
<b>258</b> Type SL3, Wallpack	4	EA	\$701.80	\$2,807
<b>259</b> Type SL3 Pedestrian Light Pole	42	EA	\$3,242.80	\$136,198
<b>260</b> WP Signage w/ Lights, FBO	1	EA	\$1,113.20	\$1,113
<b>261</b> Type SL10 Plant uplight	12	EA	\$520.30	\$6,244
<b>262</b> Receptacle WP GFI	5	EA	\$284.35	\$1,422
<b>263</b> CCTV Camera, Pole Mtd	3	EA	\$1,863.40	\$5,590
<b>264</b> Elect Vehicle Charging Station	3	EA	\$1,645.60	\$4,937
<b>265</b> Relocate Exist EM Call Box	1	EA	\$1,113.20	\$1,113
<b>266</b> Time Clock	1	EA	\$1,004.30	\$1,004
<b>267</b>				
<b>268</b> Branch Circuitry:				
<b>269</b> 3/4" Emt, 4#10	280	LF	\$14.98	BP#1
<b>270</b> 1" PVC CDT UG	6,050	LF	\$5.41	BP#1
<b>271</b> 2" PVC CDT UG	900	LF	\$7.70	BP#1
<b>272</b> 2 1/2" PVC CDT UG	8,400	LF	\$10.31	BP#1
<b>273</b> 17x30x12" Site Pullbox	14	EA	\$2,323.20	\$32,525
<b>274</b> Handhole, future PV	14	EA	\$2,323.20	\$32,525
<b>275</b> #10 Wire	12,400	LF	\$1.25	\$15,535
<b>276</b> #8 Wire	12,090	LF	\$1.76	\$21,288
<b>277</b> #6 Wire	2,700	LF	\$2.11	\$5,707
<b>278</b> Signal Cable	1,150	LF	\$1.82	\$2,087
<b>279</b>				
<b>280</b> Site Power, EG Feeders, Utilities:				
<b>281</b> 1" PVC, EG Controls, Misc UG	200	LF	\$10.44	\$2,088
<b>282</b> 4" PVC (Primary, empty) UG	460	LF	\$16.95	\$7,797
<b>283</b> 4" PVC CDT, 4 600 Mcm, UG (service)	600	LF	\$104.70	\$62,819
<b>284</b> 4" PVC CDT UG (spare)	100	LF	\$16.95	\$1,695
<b>285</b> 4" PVC CDT, 4 500 Mcm, UG (EG)	0	LF	\$87.18	\$0



**Fuller Middle School**

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**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>286</b> 4" PVC CDT, 4 350 Mcm, UG (EG)	<b>200</b>	LF	\$68.01	\$13,602
<b>287</b> 350Mcm THHN CU		LF	\$12.77	\$0
<b>288</b> 4" PVC, 4#3/0 MI, UG	<b>100</b>	LF	\$200.92	\$20,092
<b>289</b> Utility Pole Riser	<b>1</b>	LS	\$4,767.40	\$4,767
<b>290</b> Utility Transformer Pad	<b>1</b>	EA	\$4,162.40	\$4,162
<b>291</b> Manhole	<b>2</b>	EA	\$6,500.00	\$13,000
<b>292</b> Trenching, Concrete, Backfill	<b>1</b>	LS	\$100,000.00	BP#1
<b>293</b>				
<b>294</b> Miscellaneous:				
<b>295</b> 4" PVC CDT UG (Comm)	<b>800</b>	LF	\$16.95	\$13,560
<b>296</b> Innerduct	<b>600</b>	LF	\$3.99	\$2,396
<b>297</b> Tel Utility Pole Riser	<b>1</b>	LS	\$3,121.80	\$3,122
<b>298</b> 3'x3' Comm Handhole	<b>1</b>	EA	\$6,243.60	\$6,244
<b>299</b>				
<b>300</b> Misc Site Demo	<b>1</b>	LS	\$10,890.00	BP#1
<b>301</b> Site Security Lighting	<b>1</b>	LS	\$12,584.00	\$12,584
<b>302</b> Temp Power and Lighting	<b>1</b>	LS	\$31,460.00	\$31,460
<b>303</b> Eqpt Rentals	<b>1</b>	LS	\$7,260.00	\$7,260
<b>304</b> <b>G4010 Site Electrical Utilities Total</b>				<b>\$476,743</b>
<b>305</b>				
<b>306</b> <b>G40 SITE ELECTRICAL UTILITIES TOTAL</b>				<b>\$476,743</b>
<b>307</b>				
<b>308</b>				
<b>309</b>				
			<b>TOTAL SITWORK SUMMARY</b>	<b>\$2,787,005</b>







### 2.3.5 Updated Project Budget

Following is the updated Project Budget



**Total Project Budget**

**City of Framingham  
Fuller Middle School  
Updated for 60% Construction Documents Cost  
Estimate**

School Building Committee Reviewed on:

8/27/2018

<b>Total Project Budget: All costs associated with the project are subject to 963 CMR 2.16(5)</b>	<b>Estimated Budget</b>	<b>Scope Items Excluded from the Estimated Basis of Maximum Facilities Grant or Otherwise Ineligible</b>	<b>Estimated Basis of Maximum Total Facilities Grant<sup>1</sup></b>	<b>Estimated Maximum Total Facilities Grant<sup>1</sup></b>
<b>Feasibility Study Agreement</b>				
OPM Feasibility Study	\$175,000	\$0	\$175,000	
A&E Feasibility Study	\$545,000	\$0	\$545,000	
Environmental & Site	\$145,000	\$0	\$145,000	
Other	\$135,000	\$0	\$135,000	
<b>Feasibility Study Agreement Subtotal</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$1,000,000</b>	<b>\$623,100</b>
<b>Administration</b>				
Legal Fees	\$80,000	\$80,000	\$0	\$0
<b>Owner's Project Manager</b>				
Design Development	\$175,445	\$285,688	-\$110,243	
Construction Contract Documents	\$242,886	\$0	\$242,886	
Bidding	\$115,789	\$0	\$115,789	
Construction Contract Administration	\$1,727,876	\$0	\$1,727,876	
Closeout	\$89,950	\$0	\$89,950	
Extra Services	\$40,000	\$0	\$40,000	
Reimbursable & Other Services	\$40,000	\$0	\$40,000	
Cost Estimates	\$80,000	\$0	\$80,000	
Advertising	\$20,000	\$0	\$20,000	
Permitting	\$50,000	\$0	\$50,000	
Owner's Insurance	\$120,000	\$0	\$120,000	
Other Administrative Costs	\$100,000	\$0	\$100,000	
<b>Administration Subtotal</b>	<b>\$2,881,946</b>	<b>\$365,688</b>	<b>\$2,516,258</b>	<b>\$1,567,881</b>
<b>Architecture and Engineering</b>				
<b>Basic Services</b>				
Design Development	\$2,059,998	\$835,966	\$1,224,032	
Construction Contract Documents	\$2,746,664	\$0	\$2,746,664	
Bidding	\$137,334	\$0	\$137,334	
Construction Contract Administration	\$1,833,398	\$0	\$1,833,398	
Closeout	\$89,265	\$0	\$89,265	
Other Basic Services	\$0	\$0	\$0	
<b>Basic Services Subtotal</b>	<b>\$6,866,659</b>	<b>\$835,966</b>	<b>\$6,030,693</b>	
<b>Reimbursable Services</b>				
Construction Testing	\$30,000	\$0	\$30,000	
Printing (over minimum)	\$20,000	\$0	\$20,000	
Other Reimbursable Costs	\$180,000	\$0	\$180,000	
Hazardous Materials	\$170,984	\$0	\$170,984	
Geotechnical & Geo-Environmental	\$155,925	\$0	\$155,925	
Site Survey	\$44,000	\$0	\$44,000	
Wetlands	\$44,000	\$0	\$44,000	
Traffic Studies	\$38,500	\$0	\$38,500	
<b>Architectural/Engineering Subtotal</b>	<b>\$7,550,068</b>	<b>\$835,966</b>	<b>\$6,714,102</b>	<b>\$4,183,557</b>
<b>CM at Risk Preconstruction Services</b>				
Pre-Construction Services	\$400,000	\$0	\$400,000	\$249,240
Site Acquisition				
Land / Building Purchase	\$0	\$0	\$0	
Appraisal Fees	\$0	\$0	\$0	
Recording fees	\$0	\$0	\$0	
<b>Site Acquisition Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**Total Project Budget**

**City of Framingham  
Fuller Middle School  
Updated for 60% Construction Documents Cost  
Estimate**

School Building Committee Reviewed on:

8/27/2018

<b>Total Project Budget: All costs associated with the project are subject to 963 CMR 2.16(5)</b>	<b>Estimated Budget</b>	<b>Scope Items Excluded from the Estimated Basis of Maximum Facilities Grant or Otherwise Ineligible</b>	<b>Estimated Basis of Maximum Total Facilities Grant<sup>1</sup></b>	<b>Estimated Maximum Total Facilities Grant<sup>1</sup></b>
<b>Construction Costs</b>				
<b>SUBSTRUCTURE</b>				
Foundations	\$1,634,809	\$0		
Basement Construction	\$0	\$0		
<b>SHELL</b>				
SuperStructure	\$5,419,732	\$0		
Exterior Closure	\$0	\$0		
Exterior Walls	\$4,491,061	\$0		
Exterior Windows	\$1,848,658	\$0		
Exterior Doors	\$184,624	\$0		
Roofing	\$2,390,170	\$0		
<b>INTERIORS</b>				
Interior Construction	\$6,329,660	\$0		
Staircases	\$488,120	\$0		
Interior Finishes	\$4,946,313	\$0		
<b>SERVICES</b>				
Conveying Systems	\$220,450	\$0		
Plumbing	\$2,257,270	\$0		
HVAC	\$7,906,183	\$0		
Fire Protection	\$791,653	\$0		
Electrical	\$5,210,064	\$0		
<b>EQUIPMENT &amp; FURNISHINGS</b>				
Equipment	\$1,673,789	\$0		
Furnishings	\$1,812,200	\$0		
<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>				
Special Construction	\$0	\$0		
Existing Building Demolition	\$1,270,100	\$0		
In-Building Hazardous Material Abatement	\$1,213,480			
Asbestos Containing Floor Material Abatement	\$388,800	\$388,800		
Other Hazardous Material Abatement	\$0	\$0		
<b>BUILDING SITEWORK</b>				
Site Preparation	\$4,960,910	\$7,495,363		
Site Improvements	\$4,788,307	\$0		
Site Civil / Mechanical Utilities	\$1,025,389	\$0		
Site Electrical Utilities	\$529,137	\$0		
Other Site Construction	\$0	\$0		
Scope Excluded Site Cost		\$0		
<b>Construction Trades Subtotal</b>	<b>\$61,780,879</b>	<b>\$7,884,163</b>		
Contingencies (Design and Pricing)	\$2,653,491	\$338,625		
General Conditions	\$3,988,224	\$508,957		
General Requirements	\$3,084,502	\$393,629		
Insurance	\$895,218	\$114,243		
Bonds	\$1,300,671	\$165,985		
GMP Fee	\$1,560,000	\$199,079		
not used		\$0		
GMP Contingency	\$1,653,353	\$210,993		
Escalation to Mid-Point of Construction	\$835,850	\$106,667		
Ineligible Auditorium & PE Areas beyond Guidelines		\$7,247,170		
Overall Excluded Construction Cost		\$12,810,079		
<b>Construction Budget</b>	<b>\$77,752,188</b>	<b>\$29,979,590</b>	<b>\$47,772,598</b>	<b>\$29,767,106</b>
<b>Alternates</b>				
Alternates Included in the Total Project Budget	\$0	\$0	\$0	\$0
Alternates Excluded from the Total Project Budget	\$0	\$0	\$0	\$0
<b>Subtotal to be Included in Total Project Budget</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Miscellaneous Project Costs</b>				
Utility Company Fees	\$280,000	\$0	\$280,000	
Testing Services	\$300,000	\$0	\$300,000	
Swing Space / Modularity	\$0	\$0	\$0	
Other Project Costs (Mailing & Moving)	\$200,000	\$200,000	\$0	
<b>Misc. Project Costs Subtotal</b>	<b>\$780,000</b>	<b>\$200,000</b>	<b>\$580,000</b>	<b>\$361,398</b>
<b>Furnishings and Equipment</b>				
Furniture, Fixtures, and Equipment	\$1,134,000	\$378,000	\$756,000	
Technology	\$1,134,000	\$378,000	\$756,000	
<b>FF&amp;E Subtotal</b>	<b>\$2,268,000</b>	<b>\$756,000</b>	<b>\$1,512,000</b>	<b>\$942,127</b>
Soft Costs that exceed 20% of Construction Cost		\$0		



**Total Project Budget**

**City of Framingham  
Fuller Middle School  
Updated for 60% Construction Documents Cost  
Estimate**

**School Building Committee Reviewed on:**

**8/27/2018**

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 <sup>1</sup>	Estimated Maximum Total Facilities Grant <sup>1</sup>
<b>Project Budget</b>	<b>\$92,632,202</b>	<b>\$32,137,244</b>	<b>\$60,494,959</b>	<b>\$37,694,409</b>

<b>Board Authorization</b>	
Design Enrollment	630
Total Building Gross Floor Area (GSF)	136,790
Total Project Budget (excluding Contingencies)	\$92,632,202
Scope Items Excluded or Otherwise Ineligible	\$32,137,244
Third Party Funding (Ineligible)	\$0
Estimated Basis of Maximum Total Facilities Grant <sup>1</sup>	\$60,494,958
Reimbursement Rate <sup>3,4</sup>	62.31%
Est. Max. Total Facilities Grant (before recovery) <sup>1</sup>	\$37,694,408
Cost Recovery <sup>5</sup>	\$0
Estimated Maximum Total Facilities Grant <sup>1</sup>	\$37,694,408

57.83 Reimbursement Rate Before Incentive Points  
4.48 Total Incentive Points<sup>3,4</sup>  
62.31% MSBA Reimbursement Rate

**NOTES**  
This template was prepared by the MSBA as a tool to assist Districts and consultants in understanding MSBA policies and practices regarding potential impact on the MSBA's calculation of a potential Basis of Total Facilities Grant and potential Total Maximum Facilities Grant. This template does not contain a final, exhaustive list of all evaluations which the MSBA may use in determining whether items are eligible for reimbursement by the MSBA. The MSBA will perform an independent analysis based on a review of information and estimates provided by the District for the proposed school project that may or may not agree with the estimates generated by the District using this template.

Construction Contingency <sup>2</sup>	\$4,089,632
Ineligible Construction Contingency <sup>2</sup>	\$3,312,110
"Potentially Eligible" Construction Contingency <sup>2</sup>	\$777,522
Owner's Contingency <sup>2</sup>	\$1,555,044
Ineligible Owner's Contingency <sup>2</sup>	\$0
"Potentially Eligible" Owner's Contingency <sup>2</sup>	\$1,555,044
Total Potentially Eligible Contingency <sup>2</sup>	\$2,332,566
Reimbursement Rate <sup>3,4</sup>	62.31%
Potential Additional Contingency Grant Funds <sup>2</sup>	\$1,453,422
Maximum Total Facilities Grant	\$39,147,830
Total Project Budget	\$98,276,878

1. Does not include any potentially eligible contingency funds and is subject to review and audit by the MSBA.  
2. The proposed demolition of the \_\_\_\_\_ School is expected to result in the MSBA recovering a portion of state funds previously paid to the District for the \_\_\_\_\_ project at the existing facilities completed in \_\_\_\_\_. The MSBA will perform an independent analysis based on a review of information and estimates provided by the District for the proposed school project that may or may not agree with the estimated cost recovery generated by the District and its consultants using this template.  
3. 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.

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 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.

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By:  
Title: Chair of School Building Committee

By:  
Title: Chief Executive Officer

By:  
Title: Superintendent of Schools

By:  
Title: Chair of School Committee

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

P:\2017\17050\09-COST\60% CD Submission\Final Estimates\Fuller 60% Cost Estimate Comparison Spreadsheet 7\_15\_10.xls\CSI



### 2.3.6 Value Engineering Recommendations

Value Engineering was performed with the School Building Committee (SBC) on August 5, 2019, meeting minutes attached.



## Project Minutes

Project: New Fuller Middle School  
 Prepared by: Joel Seeley  
 Re: School Building Committee Meeting  
 Location: Fuller Middle School Library  
 Distribution: Attendees (MF)

Project No.: 17050  
 Meeting Date: 8/5/19  
 Time: 7:00pm  
 Meeting No: 45

Attendees:

PRESENT	NAME	AFFILIATION	VOTING MEMBER
	David Miles	Co-Chair, City Resident with Experience in Finance	<b>Voting Member</b>
	Dr. Edward Gotgart	Co-Chair	Non-Voting Member
	Mayor Spicer	Mayor, Chief Executive Officer	Non-Voting Member
	Thatcher Kezer III	Chief Operating Officer	Non-Voting Member
	Richard Finlay	School Committee Member and Convener	<b>Voting Member</b>
✓	Adam Freudberg	Chair, School Committee	<b>Voting Member</b>
✓	Charlie Sisitsky	City Council Member	<b>Voting Member</b>
✓	Richard Weader II	Member of community with arch., eng., and/or construction experience	<b>Voting Member</b>
✓	Michael Grilli	Member of community with arch., eng., and/or construction experience	<b>Voting Member</b>
			<b>Voting Member</b>
✓	Dr. Jennifer Krusinger Martin	School Building Committee Member	<b>Voting Member</b>
	Donald C. Taggart III	City Resident/Retired Teacher	<b>Voting Member</b>
✓	Jennifer Pratt	Assistant Chief Financial Officer and SBC Member who is MCPPO certified	Non-Voting Member
✓	Dr. Robert Tremblay	Superintendent of Schools	Non-Voting Member
	Matt Torti	Director of Buildings and Grounds	Non-Voting Member
	Jose Duarte	Principal, Fuller Middle School	Non-Voting Member
✓	Anne Ludes	Director of Secondary Education	Non-Voting Member
	Mary Ellen Kelley	Chief Financial Officer and Local Budget official or member of Finance Committee	Non-Voting Member
	Michael Tusino	Certified Building Official	Non-Voting Member
	Patrick Johnson	Principal, Walsh Middle School	Non-Voting Member
	David Panich	School Building Committee Member	Non-Voting Member
	Thomas Barbieri	School Building Committee Member	Non-Voting Member
			Non-Voting Member
	Noval Alexander	School Committee Member	Non-Voting Member
	Heather Connolly	Former Chair of the School Committee	Non-Voting Member
✓	Scott Wadland	School Committee Member	
✓	Jonathan Levi	JLA, Architect	
✓	Philip Gray	JLA, Architect	
✓	Christian Riordan	Consigli Construction Company (CCC), CM	
✓	Matteo Batista	Consigli Construction Company (CCC), CM	
✓	Kristy Lyons	Consigli Construction Company (CCC), CM	
✓	Robert Smith	SMMA, OPM	
✓	Joel Seeley	SMMA, OPM	

Item #	Action	Discussion
45.1	Record	Call to Order, 7:00 PM, meeting opened.
45.2	Record	A. Freudberg indicated he will be acting Chair with both D. Miles and E. Gotgart not in attendance.
45.3	Record	A. Freudberg indicated S. Wadland will be voting for R. Finlay.
45.4	J. Seeley	Public Comments - none
45.5	Record	A motion was made by S. Wadland and seconded by C. Sisitsky to approve the 7/1/19 School Building Committee meeting minutes. No discussion, motion passed unanimous by those attending, one abstention.
45.6	Record	J. Seeley distributed and reviewed the Budget Tracking Form thru 7/31/19, attached, for the Total Project Budget.
45.7	Record	J. Seeley distributed and reviewed Warrant No. 20, attached. A motion was made by S. Wadland and seconded by C. Sisitsky to approve Warrant No. 20. No discussion, motion passed unanimous.
45.8	Record	J. Seeley distributed and reviewed Designer Amendment No. 21, dated 8/5/19 for GeoEnvironmental Engineering Services related to the elevated arsenic findings discovered in the existing underground peat, in the amount of \$33,550.00, attached, to be funded out of ProPay Code 0203-9900 which has a budget balance of \$175,608.62.  Committee Discussion:  <ol style="list-style-type: none"> <li>J. Seeley provided an overview of the actions and tasks undertaken by the GeoEnvironmental Engineer including additional soil borings, soil testing, filing the Release Notification Form and the Release Abatement Measure (RAM) plan to DEP and distributed and reviewed the Notice of Responsibility from DEP, attached.</li> <li>M. Grilli asked if the City Solicitor has reviewed the Amendment? <i>J. Pratt indicated the preferred process is for the Committee to vote to approve the Amendment and request signature by the City Solicitor and City Accountant.</i></li> </ol> <p>A motion was made by C. Sisitsky and seconded by J. Krusinger Martin to approve Designer Amendment No. 21, dated 8/5/19, subject to approval by the City Solicitor and recommend signature by T. Kezer III, City Solicitor and City Accountant. No discussion, motion passed five in favor and one against (M. Grilli).</p>
45.9	Record	J. Seeley distributed and reviewed the Project Schedule, attached.
45.10	Record	J. Seeley distributed and reviewed the 90% Construction Document Phase Meetings and Agenda Schedule, and the 100% Construction Document Phase Meetings and Agenda Schedule, attached.
45.11	J. Levi	J. Levi to coordinate with J. Duarte on a presentation of the project to the Fuller teachers and staff, targeted for September or October.
45.12	D. Miles	D. Miles will follow-up with the Mayor's Office on the open Committee membership.

45.13	D. Miles R. Finlay	<p>D. Miles to obtain an opinion from the City Solicitor if the SBC can sponsor appropriation requests, if the School Department and Parks and Recreation submit a joint-sponsored appropriation request to the City for upgrading one or both of the Fuller playing fields, or other fields in the City, to synthetic turf fields.</p> <p>R. Finlay will coordinate a meeting with School Committee, Parks and Recreation and the SBC to review.</p>
45.14	J. Seeley	<p>J. Seeley provided an overview of the meeting with R. Santos, JLA, CCC and SMMA on providing periodic updates to the Project Website and issuing releases to the press and social media.</p> <p>Committee Discussion:</p> <ol style="list-style-type: none"> <li>1. S. Wadland asked that periodic meetings with the Public Information Working Group be established. <i>J. Seeley to coordinate scheduling the initial meeting.</i></li> <li>2. A. Freudberg asked that a FAQ be developed for construction related questions. <i>J. Seeley to develop a FAQ for review.</i></li> </ol>
45.15	Record	<p>P. Gray presented and reviewed a photograph of the Perforated Stair and Guardrail Panels proposed for the project, attached.</p>
45.16	E. Bugbee	<p>E. Bugbee to confirm that the specified Linoleum Tiles will not require polishing, only buffing.</p>
45.17	Record	<p>P. Gray provided an overview of the 7/29/19 Security Meeting and indicated the additional security film on the interior glazing has been incorporated in the 60% Construction Documents and estimate.</p>
45.18	Record	<p>P. Gray distributed and reviewed the 7/1/19 Technology Review Meeting Minutes, attached.</p>
45.19	E. Bugbee	<p>E. Bugbee to further develop Finish Material Color Option 2, including accents and Student Locker type in the 90% Construction Documents phase.</p>
45.20	Record	<p>A. Freudberg distributed and reviewed the Policy on Remote Participation, attached. No action required by the Committee at this time until such time as the policy is released by the Mayor's office.</p>
45.21	M. Batista	<p>P. Gray presented the 8/3/19 Neighborhood Meeting PowerPoint presentation and video, attached, and provided an overview of the meeting. The following summarized the points discussed:</p> <ol style="list-style-type: none"> <li>1. Indicate the crossing guard locations on the McCarthy Traffic Plan</li> <li>2. The Police Department will increase their presence the first 2-3 weeks of school</li> <li>3. Mail the presentation to the neighbors</li> <li>4. Provide a phone number of the person the neighbors can call if there is an issue</li> <li>5. An engineer to witness the traffic flow for the first few weeks to verify if operating as intended</li> </ol>

		<p>6. Review the walkers route coming up Flagg from Warren to both McCarthy and Fuller</p> <p>Committee Discussion:</p> <ol style="list-style-type: none"> <li>1. J. Krusinger Martin indicated a follow-up meeting should be scheduled the 3<sup>rd</sup> week of September</li> <li>2. The Committee discussed what document to include in the mailing and concluded on a single Traffic Map, showing the traffic plan for both McCarthy and Fuller, with potentially the walking path from Warren Road to McCarthy. M. Batista to update the current traffic map for review.</li> <li>3. J. Krusinger Martin to assist in a brief narrative to include on the Traffic Map.</li> </ol>
45.22	Record	C. Riordan presented and reviewed the 60% Construction Documents Construction Cost Estimates, attached. The estimates range from \$77.2M to \$77.7M against a budget of \$77.9M.
45.23	J. Seeley	<p>J. Levi presented and reviewed the Value Management Items List, attached</p> <p>Committee Discussion:</p> <ol style="list-style-type: none"> <li>1. C. Sisitsky asked if the Traffic Commission was required to approve the removal of the raised traffic table on Flagg Drive? <i>J. Seeley will follow-up with the Traffic Commission.</i></li> <li>2. C. Sisitsky asked if the pH neutralization system is a requirement of the MWRA? <i>J. Seeley indicated the pH neutralization system is a requirement of the plumbing code based on the chemicals anticipated to be used in the science labs. A. Ludes indicated the list of anticipated chemicals is based on the curriculum.</i></li> <li>3. S. Wadland indicated concern that the new Amphitheater layout has stairs at the north end up to the building's main entrance. <i>J. Levi indicated the current design had the same stair requirement.</i></li> </ol> <p>A motion was made by J. Krusinger Martin and seconded by C. Sisitsky to incorporate the following accepted VM items into the 90% Construction Documents, 1) remove the raised traffic table on Flagg Drive subject to Traffic Commission approval, 2) remove the terraces in the Amphitheater, and 3) change the centralized pH neutralization system to a point of use system. No discussion, motion passed unanimous.</p>
45.24	Record	A Motion was made by S. Wadland and seconded by R. Weader II to approve the 60% Construction Documents Submittal and authorize submission to the MSBA. No discussion, motion passed unanimous.
45.25	M. Batista	M. Batista provided a Construction Update, attached. The pavement binder has been installed on the Farley parking lot and east section of the loop road, the McCarthy parking lot has been paved and striped, the drainage system in front of Fuller is underway and the asphalt paving has been stripped in the vicinity of the new building footprint.



		<p>Committee Discussion:</p> <ol style="list-style-type: none"> <li>S. Wadland asked if there are any impediments to completing the temporary Fuller parking lot by the time the teachers arrive on 8/27/19?  <i>M. Batista indicated none.</i></li> </ol>
45.26	Record	<p>M. Grilli distributed and reviewed the List of Prequalified Waterproofing, Damproofing and Caulking Trade Contractors for the Early Concrete and Steel Package as recommended by the Trade Contractor Prequalification Committee.</p> <p>A Motion was made by C. Sisitsky and seconded by R. Weader II to approve the List of Prequalified Waterproofing, Damproofing and Caulking Trade Contractors for the Early Concrete and Steel Package. No discussion, motion passed unanimous.</p>
45.27	Record	<p>C. Riordan distributed and reviewed the List of Non-Trade Contractors for the Early Concrete and Steel Package, attached.</p> <p>A Motion was made by S. Wadland and seconded by C. Sisitsky to approve the List of Non-Trade Contractors for the Early Concrete and Steel Package. No discussion, motion passed unanimous.</p>
45.28	Record	<p>J. Seeley distributed the Conservation Commission Order of Conditions filed at the Registry of Deeds, attached.</p>
45.29	J. Levi	<p>Old or New Business</p> <ol style="list-style-type: none"> <li>P. Gray indicated the amount of exterior doors used to provide the make-up air for the Smoke Evacuation System has been reduced as requested by Building and Grounds, attached.</li> </ol>
45.30	Record	<p>Next <b>SBC Meeting: August 19, 2019 at 7:00 PM</b> at Fuller Middle School Library.</p>
45.31	Record	<p>A Motion was made by M. Grilli and seconded by C. Sisitsky to adjourn the meeting. No discussion, motion passed unanimous.</p>

Attachments: Agenda, Budget Tracking Form, Warrant No. 20, Designer Amendment No. 21, Project Schedule, 90% Construction Document Phase Meetings and Agenda Schedule, 100% Construction Document Phase Meetings and Agenda Schedule, photograph of the Perforated Stair and Guardrail Panels, 7/1/19 Technology Review Meeting Minutes, Policy on Remote Participation, 8/3/19 Neighborhood Meeting PowerPoint presentation and video, List of Prequalified Waterproofing, Damproofing and Caulking Trade Contractors for the Early Concrete and Steel Package, List of Non-Trade Contractors for the Early Concrete and Steel Package, Conservation Commission Order of Conditions

The information herein reflects the understanding reached. Please contact the author if you have any questions or are not in agreement with these Project Minutes.



## 6A.3 Designer Deliverables

### 3.1 General Requirements

#### 3.1.1 Work Plan

Please reference the attached updated Fuller Middle School Work Plan.



Fuller Middle School  
Work Plan

Phase	Responsibility	Description of Key Tasks	Deliverable	Submittal Date	Status
	McPhail	Phase 1 Environmental Report	Forward copy of report to Designer	9/10/2018	Complete
	McPhail	Geotechnical Site Evaluation	Preliminary Geotechnical Report	9/10/2018	Complete
	JLA, FPS	Final Design Program	Excel spreadsheet and architect's signature	9/10/2018	Complete
	Vanasse	Traffic Study	Traffic Study	9/10/2018	Complete
	RSE, JLA, GGD	Building Description Narratives	Architectural, Sustainable Design, MEP, Fire Protection, Structural, and Technology	9/10/2018	Complete
	JLA	LEED Scorecard	LEED Scorecard and Potential rating	9/10/2018	Complete
	JLA GGD	Utility Analysis	Narrative	9/10/2018	Complete
	JLA, FPS, SMMA	DESE Approval	Plans and Program forwarded to SMMA and WPS Working Group. WPS' Narrative describing SPED Program Spaces	9/10/2018	Complete
	JLA	Document Updates: Plans, Site Plan, Exterior Elevations, Model Images, Specifications	Plans and Specs to Miyakoda and SMMA for Cost Estimate	9/10/2018	Complete
	JLA, SMMA	Site Development Plans and Analysis	Schematic Site Plan, and Surveys	9/10/2018	Complete
	JLA	Specifications	Outline Specifications	9/10/2018	Complete
	JLA, FPS	Schematic Building Floor Plans	Overall 1/8" Building Floor Plans	9/10/2018	Complete
	JLA	Schematic Roof Plans	Overall and 1/8" Roof Plans	9/10/2018	Complete
	JLA	Schematic Exterior Elevations	Overall and 1/8" exterior Elevations	9/10/2018	Complete
	JLA	Massing Study	Images of Exterior Design	9/10/2018	Complete
	SMMA	Preliminary Project Cash Flow	MSBA Formatted Cash Flow Projections	9/10/2018	Complete
	SMMA	Project Schedule	OPM Project Schedule	9/10/2018	Complete
	Miyakoda	Cost Estimate	Uniformat Detailed Estimate 100% SD	8/24/2018	Complete
	AM Fogarty	Cost Estimate	Uniformat Detailed Estimate 100% SD	8/24/2018	Complete
	Miyakoda, SMMA	Reconcile Cost Estimate	Reconciled Cost Estimates	9/10/2018	Complete
	SMMA	Project Budget Cost	Excel Spreadsheet 3011	9/10/2018	Complete
	<b>SUBMITTALS</b>				
	SMMA	Submit Documents for DESE Review	Cover Letter, Space Summary, Plans	9/12/2018	Complete
	JLA	Submit Documents for Cost Estimates	Plans and Specifications	8/7/2018	Complete
	JLA	Submit Documents to SMMA	MSBA Formatted PS&B Submission	9/10/2018	Complete
	SMMA	Submit Documents to MSBA	Final PS&B Submittal	9/12/2018	Complete

**Project Scope and Budget**

Phase	Responsibility	Description of Key Tasks	Deliverable	Submittal Date	Status
	RSE	Geotechnical Site Evaluation	Updated Geotechnical Report	5/8/2019	Complete
	JLA	Program Comparison Analysis	Letter from Architect outlining differences from PS&B Space Summary Submittal	5/8/2019	Complete

Jonathan Levi Architects

7/25/18

Design Development Documents 100% Site Enabling Package		Phase	Responsibility	Description of Key Tasks	Deliverable	Submittal Date	Status
JLA	Program Space Summary	Program Space Summary	Space Summary Document signed by Architect	5/8/2019	Complete		
CDW	Site Related Code Analysis: Permitting and Zoning	Detailed Review of Framingham's Regulatory Requirements	5/10/2019	Complete			
SMMA	Updated Schedule	Schedule	5/8/2019	Complete			
Design Team	Design Development Documents	PDF Files	5/8/2019	Complete			
Design Team	Design Development Specification	PDF Files	5/8/2019	Complete			
Miyakoda	Design Development Cost Estimate	Detailed Cost Estimate	5/8/2019	Complete			
Miyakoda, Fogarty, Consigli	Reconcile Cost Estimate	Reconciled Estimates	5/8/2019	Complete			
SMMA	Value Engineering Report	VE Report	5/8/2019	Complete			
<b>SUBMITTALS</b>							
Design team	Design Development Documents	Drawings, Specifications, Binder	5/8/2019	Complete			
Design team	100% Site Enabling Package	Drawings & Specifications	5/8/2019	Complete			
SMMA	Submit Documents to MSBA	DD Submittal	5/10/2019	Complete			

60% Construction Documents 100% Structural Package		Phase	Responsibility	Description of Key Tasks	Deliverable	Submittal Date	Status
Howe Engineers	Site Related Code Analysis: Permitting	Detailed Review of the Regulatory Requirements	8/7/2019	Complete			
SMMA /JLA	Approval of Proprietary Items	School Committee Vote	6/5/2019	Complete			
JLA	Program Comparison Analysis	Letter from Architect outlining differences from PS&B Space Summary Submittal	8/7/2019	Complete			
JLA	Program Space Summary	Space Summary Document signed by Architect	8/7/2019	Complete			
JLA	Project Design Compliance	Letter from Architect verifying compliance of design with PS&B	8/7/2019	Complete			
SMMA	Updated Schedule	Schedule	8/7/2019	Complete			
Design Team	60% Construction Documents	PDF Files	8/7/2019	Complete			
Design Team	60% Construction Specification	PDF Files	8/7/2019	Complete			
Miyakoda	60% Cost Estimate	Detailed Cost Estimate	7/30/2019	Complete			
Miyakoda, Fogarty, Consigli	Reconcile Cost Estimate	Meeting	7/30/2019	Complete			
SMMA	Value Engineering Report	VE Report	8/2/2019	Complete			
<b>SUBMITTALS</b>							
Design team	60% Construction Documents	Drawings, Specifications, Binder	8/7/2019	Complete			
Design team	100% Structural Package	Drawings & Specifications	8/7/2019	Complete			
SMMA	Submit Documents to MSBA	60% CD Submittal	8/9/2019	Complete			

Phase	Responsibility	Description of Key Tasks	Deliverable	Submittal Date	Status
90% and 100% Construction Documents 100% Masonry Package	JLA	Program Space Summary	Space Summary Document signed and certified by Architect	10/9/2019	
	SMMA	Geotechnical Peer Review	Letter and Report from Second Peer Review	10/9/2019	
	Cx Agent	Cx Review	Review Questions and responses from design team	10/9/2019	
	JLA, GGD	Building Code and Fire Safety Review	Letter from Architect and Code Review Consultant	10/9/2019	
	JLA	Utility Certification & Board Approval	Letter from Architect stating review meetings and approvals obtained from City Departments	10/9/2019	
	JLA	Program Comparison Analysis	Letter from Architect outlining differences from 60% Space Summary Submittal	10/9/2019	
	KMA	Site and Building ADA MAAB Review	Letter of Compliance from the Accessibility Consultant. Design Team's responses to the detailed Review Document provided by Accessibility Consultant	10/9/2019	
	JLA	Testings and Permits compliance	Letter from Architect stating all testing and permits have been obtained for the project	10/9/2019	
	JLA, GGD	Compliance with Energy Code	Com CHECK 3.8.1 2009 IEC Report	10/9/2019	
	RSE	Structural Design Calculations	Structural Design Calculation Report	10/9/2019	
	JLA	90% Construction Documents	Documents available for review by design team and independent estimator	10/9/2019	
	Design Team	90% Construction Documents	Bound AutoCAD files	10/9/2019	
	Design Team	90% Construction Specification	PDF File of Specification	10/9/2019	
	JLA RSE	100% Masonry Package	Drawings & Specifications	10/9/2019	
	JLA	Interior Materials Color Board	Color Board for FPS review	10/9/2019	
	Design Team	Designer review responses to the 60% MSBA review comments	Letters of compliance from Design Team	10/9/2019	
	Miyakoda	Final Designer Cost Estimate	Cost Estimates	9/27/2019	
	Fogarty	Final OPM Cost Estimate	Cost Estimates	9/27/2019	
	SMMA	Cost Estimate Comparison Spreadsheet	Cost Estimate Comparison Spreadsheet	9/27/2019	
	Miyakoda, Fogarty, Consigli	Reconcile Cost Estimate	Meeting	9/27/2019	
JLA, SMMA	Independent Structural Peer Review	Letter of compliance to Building Code	10/9/2019		
SMMA	Value Engineering Report	VE Report	10/9/2019		
<b>SUBMITTALS</b>					
Design Team	90% Construction Documents to MSBA	Drawings & Specifications		10/11/2019	
Design Team	100% Construction Documents to MSBA	Drawings & Specifications		11/15/2019	





### 3.1.2 Basis of Design Narratives

#### *Architecture*

The new Fuller School's design builds on the District's Educational Program, first and foremost, by embodying the District's stated commitment to a 21st century STEAM, student centered approach to education, a commitment which is already been acted upon through advanced teaching and learning programs at the elementary school level in preparation for this project. STEAM compatible educational environments are achieved through the creation of student driven, problem-based, "hands-on project space" at three different scales within the proposed floor plan. These spaces are provided together with a high degree of visual and functional connectedness both in plan and in section.

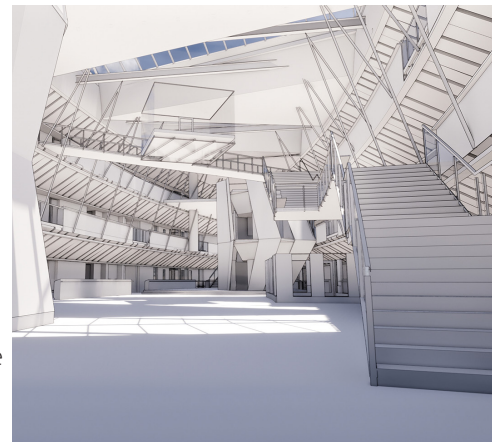




The new school will be three-stories, oriented for energy efficiency and sustainability purposes to the south and to the north. The massing utilizes a compact footprint in order to conserve site space and allow for the creation of a sloped campus open space which will unify the District's three buildings in this location into a cohesive educational grouping. The building is located on the open space which now exists as a parking lot between the existing Fuller Middle School footprint to the west Farley School to the east. This location makes it possible to eliminate temporary swing space expenses and minimize disruption to ongoing educational activities by leaving the existing school in operation during the construction phase. Once the new school is complete, the existing 196,000 gsf single story school will be demolished, providing more than 90,000 sf of additional open space than exists today.

The site is organized with vehicular movements removed entirely from the public Flagg Drive. A bus drop-off lane with sufficient queuing space for 17 buses to be parked simultaneously is located directly in front of the school and stretches to the west with a separate exit from the main parking area. Upon demolition of the existing school a new single parking area will be built sufficient in size to accommodate the needs of the school staff and visitors.

The new school floor plan is characterized by two segmented arcs of classrooms facing one another across an open three-story Learning Common atrium. Classroom clusters can be flexibly arranged within the floors or by utilizing monumental stairs, aggregating floors of cohort classrooms. At the center of each one of these cohorts will be located in medium size cohort collaboration space which is co-located with a cohort satellite station area. These medium size collaboration spaces are located on balconies overlooking the main Learning Common and relate visually to one another. Several multi-use breakout spaces are also located on balconies directly adjacent to the classrooms which they serve so as to be highly visible to one another and to the Learning Common. Each cohort cluster also includes at its center a pair of science classrooms.



The school's main entry is at the second floor level, directly adjacent to the administration suite, and leads directly to a balcony overlooking the entire array schools educational program at once. Stairs will branch off from this location either upwards or downwards for ease of communication between floors. Arriving at the lowest ground-floor level Learning Common, one will be surrounded by an array of common shared spaces for the school community including the Media Center, Cafeteria, Maker Space, Music and Art classrooms, Fabrication Lab, Gymnasium and Auditorium. All are arrayed around a single open space will serve as a food court but also as a flexible use whole community collaboration and potential assembly space.

Community use functions will be separable from classroom areas through the use of metal mesh partitions. A community entrance is located on the west side of the school, adjacent to the new parking area. The adjacent lobby joining the Gymnasium and the Auditorium will serve these event spaces for the both school and the larger community.

Please reference the attached Basis of Design Narratives:

- Sustainability/ LEED
- Fire Protection
- Plumbing System
- HVAC System
- Electrical System
- Technology System







Y	?	N	Credit	1	Integrative Process	
4	1	10	<b>Location and Transportation</b>	15		
			Credit	1	LEED for Neighborhood Development Location	
			Credit	2	Sensitive Land Protection	
			Credit	5	High Priority Site	
			Credit	4	Surrounding Density and Diverse Uses	
			Credit	1	Access to Quality Transit	
			Credit	1	Bicycle Facilities	
			Credit	1	Reduced Parking Footprint	
			Credit	1	Green Vehicles	

5	2	5	<b>Sustainable Sites</b>	12		
			Prereq	Required	Construction Activity Pollution Prevention	
			Prereq	Required	Environmental Site Assessment	
			Credit	1	Site Assessment	
			Credit	2	Site Development - Protect or Restore Habitat	
			Credit	1	Open Space	
			Credit	3	Rainwater Management	
			Credit	2	Heat Island Reduction	
			Credit	1	Light Pollution Reduction	
			Credit	1	Site Master Plan	
			Credit	1	Joint Use of Facilities	

5	0	7	<b>Water Efficiency</b>	12		
			Prereq	Required	Outdoor Water Use Reduction	
			Prereq	Required	Indoor Water Use Reduction	
			Prereq	Required	Building-Level Water Metering	
			Credit	2	Outdoor Water Use Reduction	
			Credit	7	Indoor Water Use Reduction	
			Credit	2	Cooling Tower Water Use	
			Credit	1	Water Metering	

17	8	6	<b>Energy and Atmosphere</b>	31		
			Prereq	Required	Fundamental Commissioning and Verification	
			Prereq	Required	Minimum Energy Performance	
			Prereq	Required	Building-Level Energy Metering	
			Prereq	Required	Fundamental Refrigerant Management	
			Credit	6	Enhanced Commissioning	
			Credit	16	Optimize Energy Performance	
			Credit	1	Advanced Energy Metering	
			Credit	2	Demand Response	
			Credit	3	Renewable Energy Production	
			Credit	1	Enhanced Refrigerant Management	
			Credit	2	Green Power and Carbon Offsets	

4	0	9	<b>Materials and Resources</b>	13		
			Prereq	Required	Storage and Collection of Recyclables	
			Prereq	Required	Construction and Demolition Waste Management Planning	
			Credit	5	Building Life-Cycle Impact Reduction	
			Credit	2	Building Product Disclosure and Optimization - Environmental Product Declarations	
			Credit	2	Building Product Disclosure and Optimization - Sourcing of Raw Materials	
			Credit	2	Building Product Disclosure and Optimization - Material Ingredients	
			Credit	2	Construction and Demolition Waste Management	

7	7	2	<b>Indoor Environmental Quality</b>	16		
			Prereq	Required	Minimum Indoor Air Quality Performance	
			Prereq	Required	Environmental Tobacco Smoke Control	
			Prereq	Required	Minimum Acoustic Performance	
			Credit	2	Enhanced Indoor Air Quality Strategies	
			Credit	3	Low-Emitting Materials	
			Credit	1	Construction Indoor Air Quality Management Plan	
			Credit	2	Indoor Air Quality Assessment	
			Credit	1	Thermal Comfort	
			Credit	2	Interior Lighting	
			Credit	3	Daylight	
			Credit	1	Quality Views	
			Credit	1	Acoustic Performance	

5	1	0	<b>Innovation</b>	6		
			Credit	5	Innovation	
			Credit	1	LEED Accredited Professional	

1	1	2	<b>Regional Priority</b>	4		
			Credit	1	Regional Priority: EAc2 Optimize Energy Performance (20%/8 pts)	
			Credit	1	Regional Priority: EAc5 Renewable Energy Production (5%/2 pts)	
			Credit	1	Regional Priority: LTc4 / LTc5	
			Credit	1	Regional Priority: SSC2 / MRc1	

48	20	42	<b>TOTALS</b>	110	Possible Points:	
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Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110



## **FIRE PROTECTION SYSTEMS**

### **NARRATIVE REPORT**

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

1. CODES
  - A. All work installed under Section 210000 shall comply with the MA Building Code, NFPA and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.
2. DESIGN INTENT
  - A. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Fire Protection work and all items incidental thereto, including commissioning and testing.
3. GENERAL
  - A. In accordance with the provisions of the Massachusetts Building Code, a school building of greater than 12,000s.f. must be protected with an automatic sprinkler system.
4. DESCRIPTION
  - A. The new School will be served by a new 8 inch fire service, double check valve assembly, and wet alarm valve complete with electric bell, and fire department connection meeting local thread standards.
  - B. System will be a combined standpipe/sprinkler system with control valve assemblies to limit the sprinkler area controlled to less than 52,000 s.f. as required by NFPA 13-2013.
  - C. Control valve assemblies shall consist of a supervised shutoff valve, check valve, flow switch and test connection with drain. Standpipes meeting the requirements of NFPA 14-2013 shall be provided in the egress stairwells and in the Stage area.
  - D. All areas of the building, including all finished and unfinished spaces, combustible concealed spaces, all electrical rooms and closets will be sprinklered.
  - E. All sprinkler heads will be quick response, concealed pendent in hung ceiling areas and upright in unfinished areas.
  - F. Fire department valves and cabinets will be provided on each side of the Stage in the Building.
5. BASIS OF DESIGN
  - A. The mechanical rooms, kitchen, science classrooms, and storage rooms are considered Ordinary Hazard Group 1; stage is considered Ordinary Hazard Group 2; all other areas are considered light hazard.

B. Required Design Densities:

Light Hazard Areas	0.10 GPM over 1,500 s.f. with 100 gpm hose allowance
Ordinary Hazard Group 1	0.15 GPM over 1,500 s.f. with 250 gpm hose allowance
Ordinary Hazard Group 2	0.20 GPM over 1,500 s.f. with 250 gpm hose allowance

C. Sprinkler spacing (max.):

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

D. A hydrant flow test was conducted on October 31, 2018 on Flagg Drive with the following results: 87 PSI static, 78 PSI residual, 1,048 GPM flow, 3,098 GPM flow at 20 PSI. There is adequate water to serve the project without a fire pump.

6. PIPING

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

7. FITTINGS

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

8. JOINTS

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

9. FIRE STANDPIPE EQUIPMENT

- A. Fire Department Valves shall be 2-1/2 inch valves fitted with 2-1/2 inch x 1-1/2 inch reducer, caps and chains all conforming to Local Fire Department thread standard. Valves shall be polished chrome plated and shall be mounted in a recessed cabinet.
- B. Cabinets for the Fire Department Valves shall be fully recessed, solid door, prime painted steel. Include graphic and door catch.
- C. Provide 32 inch x 32 inch access panels at floor control locations or recessed cabinets as appropriate to the wall construction.

10. SPRINKLER SYSTEM EQUIPMENT

A. Double check valve assembly (Back flow Preventer) shall be UL listed FM approved, complete with test kit and spare parts kit. The Double Check Valve Assembly shall consist



of two independent tri-link check modules within a single housing, sleeve access port, four test cocks and two drip tight shut-off valves. Tri-link checks shall be removable and serviceable, without the use of special tools. The housing shall be constructed of Schedule 40 stainless steel pipe with groove end connections. Tri-link checks shall have reversible elastomer discs and in operation shall produce drip tight closure against reverse flow caused by backpressure or backsiphonage. This Sub-contractor shall act as the Owner's agent in seeking approval from the Department of Environmental Protection or its designee.

- B. Gate valves, 2 inches and smaller shall be outside screw and yoke, bronze, rising stem, wedge disc type, threaded, conforming to MSS SP-80. Gate valve 2-1/2 inches and larger shall be iron body, bronze trim, outside screw and yoke, flanged, UL/FM listed conforming to MSS SP-70. All valves shall be UL listed for at least 175 psi working water pressure (wwp).
- C. Globe and angle valves may be used as auxiliary valves (drain valves, test valves, trim valves and valves on compressed air piping) for diameters not over 2 in. They shall be bronze, rising stem, with bronze disc, threaded, conforming to MSS SP-80 Class 150.
- D. Check valves shall be swing type except as noted. Valves 2 inches and smaller shall be bronze, regrinding type with renewable disc, screwed caps, threaded, class 150 conforming to MSS SP-80. Check valves 2-1/2 inches and greater shall be iron body, bronze trim, bolted cover, flanged, conforming to MSS SP-71, UL listed for 175 psi wwp.
- E. Wet riser check valves shall be approved vertical type for wet systems, complete with drain valve and glycerin filled pressure gauges. Valve internal components shall be replaceable without removing valve from the installed position. UL/FM Global approved.
- F. Fire Department connection shall be flush mount cast brass two way inlet body with drop clappers, 2 1/2" x 2 1/2" x 4". Polished brass plate lettered with the approved signage. Two polished brass double female snoots with rigid end NPT x pin lug hose thread swivels, plugs and chain. The connection's lettering and threads shall match Local Fire Department requirements. Confirm finish with Architect prior to ordering.
- G. Fire protection test connection shall be polished brass plate with lettering to read "TEST". Polished brass double female snoot with rigid end N.P.T. x pin lug hose thread swivel, pin lug plug and chain.
- H. Water Flow Indicators: Vane type waterflow detector, rated to 250 psig; designed for horizontal or vertical installation; have 2-SPDT circuit switches to provide isolated alarm and auxiliary contacts, 7 ampere 125 volts AC and 0.25 ampere 24 volts DC; complete with factory-set, field-adjustable retard element to prevent false signals, and tamper-proof cover which sends a signal when cover is removed.
- I. Electric Alarm: Electrically operated, red enameled gong with pressure alarm switch.
- J. Supervisory Switches: SPST, normally closed contacts, designed to signal valve in other than full open position.

## 11. SPRINKLERS

- A. All sprinklers to be used on this project shall be Quick Response type and shall be stamped with date of manufacture and temperature rating. Temperature ratings shall be determined by the location of the heads per NFPA 13-2013, section 8.3.2.5, and shall be minimum 155° F throughout except in special areas around heat producing equipment, skylights,

and attics in which case use temperature rating to conform with hazard as specified in NFPA 13-2013. Orifice diameter and K factor shall be appropriate to meet the hydraulic design criteria, the available water supply, and NFPA Standards.

- B. Furnish spare heads of each type installed located in a cabinet along with special sprinkler wrenches. The number of spares and location of cabinet shall be in complete accord with NFPA 13-2013.
- C. Sprinklers shall be manufactured by Tyco, Victaulic, Viking, or equal.
- D. Upright sprinkler heads in areas with no ceilings shall be Tyco Model "TY-FRB" Quick Response, upright natural brass finish heads. Include heavy duty sprinkler guards in all mechanical rooms, storage rooms, and gymnasium. In pool equipment area, all heads shall be stainless steel.
- E. Sidewall heads shall be Tyco Model "TY-FRB" Quick Response with white polyester head and escutcheon.
- F. Pendent wet sprinkler heads shall be Tyco Model "TY-FRB" Quick Response recessed adjustable escutcheon, white polyester finish.
- G. Concealed heads shall be Tyco Model "RFII" Quick Response concealed type, 1-1/2 inch adjustment white cover plate. In special areas, as may be noted on the Drawings, provide alternate cover plate finishes (5 custom colors)..

## PLUMBING SYSTEMS

### NARRATIVE REPORT

The following is the Plumbing system narrative, which defines the scope of work and capacities of the Plumbing system as well as the Basis of Design. The Plumbing Systems shall be designed and constructed for **LEED v4 for Schools** where indicated on this narrative.

1. CODES
  - A. All work installed under Section 220000 shall comply with the MA Building Code, MA Plumbing Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.
2. DESIGN INTENT
  - A. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Plumbing work and all items incidental thereto, including commissioning and testing.
3. GENERAL
  - A. The Plumbing Systems that will serve the project are cold water, hot water, tempered water, sanitary waste and vent system, grease waste system, special waste system, storm drain system, and natural gas.
  - B. The Building will be serviced by Municipal water and Municipal sewer system.
  - C. All Plumbing in the building will conform to Accessibility Codes and to Water Conserving sections of the Plumbing Code.
4. DRAINAGE SYSTEM
  - A. Soil, Waste, and Vent piping system is provided to connect to all fixtures and equipment. System runs from 10 feet outside building and terminates with stack vents through the roof.
  - B. A separate Grease Waste System starting with connection to an exterior concrete grease interceptor running thru the kitchen and servery area fixtures and terminating with a vent terminal through the roof. Point of use grease interceptors are to be provided at designated kitchen fixtures. The exterior grease interceptor is provided under Division 22 scope.
  - C. Storm Drainage system is provided to drain all roofs with roof drains piped through the building to a point 10 feet outside the building.

- D. Drainage system piping will be service weight cast iron piping; hub and spigot with gaskets for below grade; no hub with gaskets, bands and clamps for above grade 2 in. and larger. Waste and vent piping 1-1/2 in. and smaller will be type 'L' copper.
- E. A separate Special Waste System shall be provided starting with a connection to an exterior limestone chip acid neutralizer, running thru the building to collect science classroom fixtures and terminating with vent terminals through the roof. Special Waste and Vent piping will be Schedule 40 electric heat fused polypropylene piping, fittings and traps, flame retardant above grade and non-flame retardant below ground.

## 5. WATER SYSTEM

- A. New 4 inch domestic water service from the municipal water system will be provided. A meter and backflow preventer will be provided.
- B. Cold water distribution main is provided. Non-freeze wall hydrants with integral back flow preventers are provided along the exterior of the building.
- C. Domestic hot water heating will be provided with a combination of gas fired, high efficiency, condensing water heater (Two 400 MBH input), with separate storage tank (300 gallon). System is to be equipped with thermostatically controlled mixing devices to control water temperature to the fixtures.
- D. A pump will re-circulate hot water from the piping system. Water temperature will be 120 deg. to serve general use fixtures. A 140 deg. F hot water will be supplied to the kitchen dishwasher.
- E. Water piping will be type 'L' copper with wrought copper sweat fittings, silver solder or press-fit system. All piping will be insulated with 1 in. thick high density fiberglass.
- F. A dedicated non-potable cold and hot water system will be provided to Science Classrooms. Water system will be protected with a reduced pressure backflow preventer. Self-regulating heat tracing will be provided at lab/ hot water for temperature maintenance.
- G. Tepid (70 deg. F – 90 deg. F) water will be provided to the emergency shower/eyewash fixtures in Science Classrooms as required by code.

## 6. GAS SYSTEM

- A. Natural gas service will be provided for the building and will serve the boilers, domestic water heaters, kitchen cooking equipment, roof top equipment.
- B. Science classroom requiring gas turrets will be provided with gas with master gas control shut off valve.
- C. Gas piping will be Schedule 40 black steel pipe with threaded gas pattern malleable fittings for 2 in. and under and butt welded fittings for 2-1/2 in. and larger.

## 7. FIXTURES *LEED v4*

- A. Furnish and install all fixtures, including supports, connections, fittings, and any incidentals to make a complete installation.
- B. Fixtures shall be the manufacturer's guaranteed label trademark indicating first quality. All acid resisting enameled ware shall bear the manufacturer's symbol signifying acid resisting material.
- C. Vitreous china and acid resisting enameled fixtures, including stops, supplies and traps shall be of one manufacturer by Kohler, American Standard, or Sloan, or equal. Supports shall be Zurn, Smith, Josam, or equal. All fixtures shall be white. Faucets shall be Speakman, Chicago, or equal.
- A. Fixtures shall be as scheduled on drawings.
  - a. Water Closet: High efficiency toilet, 1.28 gallon per flush, wall hung, vitreous china, siphon jet. Manually operated 1.28 gallon per flush-flush valve.
  - b. Urinal: High efficiency 0.13 gallon per flush urinal, wall hung, vitreous china. Manually operated 0.13 gallon per flush-flush valve.
  - c. Lavatory: Wall hung/countertop ADA lavatory with 0.35 GPM metering mixing faucet programmed for 10 second run-time cycle.
  - d. Sink: ADA stainless steel countertop sink with gooseneck faucet and 0.5 GPM aerator.
  - e. Drinking Fountain: Barrier free hi-low wall mounted electric water cooler, stainless steel basin with bottle filling stations.
  - f. Janitor Sink: 24 x 24 x 10 Terrazo mop receptor Stern-Williams or equal.
  - g. Laboratory Sinks: Faucets with vacuum breakers and 0.74 GPM aerators.
  - h. Emergency Shower/Eyewash: Recessed barrier free eye wash and shower safety station with ceiling mounted exposed shower and "in wall" drop-down eye wash with drain pan.

## 8. DRAINS

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

## 9. VALVES

- A. Locate all valves so as to isolate all parts of the system. Shutoff valves 3 in. and smaller shall be ball valves, solder end or screwed, Apollo, or equal.

#### 10. INSULATION

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

#### 11. CLEANOUTS

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

#### 12. ACCESS DOORS

- A. Furnish access doors for access to all concealed parts of the plumbing system that require accessibility. Coordinate types and locations with the Architect.

#### 13. WATER HEATER

- A. Gas fired, high efficiency, condensing water heaters (800,000 BTUH input), with separate storage tank (300 gallon).

#### 14. GREASE INTERCEPTOR

- A. The kitchen Grease Waste System shall be a completely separate system beginning at the exterior grease interceptor through the kitchen and vented individually through the roof. No soil lines will be connected to the grease waste nor sanitary vents to the grease vent. Furnish and install the cast iron tees and associated piping within the grease trap including 5-foot length on the outlet. All the piping within the grease trap shall be made up with caulked and leaded joints. Install an exterior cleanout as detailed at the point where the line leaves the kitchen area. Grease trap is furnished and set in place including manhole access covers by the Plumbing Contractor.

Fuller Middle School  
Framingham, MA  
J#680 015 00.00  
L#60858/Page 1/July 31, 2019

## HVAC SYSTEMS

### NARRATIVE REPORT

The following is the HVAC Systems narrative, which defines the scope of work and capacities of the HVAC systems, as well as, the Basis of Design for the proposed Middle School.

#### 1. CODES

All work installed under Division 230000 shall comply with the Massachusetts State Building Code, IMC 2015, IECC 2015, and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

#### 2. DESIGN INTENT

The work of Division 230000 is described within the narrative report. The HVAC project scope of work shall consist of providing new HVAC equipment and systems as described here within. All new work shall consist of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Heating, Ventilating and Air Conditioning work and all items incidental thereto, including commissioning and testing.

#### 3. BASIS OF DESIGN

Project weather and Code temperature values are listed herein based on weather data values as determined from ASHRAE weather data tables and the International Energy Conservation Code.

Outside: Winter 5 deg. F, Summer 88 deg. F DB 73 deg. F WB

Inside: 70 deg. F +/- 2 deg. F for heating, 75 deg. F +/- 2 deg. F (50% +/- 5%RH) for cooling for [classroom, administration, auditorium, cafeteria and gymnasium] areas with full air conditioning. 80 deg. F +/- 2 deg. F (55% RH) for cooling for locker and kitchen areas with partial air conditioning/dehumidification ventilation. Unoccupied temperature setback will be provided at 60 deg. F (adj.) for heating and 80 deg. F. (adj.) for cooling.

Generally outside air is provided at the rate of a minimum of 15 cfm/person in all classrooms and large group spaces, and minimum of 15 cfm/person for the Auditorium, Gymnasium and Cafeteria areas. In all cases ASHRAE guide 62.1-2016 and the International Mechanical Code will be met as a minimum. All occupied areas will be designed to maintain 800 PPM carbon dioxide maximum.

The building HVAC system shall be designed as a high efficiency HVAC system that shall meet the related HVAC system requirements of LEED for Schools v4, with a minimum goal of Silver level certification.

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#### 4. SYSTEM DESCRIPTION

##### A. Central Heating Plant:

Heating for the entire building will be through the use of a high efficiency gas-fired condensing Boiler Plant.

The Boiler Plant shall be provided with (2) 4,000 MBH input boilers and (2) end suction base mounted pumps with a capacity of 790 GPM each which will be located in the ground level mechanical room. In addition to new boilers and pumps, new hot water accessories including air separators and expansion tanks shall be provided.

The Boiler Plant will supply heating hot water to heating equipment and systems located throughout the building through a two-pipe fiberglass insulated schedule 40 black steel piping system. The Boiler Plants shall supply a maximum hot water temperature of 160 deg F on a design heating day and the hot water supply water temperature will be adjusted downward based on an outside temperature reset schedule to improve the overall operating efficiency of the power plants. Primary and standby end suction base mounted pumps will be provided with variable frequency drives for variable volume flow through the water distribution system for improved energy efficiency.

Combustion air for each boiler will be directly ducted to each boiler through a galvanized ductwork distribution system. Venting from each boiler shall be through separate double wall aluminized stainless steel (AL29-4C) vent system and shall discharge approximately 12 feet above the roof level. Final venting height will be dependent on the location of building intake air locations and adjacent roofs.

##### B. Central Cooling Plant:

Chilled water cooling for the majority of the building will be through the use of a high efficiency air cooled chiller plant.

The chiller plant shall be provided with (1) high efficiency modular design oil-less magnetic compressor air cooled design chillers and (2) chilled water end suction base mounted pumps with VFD drives. The chillers will be mounted on the roof and the pumps and chilled water accessories will be located in nearby factory fabricated rooftop mechanical equipment enclosure. In addition to new boilers and pumps, new chilled water accessories including air separators, expansion tanks and buffer tank shall be provided.

The chiller plant will supply chilled water to air conditioning air handling unit equipment located throughout the building through a two-pipe fiberglass insulated schedule 40 black steel piping system. Primary and standby end suction base mounted pumps will be provided with variable frequency drives for variable volume flow through the water distribution system for improved energy efficiency.

The chiller plant shall be provided with (1) 340 ton chiller with (4) 85 ton modules and (2) chilled water end suction base mounted pumps with a capacity of approximately 800 GPM each.



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- C. Classroom Heating and Ventilation (General Classrooms, including SPED, Art, Music, Maker Space, Fab Lab, Tech, Learning Commons/Cafeteria, Administration and Media Center areas):

Rooftop air handling units, with roof penthouse service enclosure, supply and return fan with VFDs, static plate type energy recovery section, hot water heating section with modulating capacity control, chilled water cooling coil with modulating capacity control, static plate reheat section, MERV 13 filtration, variable air volume and carbon dioxide controls which will reduce outside air as allowed maintaining a maximum of 800 PPM and will be provided to serve a full air conditioning displacement ventilation system. Supply air will be provided to the space through a galvanized steel supply duct distribution system and shall be connected to VAV (variable air volume) terminal boxes and wall mounted displacement ventilation diffusers located within the classrooms. Return air will be drawn back to the units by ceiling return air registers located within the classroom and will be routed back to the rooftop unit by a galvanized sheetmetal return air ductwork distribution system. Supplemental hot water radiation heating will be provided along exterior walls.

Classrooms with Displacement Ventilation and Full Air Conditioning:

The classroom space temperature would be controlled to 75 deg. F. +/- 2 deg F, based on a design cooling day of 88 deg F db/73 deg f. wb.

The following rooftop air handling equipment will be required to serve the Classroom areas to provide full air conditioning:

Four (4) air handling units with a capacity of 22,000 CFM (76 tons cooling, 1,050 MBH heating)

- D. Gymnasium:

The Gymnasium will be served by a rooftop air handling unit, with roof penthouse service enclosure, supply and return fan with VFDs, static plate type energy recovery section, hot water heating section with modulating capacity control, chilled water cooling coil, static plate reheat section, MERV 13 filtration, and carbon dioxide controls which will reduce outside air as allowed maintaining a maximum of 800 PPM and will be provided to serve a full air conditioning overhead supply distribution system. Supply air will be provided to the space through a combination galvanized steel and Fabric supply duct distribution system. The overhead fabric ductwork shall have integral supply air diffusers. As levels of carbon dioxide drop, generally relating to a reduction in population, the variable frequency drive located in the rooftop unit will modulate to reduce air flow and ventilation while always maintaining a maximum of 800 ppm. Return air will be drawn back to the unit by perforated ductwork return air registers located within the Gymnasium and will be routed back to the rooftop unit by a galvanized sheetmetal return air ductwork distribution system. Supplemental hot water radiation heating will be provided along exterior walls.

The Gymnasium will be served by (1) one rooftop air handling unit that will have a capacity of 15,000 CFM (48 Tons Cooling, 700 MBH Heating).

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E. Locker Rooms and PE/Health Offices:

The Locker Rooms and adjacent office areas will be provided with new roof-mounted air handling units, of the 100% outside air design with static plate energy recovery section. The unit will be approximately 2,000 CFM and will include a supply and exhaust fan with VFDs, 125 MBH hot water heating section with modulating capacity control, 9-ton chilled water cooling for dehumidification, static plate type energy recovery and reheat sections and MERV 13 filtration.

Supply air ventilation will be provided to each space through new galvanized supply duct which will travel throughout the area to a series of ceiling mounted supply registers. New exhaust air ductwork and air distribution devices shall be installed and shall be routed from the rooms to the new air handling units.

F. Auditorium and Stage:

The Auditorium and Stage will be provided with a new roof-mounted air handling unit, with roof penthouse service enclosure, of the recirculation design capable of providing 100% outside air variable volume fully air conditioned overhead air distribution to the Auditorium and Stage areas. The Auditorium unit will be approximately 12,000 CFM and will include supply and return fans with VFDs, 715 MBH hot water heating section with modulating capacity control, 52 ton cooling coil with modulating capacity control, static plate energy recovery and reheat sections, and MERV 13 filtration.

Supply air ventilation to the Auditorium will be provided to the space through a combination galvanized steel and Fabric supply duct distribution system. The overhead fabric ductwork shall have integral supply air diffusers. In addition, carbon dioxide controls will be installed which will monitor the overall level of carbon dioxide at a threshold level of 800 ppm. As levels drop generally relating to a reduction in population, the air handling unit outside air damper will modulate to reduce air flow and ventilation while always maintaining a maximum of 800 ppm. Return air will be drawn back to the unit by ductwork with return air registers located at lower levels within the space. Supplemental hot water radiation heating will be provided along exterior walls.

G. Administration Area, Guidance Offices and adjacent Lobby/Circulation areas

Spatial heating and air-conditioning for the Administration area and Guidance offices will be served by variable volume air system with perimeter radiant heating panels. The system will be of a recirculation design with CO2 demand ventilation capable of providing 100% outside air (economizer) and variable air volume operation full air conditioning displacement ventilation air distribution.

These areas shall be served by the classroom rooftop air handling units. Supply air ventilation will be provided to each space that will satisfy both building code requirements based on population and spatial heating and air-conditioning for these zones will be provided by a full air conditioning displacement air ventilation system with CO2 demand ventilation controls. Supplemental hot water radiation heating will be provided along exterior walls.

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H. Kitchen:

The Kitchen areas shall be provided with a new Kitchen exhaust air fan and make-up air rooftop unit with hot water heating. The Kitchen will be heated by a roof mounted heating and ventilation make-up air handling unit with hot water heating and chilled water dehumidification (partial cooling).

A variable volume Kitchen exhaust hood control system consisting of Kitchen exhaust stack temperature and smoke density sensors, supply and exhaust fan variable speed drives, and associated controller will be provided by the Kitchen Equipment Vendor. This system installation shall be field installed and coordinated with the ATC and Electrical Contractors.

I. Lobby, Corridor, and Entry Way Heating:

New hot water convectors, cabinet unit heaters and fin tube radiation heating equipment shall be installed to provide heating to these areas. Corridors shall be ventilated from adjacent air handling unit systems.

J. Custodial Support / Mechanical Room / Adjacent Storage Areas:

Custodial support areas will be heated and ventilated by the classroom rooftop air handling units. Storage areas will be heated by hot water radiation heating equipment. Horizontal type unit heaters will heat areas adjacent to the loading dock. All custodial closets will be exhausted by exhaust air fan systems.

K. Utility Areas:

Utility areas will be provided with exhaust air fan systems for ventilation, and will typically be heated with horizontal type ceiling suspended unit heaters.

The Main Electric Rooms and IDF Rooms will be air conditioned by high efficiency ductless AC cooling units.

L. Atrium Smoke Exhaust System

A smoke exhaust and control evacuation system will be provided for the atrium. The system, including all equipment and control components, shall be interlocked to the building fire alarm system and shall be powered by emergency power. The system shall consist of roof mounted smoke exhaust duty rated fans, ductwork, dampers and associated controls. The system shall be designed to purge smoke exhaust from the top of the Atrium. Make-up air shall be provided at the lower first and second floor levels through the use of operable doors, louvers, and/or windows with automatic operators that shall also be connected to the smoke control system.

The Atrium smoke control system design shall be modeled and reviewed by a third-party consultant. As part of the third party's design review CFD and fire dynamic modeling shall be performed to determine the proper smoke exhaust system equipment sizing. After the system is installed, the smoke control system operation shall be tested and verified by a third-party consultant to ensure proper system operation.

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All new HVAC systems shall be tested, adjusted, balanced and commissioned as part of the project scope.

N. Automatic Temperature Controls – Building Energy Management System:

A new DDC (direct digital control) automatic temperature control (ATC) and building energy management (BEMS) system shall be installed to control and monitor building HVAC systems. The building lighting control system shall also be integrated into the new building energy management system. Energy metering shall be installed to monitor the energy usage of building HVAC systems and utilities (fuel, gas, water). A building energy dashboard system and kiosk shall be provided to display building energy and water usage. The new building energy management system shall be a BACnet open protocol system with Tridium Niagara JACE front end controller.

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## ELECTRICAL SYSTEMS

### NARRATIVE REPORT

The following is the Electrical Systems narrative, which defines the scope of work and capacities of the Power and Lighting systems, as well as, the Basis of Design. The Electrical systems shall be designed and constructed for **LEED v4** where indicated on this narrative. This project shall conform to LEED Silver rating.

#### 1. CODES

All work installed under Section 260000 shall comply with the International Building Code (IBC) as amended by Massachusetts and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

#### 2. DESIGN INTENT

The work of Section 260000 is indicated in this narrative report. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Electrical work and all items incidental thereto, including commissioning and testing.

#### 3. SEQUENCE OF OPERATIONS AND INTERACTIONS

- A. Classroom and Corridor lighting will be controlled via “addressable relays”, which is achieved through programming networked controls. The control of the relays will be by automatic means, such as an occupancy sensor in each classroom. The system will have a BacNet gateway and will be interfaced with the DDC control system for schedule functions. The controllability shall be in conformance with associated LEED credit in indoor environmental quality.
- B. Automatic control of receptacles based on occupancy will be provided for at least 50% of the receptacles. Installed in private offices, open offices, and computer classrooms. Controlled receptacles will be marked per NEC 406.3 (E).
- C. Exterior lighting will be controlled by photocell “ON” and “scheduled” for “OFF” operation. The parking area lighting will be controlled by “zones” with dimmable capability.
- D. Emergency and Exit lighting will be run through life safety panels to be “ON” during normal power conditions, as well as, power outage conditions. The emergency lighting system will have time control so that lights are “ON” only when building is occupied.

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#### 4. DESCRIPTION OF THE SYSTEMS

##### A. Electrical Distribution System:

1. Service ratings for the building are designed for a connected load of 10 watts/S.F. The service capacity will be sized for 2,500 Amperes with a 100% rated main breaker. The main buss will be sized at 3,000 Amperes and will have an available space provision at the end of the gear to accommodate a future grid connected photovoltaic array. The switchboard will be furnished with a service entrance transient voltage surge protection device (SPD) rated at 240 kA and digital metering unit to monitor voltage, current, power factor, demand KW and with a data communication port for interface with BMS. Main switchboards short circuit rating with a data communication port for interface with BMS. Main switchboards short circuit rating will be coordinated with the Utility Company but it is estimated to be 65 KAIC.

##### B. Interior Lighting System:

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

In general, lighting power density will be 30 percent less than IECC 2015. The power density reduction relates to **LEED v4 for Schools**.

2. Lighting levels will be approximately 30 foot candles in classrooms and offices. The daylight dimming footcandle level will be in compliance with **LEED v4 for Schools**.
3. Gymnasium lighting will be comprised of indirect LED fixtures with dimming drivers. The fixtures will be provided with protective wire guards. The light level will be designed for approximately 50 foot candles.

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

4. Corridor lighting will be comprised of linear indirect lighting using LED light source. The corridor light level will be designed for approximately 15 foot candles. Corridor lighting will be on a schedule through the DDC system control and only "on" during occupied hours. The corridor lighting will have two level control.
5. Auditorium lighting will be cove pendant LED fixtures with DMX dimming drivers. The light levels will be designed for approximately 20 foot candles.
6. Cafeteria lighting will consist of cove mounted LED linear fixtures with dimming drivers.

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7. Kitchen and Servery lighting will consist of recessed 2 ft. x 2 ft. lensed gasketed LED panels. Light levels will be approximately 50 foot candles.
8. Library lighting will consist of indirect LED fixtures and dimming drivers. Light levels will be approximately 30 foot candles.
9. Each area will be locally switched and designed for multi-level controls. Each classroom, office space and toilet rooms will have an occupancy sensor to turn lights off when unoccupied. Daylight sensors will be installed in each room where natural light is available for dimming of light fixtures. Corridors will have occupancy sensors for shutdown of lighting, similar to classrooms.
10. The entire school will be controlled with an automatic lighting control system using the DDC control system for schedule programming of lights.

C. Emergency Lighting System:

1. An exterior ground mounted 300 kW natural gas fueled emergency generator with sound attenuated housing will be provided. Light fixtures and LED exit signs will be installed to serve all egress areas such as corridors, intervening spaces, toilets, stairs and exit discharge exterior doors. The administration area lighting will be connected to the emergency generator.
2. The generator will be sized to include life safety systems, legally required systems (smoke evacuation) and optional standby systems including boilers and circulating pumps, communications systems and kitchen refrigeration.
3. Refer to the attached Generator Load Breakdown Dated April 30, 2019.

D. Site Lighting System:

1. Fixtures for area lighting will be pole mounted cut-off 'LED' luminaries in the parking area and roadways. The exterior lighting will be connected to the automatic lighting control system for photocell on and timed off operation. The site lighting fixtures will be dark sky compliant. The illumination level is 1.0 fc for parking areas.
2. Building perimeter fixtures will be wall mounted cut-off over exterior doors for exit discharge.

E. Wiring Devices:

1. Each classroom will have a minimum of (2) duplex receptacles per teaching wall and (2) double duplex receptacles on dedicated circuits at classroom computer workstations. The teacher's workstation will have a double duplex receptacle also on a dedicated circuit.
2. Office areas will generally have (1) duplex outlet per wall. At each workstation a double duplex receptacle will be provided.
3. Corridors will have a cleaning receptacle at approximately 25 foot intervals.

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4. Exterior weatherproof receptacles will be installed at exterior doors. The outlets will automatically be switched off from schedule.
  5. A system of computer grade panelboards with double neutrals and transient voltage surge suppressors will be provided for receptacle circuits.
- F. Fire/Mass Notification System:
1. A fire/mass notification system and detection system will be provided with 60 battery back-up. The system will be of the addressable type where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms. The notification system will be in conformance with NFPA 72 Chapter 24 emergency communications systems.
  2. Smoke detectors will be provided in open areas, corridors, stairwells and other egress ways.
  3. The sprinkler system will be supervised for water flow and tampering with valves.
  4. Speaker/strobes will be provided in egress ways, classrooms, assembly spaces, open areas and other large spaces. Strobe only units will be provided in single toilets and conference rooms.
  5. Manual pull stations will be provided at exit discharge doors.
  6. The system will be remotely connected to automatically report alarms to fire department via an approved method by the fire department.
- G. Addressable Dual Speaker/Strobe Units for Fire and Mass Notification application:
1. One-way Tone/Voice Communication:
    - a. The evacuation alarm and alert signals shall be capable of being initiated automatically from the fire alarm control panel (FACP) and transmitted to any speaker circuit, selected speaker circuits or all speaker circuits.
    - b. The alarm signal, alert signal and live and pre-recorded voice announcements shall be capable of manual transmission from the FACP to any speaker circuit, selected speaker circuits or all speaker circuits by manual selection of the associated speaker circuit control switches.
    - c. Live voice announcements, via the hand-held microphone or patched in external source, by use of speaker control switches, shall take priority over all previously activated alarm inputs. In addition to NFPA 72 requirements, the system shall be capable of priority live voice announcements over subsequent alarm conditions. In no case shall subsequent alarms disrupt emergency live voice announcements. Mass notification activation is the only condition allowed to override the fire alarm event.



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- d. Addressable Visual Unit (Xenon Strobe) and Visual/Fire/MNS unit:
    - 1) Combination white/amber strobe/MNS units - Provide Truealert Synchronized white strobe (fire)/yellow strobe (MNS event) all in one unit. Unit shall be red with "FIRE" in white lettering. Yellow strobe shall include "ALERT" in white lettering.
    - 2) Provide candela rating indicated on drawings and in accordance with NFPA requirements.
    - 3) Adjacent to all combination visual units shown on drawings provide an addressable speaker
    - 4) Systems that require separate wiring and control modules to support the specified functionality shall be provided at no additional cost.
  - 2. Addressable Textual Notification Appliance (MNS): Textual Notification Appliance is to operate on a compatible Signaling Line Circuit (SLC) and is to provide a high visibility, multi-color LED text message display.
- H. Uninterruptible Power Supply (UPS):
- 1. Two (2) 24 kW, three (3) phase centralized UPS systems will be provided with 8-minute battery back-up.
  - 2. The system will provide conditioned power to sensitive electronic loads, telecommunication systems, bridge over power interruptions of short duration and allow an orderly shutdown of servers, communication systems, etc. during a prolonged power outage.
  - 3. The UPS systems will also be connected to the stand by generator.
- I. Lightning Protection System:
- 1. A system of lightning protection devices will be provided.
  - 2. The lightning protection equipment will include air terminals, conductors, conduits, fasteners, connectors, ground rods, etc.
  - 3. The facility will be issued a UL Master Label Certificate.
- J. Renewable Energy System Provisions:
- 1. The base project will include:
    - a. Electrical provisions will be made for a roof mounted renewable energy system for a grid connected photovoltaic PV system intended to reduce the facilities demand for power.

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K. Two-way Communication System:

1. A Two-Way Communications System will be provided at the elevator lobbies that do not have grade access. Area of rescue assistance call boxes will be provided at Elevator Lobbies with no grade access. The call boxes connect to a main panel located adjacent to the Fire Alarm annunciator panel.

L. Distributed Antennae System (DAS):

1. A public safety radio distributed antenna system (DAS) which consists of bi-directional amplifiers (BDA), donor antennas, coverage antennas, coax cable, coax connectors, splitters, combiners and couplers. These devices will be used as part of a system for in-building public safety 2-way radio system communication.

M. Closed-Circuit TV System(CCTV):

1. A Closed-Circuit TV system will consist of computer servers with image software, computer monitors and IP based closed circuit TV cameras. The head end server will be located in the head end (MDF) room and will be rack mounted. The system can be accessed from any PC within the facility or externally via an IP address. Each camera can be viewed independently. The network video recorders (SAN) will record all cameras and store this information for 45 days at 30 images per second (virtual real time).
2. The location of the cameras is generally in corridors and exterior building perimeter. The exterior cameras are 360 degree multi-sensor type.
3. The system will fully integrate with the access control system to allow viewing of events from a single alarm viewer. Camera images and recorded video will be linked to the access system to allow retrieval of video that is associated with an event.

N. Intrusion System:

1. An intrusion system will consist of security panel, keypads, motion detectors and door contacts. The system is addressable which means that each device will be identified when an alarm occurs. The system is designed so that each perimeter classroom with grade access will have dual tech sensors along the exterior wall and corridors, door contacts at each exterior door.
2. The system can be partitioned into several zones. Therefore, it is possible to use the Gym area while the remainder of the school remains alarmed.
3. The system will include a digital transmitter to summons the local police department in the event of an alarm condition
4. The intrusion system will be connected to the automated lighting control system to automatically turn on lighting upon an alarm.

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O. Card Access System:

1. A card access system includes a card access controller, door controllers and proximity readers/keypads. Proximity readers will be located at various locations. Each proximity reader will have a distinctive code to identify the user and a log will be kept in memory. The log within the panel can be accessed through a computer.
2. The alarm condition will also initiate real time recording on the integrated CCTV System. The system may be programmed with graphic maps allowing the end-user to quickly identify alarm conditions and lock/unlock doors.
3. The system is modular and may be easily expanded to accommodate any additional devices.

5. TESTING REQUIREMENTS

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

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

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

6. OPERATION MANUALS AND MAINTENANCE MANUALS

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

7. RECORD DRAWINGS AND CONTROL DOCUMENTS

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

8. COMMISSIONING

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

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9. SITE UTILITIES

The Electric, Telephone and Cable TV utilities will be underground for each system provided. Existing town network services shall be maintained.

M#66209r  
J#680 015 00.00

DATE: April 26, 2019, *Updated April 30, 2019*

MEMO

TO: Elizabeth Bugbee, AIA  
Jonathan Levi Architects.

FROM: David M. Pereira



PROJECT: Fuller Middle School  
Framingham, MA

SUBJECT: Generator Load Breakdown

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Please be advised of the following:

The generator will be located on the exterior of the building and will be provided with a 10' emissions stack mounted on top of housing and supported from all four corners with Aircraft cable.

A 300kW natural gas fired generator will allow the facility to function as a Warm-up Shelter within the Student Commons during loss of normal power. Kitchen equipment necessary for warming food will be on generator power. (the use of the range and hood is not included). The system will be designed to lock out ATS-OS (optional stand-by loads) which are the loads listed in items B and C in the below load breakdown list. ATS-OS will be locked out when the smoke exhaust fans for the Atrium are initiated. This is done to avoid an oversized generator as when the smoke exhaust fans run the school is required to be evacuated.

The loads will include all required life safety equipment, legally required equipment as well as, optional standby loads and Warm-Up Shelter loads as listed below.

Emergency Generator Load Breakdown List

Load Breakdown for Life Safety Equipment:

- A. All Exit Signs and Emergency Lighting in the areas listed below are fed by Life Safety Emergency Power:
1. Corridors
  2. Electrical Rooms
  3. Gymnasium & Locker Rooms
  4. Cafeteria Learning Commons
  5. Media Center
  6. Lobbies
  7. Central Administration Area
  8. Custodian Workshop/Office
  9. Domestic Water Room
  10. Health Suite/Nurses Office
  11. Toilets
  12. Auditorium & Stage
  13. Data Rooms "Head End Room & IDF Closets
  14. Kitchen & Servery
  15. Exterior Building mounted lights over doors required for egress lighting
  16. Pole mounted lights for parking areas used during warm-up shelter occupancy.

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17. Where required by code (egress areas)

Load Breakdown for Optional Standby Equipment:

- B. Equipment listed below is fed by Optional Standby Power:
1. Door Access Controls, Security System, CCTV
  2. Strategically located receptacles in the following areas. These receptacles will be RED in color:
    - a. Central Administration
    - b. Electric Rooms and Emergency Electric Rooms
    - c. Mechanical Rooms
  3. Heating and Ventilation systems:
    - a. Boilers, Water Pumps
    - b. Building Management System Headend
    - c. Cooling unit serving Head End room & IDF rooms
    - d. Unit heater serving water service room.
  4. Equipment within the Head End and IDF rooms including:
    - a. Paging/Intercom System
    - b. Telephone System
    - c. Network electronics
    - d. Servers
    - e. Telephone system
    - f. Clock system
  5. Fire alarm system (system also has full battery back-up 15 minutes of alarm, 60 hours standby)
  6. Elevator
  7. Refrigeration Equipment
- C. Warm-up Shelter Loads:
1. Heating and ventilation systems:
    - a. One Rooftop unit serving student commons to provide ventilation and heat to Student Commons.
  2. Kitchen equipment necessary to warm food (excluding range and hood).
  3. Strategically located receptacles in the following areas. These receptacles will be RED in color:
    - a. Student Commons
    - b. Kitchen/Servery

Load Breakdown for Legally Required Standby Power:

- D. Equipment listed below is fed by legally required standby power:
1. Atrium smoke exhaust system.

DMP:jfm

Enc.

Cc: Carlos G. DeSousa, P.E., Garcia, Galuska & DeSousa, Inc.  
Christopher M. Garcia, P.E., Garcia, Galuska & DeSousa, Inc.  
Jose M. Carreiro, Garcia, Galuska & DeSousa, Inc.

**Generator Sizing Report**



**GARCIA • GALUSKA • DESOUSA**  
Consulting Engineers, Inc.

Project information

Project name: Fuller Middle School  
 Customer's name: Jonathan Levi Architects  
 Customer contact: Elizabeth Bugbee

Site requirements

Voltage:	277/480	Application:	Schools
Phase:	3	Emissions Requirement:	Stationary emergency (US EPA)
Frequency:	60Hz	Altitude:	180 Feet
Alt. Temp. Rise Duty:	130°C Standby	Max. Ambient Temp.:	82 Degrees F
Qty of Gensets:	1	Min. Genset Loading :	25 %
Fuel type:	Natural gas	Max. Genset Loading :	100 %
Country :	United States		

Site load requirements summary

Running kW:	269.94	Max. Starting kW:	100.50 in step 2
Running kVA:	307.37	Max. Starting kVA:	130.84 in step 2
Running P.F.:	0.88		

Generator selection

Genset Model:	300REZXB	Alternator:	4M4019	Rated kW :	300.00
Engine:	Doosan 18.3L	Alternator Leads:	12	Site Rated kW :	298.50
Emission level:	EPA Certified	Alt. Starting kVA at 35% V dip:	1,730.00	UL 2200 Certified	
BHP:	530.00	Cal Alt Temp rise with site loads:	80C		
Displacement:	1,115.00	Excitation System :	PMG		
RPM:	1800				

Generator Performance Summary

Voltage Dip Limit:	30.00 %	Calculated Voltage Dip:	4.36 %
Frequency Dip Limit:	10.00 %	Calculated Frequency Dip:	4.19 %
Harmonic Distortion Limit:	10.00 %	Calculated Harmonic Distortion:	7.72 %
		Calculated Genset % Loaded:	90.43 %

Report prepared by: david pereira

**TOTAL SYSTEM INTEGRATION**  
 GENERATORS | TRANSFER SWITCHES | SWITCHGEAR | CONTROLS

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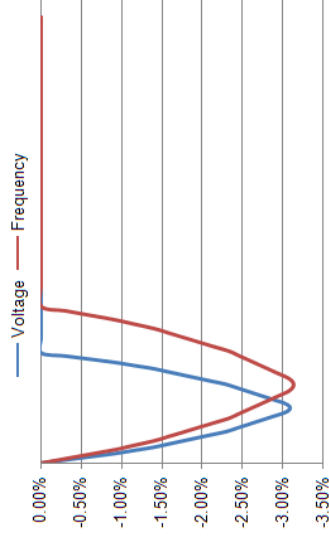
Software version: 1.0029.5.39

Tuesday, April 30, 2019

Model : 300REZXB, Alternator : 4M4019

Load Profile

Step # 1	Qty	Run			Start			Volt Dip %	Freq Dip %	Volt. Dist. %
		kW	kVA	PF	kW	kVA	PF			
Lighting Life Safety Lighting Evenly distributed LED Filtered Ballast	1	45.00	56.25	0.80	45.00	56.25	0.80			
Misc. Non-Linear Load Data Equipment 3 Phase IGBT	1	14.40	16.00	0.90	24.00	26.67	0.90			
Misc. Linear Load Fire alarm control panel 3 Phase	1	1.20	1.20	1.00	1.20	1.20	1.00			
Misc. Linear Load Hot food well 3 Phase Load Turns On/Off	1	4.00	4.00	1.00	4.00	4.00	1.00			
Misc. Linear Load Hot food well 3 Phase Load Turns On/Off	1	4.00	4.00	1.00	4.00	4.00	1.00			
Misc. Linear Load Disposer 3 Phase Load Turns On/Off	1	2.45	2.45	1.00	2.45	2.45	1.00			
<b>Step Total</b>		71.05	81.89	0.87	80.65	92.54	0.87	3.08	3.13	2.18
<b>Cum. Total</b>		71.05	81.89	0.87						



Report prepared by: david pereira

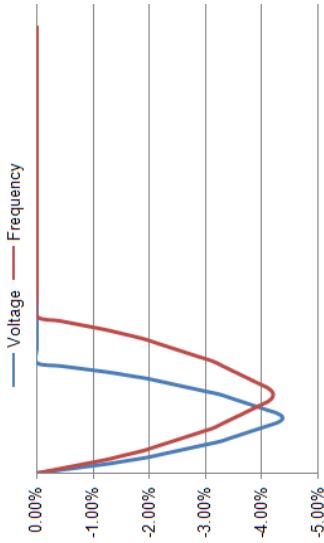
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Step # 2	Qty	Run			Start	Volt Dip %	Freq Dip %	Volt. Dist. %
		kW	kVA	PF				
Lighting Additional shelter lighting Evenly distributed LED Filtered Ballast	1	50.00	62.50	0.80	50.00	0.80		
Air Conditioning DCUC-6 Phase B-C solid state current limit	1	1.38	1.38	1.00	2.62	1.00	0.63	
Air Conditioning DCUC-5 Phase A-B solid state current limit	1	1.38	1.38	1.00	2.62	1.00	0.63	
Air Conditioning DCUC-4 Phase A-C autotransformer w 65	1	1.38	1.38	1.00	3.82	1.00	0.63	
Air Conditioning DCUC-3 Phase A-C solid state current limit	1	1.38	1.38	1.00	2.62	1.00	0.63	
Air Conditioning DCUC-1 Phase A-B solid state current limit	1	3.69	3.69	1.00	6.09	1.00	0.55	
Office Equipment Office equipment 3 Phase	1	4.50	5.63	0.80	4.50	0.80	0.80	
Air Conditioning Walk in cooler 3 Phase soft start with ramp Load Turns On/Off	1	3.33	4.50	0.74	1.25	0.74	0.58	
Air Conditioning Walk in freezer 3 Phase soft start with ramp Load Turns On/Off	1	5.40	7.21	0.75	1.98	0.75	0.55	



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Tuesday, April 30, 2019

Step # 2	Qty	Run		Start		Volt Dip %	Freq Dip %	Volt. Dist. %
		kW	kVA	PF	kW			
Air Conditioning Reach in refrigerator Phase A-N solid state current limit Load Turns On/Off	1	0.67	0.98	0.68	0.67	0.98	0.68	
Office Equipment kitchen office and POS 3 Phase	1	4.50	5.63	0.80	4.50	5.63	0.80	
Air Conditioning Milk coolers 3 Phase wye delta closed Load Turns On/Off	2	3.48	4.90	0.71	0.99	1.62	0.61	
Motor P-1 20.00 HP 3 Phase Motor code : G Loaded NEMA Design VFD Load Turns On/Off	1	18.84	20.93	0.90	18.84	20.93	0.90	
<b>Step Total</b>		99.95	119.42	0.84	100.50	130.84	0.77	5.60
<b>Cum.Total</b>		171.00	201.23	0.85				

Report prepared by: david pereira

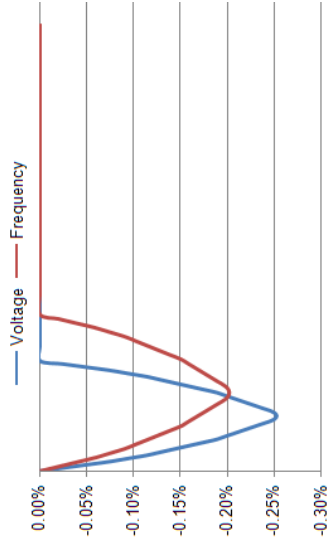
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Tuesday, April 30, 2019

Step # 3	Qty	Run			Start	Volt Dip %	Freq Dip %	Volt. Dist. %
		kW	kVA	PF				
Misc. Linear Load Boiler-3 3 Phase Load Turns On/Off	1	2.34	2.34	1.00	2.34			
Misc. Linear Load Boiler-2 3 Phase Load Turns On/Off	1	2.34	2.34	1.00	2.34			
Air Conditioning DCUc-7 Phase A-C solid state current limit	1	1.38	1.38	1.00	2.62	4.15	0.63	
<b>Step Total</b>		6.07	6.07	1.00	7.30	7.98	0.91	5.60
<b>Cum.Total</b>		177.07	206.41	0.86				



Report prepared by: david pereira

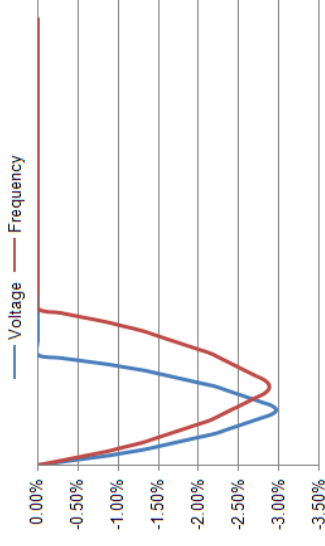
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Tuesday, April 30, 2019

Step # 4	Qty	Run			Start			Volt Dip %	Freq Dip %	Volt. Dist. %
		kW	kVA	PF	kW	kVA	PF			
Motor RTU-1 supply air 25.00 HP 3 Phase Motor code : G Loaded NEMA Design VFD	2	46.83	52.03	0.90	46.83	52.03	0.90			
Motor RTU-1 return air 15.00 HP 3 Phase Motor code : G Loaded NEMA Design VFD	2	28.75	31.94	0.90	28.75	31.94	0.90			
<b>Step Total</b>		75.58	83.97	0.90	75.58	83.97	0.90	2.96	2.87	7.72
<b>Cum. Total</b>		252.65	290.15	0.87						



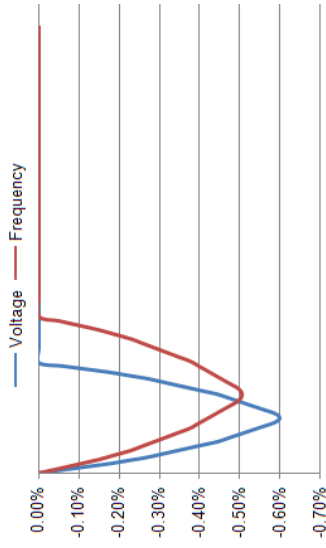
Report prepared by: david pereira

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Step #	Qty	Run			Start			Volt Dip %	Freq Dip %	Volt. Dist. %
		kW	kVA	PF	kW	kVA	PF			
Misc. Linear Load Kitchen equipment 3 Phase Load Turns On/Off	4	5.76	7.21	0.80	5.76	7.21	0.80			
Misc. Linear Load convection ovens 3 Phase Load Turns On/Off	4	11.53	11.53	1.00	11.53	11.53	1.00			
<b>Step Total</b>		17.29	17.82	0.97	17.29	17.82	0.97	0.60	0.50	7.72
<b>Cum. Total</b>		269.94	307.37	0.88						



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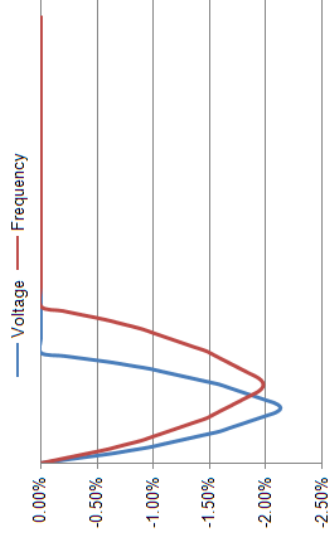
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Tuesday, April 30, 2019

Loads Turning OFF and ON	Qty	Run		Start			Volt Dip %	Freq Dip %	Volt. Dist. %
		kW	kVA	kW	kVA	PF			
Misc. Linear Load Boiler-3 3 Phase Load Turns On/Off	1	2.34	2.34	2.34	2.34	1.00			
Misc. Linear Load Boiler-2 3 Phase Load Turns On/Off	1	2.34	2.34	2.34	2.34	1.00			
Air Conditioning Walk in cooler 3 Phase soft start with ramp Load Turns On/Off	1	3.33	4.50	1.25	2.16	0.74			0.58
Air Conditioning Walk in freezer 3 Phase soft start with ramp Load Turns On/Off	1	5.40	7.21	1.98	3.60	0.75			0.55
Misc. Linear Load Kitchen equipment 3 Phase Load Turns On/Off	4	5.76	7.21	5.76	7.21	0.80			0.80
Misc. Linear Load convection ovens 3 Phase Load Turns On/Off	4	11.53	11.53	11.53	11.53	1.00			1.00
Air Conditioning Reach in refrigerator Phase A-N solid state current limit Load Turns On/Off	1	0.67	0.98	0.67	0.98	0.68			0.68
Misc. Linear Load Hot food well 3 Phase Load Turns On/Off	1	4.00	4.00	4.00	4.00	1.00			1.00



Report prepared by: david pereira

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GENERATORS | TRANSFER SWITCHES | SWITCHGEAR | CONTROLS

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Loads Turning OFF and ON	Qty	Run			Start			Volt Dip %	Freq Dip %	Volt. Dist. %
		kW	kVA	PF	kW	kVA	PF			
Misc. Linear Load Hot food well 3 Phase Load Turns On/Off	1	4.00	4.00	1.00	4.00	4.00	1.00			
Air Conditioning Milk coolers 3 Phase weye delta closed Load Turns On/Off	2	3.48	4.90	0.71	1.62	0.99	0.61			
Misc. Linear Load Disposer 3 Phase Load Turns On/Off	1	2.45	2.45	1.00	2.45	2.45	1.00			
Motor P-1 20.00 HP 3 Phase Motor code : G Loaded NEMA Design VFD Load Turns On/Off	1	18.84	20.93	0.90	20.93	18.84	0.90			
<b>Step Total</b>		64.15	69.00	0.93	59.68	56.15	0.94	2.12	1.97	
<b>Cum.Total</b>		269.94	307.37	0.88						
<b>Grand Total</b>		269.94	307.37	0.88				4.36	4.19	7.72

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Tuesday, April 30, 2019

**Generator Cut Sheet**

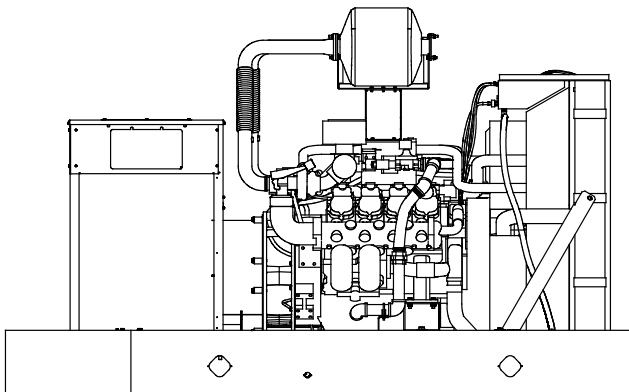




**EPA-Certified for Stationary  
Emergency Applications**

## Ratings Range

		60 Hz
Standby:	kW	230- 300
	kVA	230- 375



## Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all generator set systems and components. Two- and five-year extended limited warranties are also available.
- Alternator features:
  - The unique Fast-Response® II excitation system delivers excellent voltage response and short-circuit capability using a permanent magnet (PM)-excited alternator.
  - The brushless, rotating-field alternator has broadrange reconnectability.

## Generator Set Ratings

Alternator	Voltage	Ph	Hz	Rich-Burn Natural Gas 130°C Rise Standby Rating	
				kW/kVA	Amps
4UA13	120/208	3	60	300/375	1041
4UA13	127/220	3	60	300/375	985
4UA13	120/240	1	60	230/230	959
4UA13	120/240	3	60	300/375	903
4UA13	139/240	3	60	300/375	903
4UA13	220/380	3	60	280/350	532
4UA13	240/416	3	60	300/375	521
4UA13	277/480	3	60	300/375	452
4UA13	347/600	3	60	300/375	361

RATINGS: All three-phase units are rated at 0.8 power factor. Standby Ratings: The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

# Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet
Leads: quantity, type	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V	4UA13
990 (60Hz)	

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Fast-Response® II brushless alternator with brushless exciter for excellent load response.

## Application Data

### Engine

Engine Specifications	
Manufacturer	Doosan
Engine model	D146L
Engine type	14.6 L, 4-Cycle, Turbocharged, Aftercooled
Cylinder arrangement	V-8
Displacement, L (cu. in.)	14.6 (892)
Bore and stroke, mm (in.)	128 x 142 (5.04 x 5.59)
Compression ratio	10.5:1
Piston speed, m/min. (ft./min.)	511 (1677)
Main bearings: quantity, type	10, Precision Half-Shell
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	342 (459)
Cylinder head material	Cast Iron
Piston: type, material	—
Crankshaft material	Forged Steel
Valve material	—
Governor: type	Electronic
Frequency regulation, no-load to full-load	Isochronous
Frequency regulation, steady state	±0.5%
Frequency	Fixed
Air cleaner type, all models	Dry

### Exhaust

Exhaust System	
Exhaust manifold type	Wet
Exhaust flow at rated kW, kg/hr. (cfm)	1308 (1895)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	732 (1350)
Maximum allowable back pressure overall, kPa (in. Hg)	10.2 (3)
Maximum allowable back pressure after catalyst, kPa (in. Hg)	5.1 (1.5)
Engine exhaust outlet size, mm (in.)	Flanged Outlet at Catalyst, see ADV drawing

### Engine Electrical

Engine Electrical System	
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	24
Ampere rating	45
Starter motor rated voltage (DC)	24
Battery, recommended cold cranking amps (CCA):	
Qty., CCA rating each	Two, 1000
Battery voltage (DC)	12

### Fuel

Fuel System - Rich Burn	
Fuel type	Natural Gas
Fuel supply line inlet	2.0 NPTF
Natural gas fuel supply pressure, kPa (in. H <sub>2</sub> O)	1.74- 2.74 (7.0- 11.0)
Fuel supply pressure, measured at the generator set fuel inlet downstream of any fuel system equipment accessories.	

Fuel Composition Limits *	Nat. Gas
Methane, % by volume	90 min.
Ethane, % by volume	4.0 max.
Propane, % by volume	1.0 max.
Propene, % by volume	0.1 max.
C <sub>4</sub> and higher, % by volume	0.3 max.
Sulfur, ppm mass	25 max.
Lower heating value, MJ/m <sup>3</sup> (Btu/ft <sup>3</sup> ), min.	33.2 (890)

\* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

# Application Data

## Lubrication

### Lubricating System

Type	Full Pressure
Oil pan capacity, L (qt.) §	40 (42.3)
Oil pan capacity with filter, L (qt.) §	47.1 (49.7)
Oil filter: quantity, type §	2, Cartridge
Oil cooler	Water-Cooled
§ Kohler recommends the use of Kohler Genuine oil and filters.	

## Cooling

### Radiator System

Ambient temperature, °C (°F) *	50 (122)
Engine jacket water capacity, L (gal.)	43.2 (9.5)
Radiator system capacity, including engine, L (gal.)	227.3 (50)
Engine jacket water flow, Lpm (gpm)	680 (180)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	284 (16189)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	47 (2670)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	1143 (45)
Fan, kWm (HP)	16 (22)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O)	0.125 (0.5)

\* Weather and sound enclosures with internal silencer reduce ambient temperature capability by 8°C (15°F).

## Operation Requirements

### Air Requirements

Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm) †	638 (22500)
Combustion air, kg/hr. (cfm)	1227 (687)
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	66 (3765)
Alternator, kW (Btu/min.)	23 (1309)

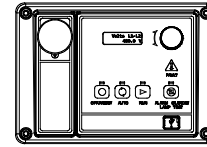
† Air density = 1.20 kg/m<sup>3</sup> (0.075 lbm/ft<sup>3</sup>)

### Fuel Consumption‡

Natural Gas, m <sup>3</sup> /hr. (cfh) at % load	Standby Rating
100%	85.4 (3015)
75%	68.8 (2428)
50%	52.2 (1843)
25%	38.1 (1345)

‡ Nominal fuel rating: Natural gas, 37 MJ/m<sup>3</sup> (1000 Btu/ft.<sup>3</sup>)

## Controllers



### APM402 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
  - Measurements are selectable in metric or English units
  - Remote communication thru a PC via network or serial configuration
  - Controller supports Modbus® protocol
  - Integrated hybrid voltage regulator with ±0.5% regulation
  - Built-in alternator thermal overload protection
  - NFPA 110 Level 1 capability
- Refer to G6-161 for additional controller features and accessories.

Modbus® is a registered trademark of Schneider Electric.

## Standard Features

- Alternator Protection
- Battery Rack and Cables
- Closed Crankcase Ventilation (CCV) with Filters
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Low Coolant Level Shutdown
- Oil Drain Extension
- Operation and Installation Literature
- Three-Way Exhaust Catalyst

## Available Options

### Approvals and Listings

- CSA Certified
- IBC Seismic Certification
- UL 2200 Listing
- Hurricane Rated Enclosure

### Enclosed Unit

- Sound Enclosure with Internal Silencer (Aluminum)
- Sound Enclosure with Internal Silencer (Steel)
- Weather Enclosure with Internal Silencer (Steel)

### Open Unit

- Exhaust Silencer, Critical (kit: PA-324470)
- Flexible Exhaust Connector, Stainless Steel

### Fuel System

- Flexible Fuel Lines  
(required when the generator set skid is spring mounted)
- Gas Filter
- Secondary Gas Solenoid Valve

### Controller

- Communications Products and PC Software
- Two Input/Five Output Module

- Remote Serial Annunciator Panel
- Run Relay
- Manual Speed Adjust

### Cooling System

- Block Heater; 2500 W, 120 V, 1 Ph
- Block Heater; 6000 W, 208 V, 1 Ph
- Block Heater; 6000 W, 240 V, 1 Ph or 3 Ph
- Block Heater; 6000 W, 480 V, 1 Ph  
Recommended for ambient temperatures below 10°C (50°F)
- Radiator Duct Flange

## Electrical System

- Alternator Strip Heater
- Battery
- Battery Charger, Equalize/Float Type
- Battery Charger Temperature Compensation
- Battery Heater
- Line Circuit Breaker (NEMA1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)

## Miscellaneous

- Air Cleaner Restriction Indicator
- Certified Test Report
- Engine Fluids Added
- Rated Power Factor Testing
- Rodent Guards

## Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

## Warranty

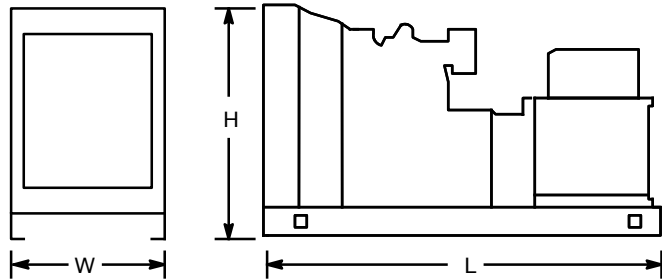
- 2-Year Basic Limited Warranty
- 5-Year Basic Limited Warranty
- 5-Year Comprehensive Limited Warranty

## Other Options

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

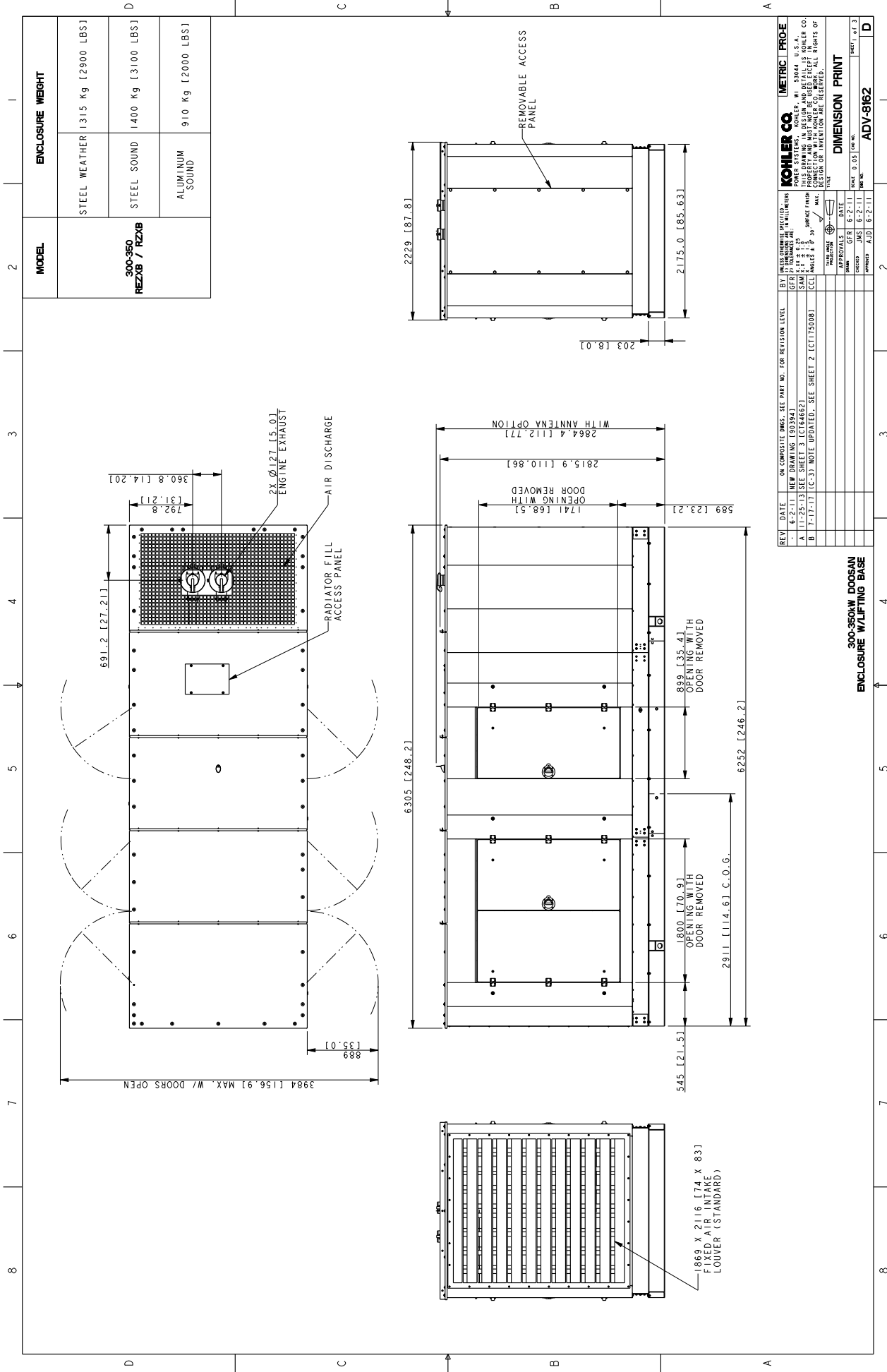
## Dimensions and Weights

Overall Size, L x W x H, max., mm (in.): 3500 x 1750 x 2148  
 (137.8 x 68.9 x 84.6)  
 Weight (radiator model), wet, max., kg (lb.): 3200 (7055)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

**DISTRIBUTED BY:**



MODEL	ENCLOSURE WEIGHT
300-350 REZXB / RZXB	STEEL WEATHER 1315 Kg [2900 LBS]
	STEEL SOUND 1400 Kg [3100 LBS]
	ALUMINUM SOUND 910 Kg [2000 LBS]

REV	DATE	BY	CHKD	APP'D	DESCRIPTION
A	11-25-13	SAK	SAK	SAK	NEW DRAWING (03934)
B	7-17-17	CCJ	CCJ	CCJ	NOTE UPDATED. SEE SHEET 2 [CT175008]

APPROVALS	DATE
DESIGNER	11-25-13
CHECKER	6-2-11
APP'VER	6-2-11

SCALE	UNIT
SCALE 0.05	UNIT: MILL

NO.	DESCRIPTION	DATE
01	ISSUE ENCLOSURE SPECIFICATIONS	11-25-13
02	ISSUE DRAWING WITH DIMENSIONS	11-25-13
03	ISSUE DRAWING WITH DIMENSIONS	11-25-13

DATE	DESCRIPTION
11-25-13	ISSUE DRAWING WITH DIMENSIONS
7-17-17	NOTE UPDATED. SEE SHEET 2 [CT175008]

REV	DATE	BY	CHKD	APP'D	DESCRIPTION
A	11-25-13	SAK	SAK	SAK	NEW DRAWING (03934)
B	7-17-17	CCJ	CCJ	CCJ	NOTE UPDATED. SEE SHEET 2 [CT175008]

APPROVALS	DATE
DESIGNER	11-25-13
CHECKER	6-2-11
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SCALE	UNIT
SCALE 0.05	UNIT: MILL

NO.	DESCRIPTION	DATE
01	ISSUE ENCLOSURE SPECIFICATIONS	11-25-13
02	ISSUE DRAWING WITH DIMENSIONS	11-25-13
03	ISSUE DRAWING WITH DIMENSIONS	11-25-13

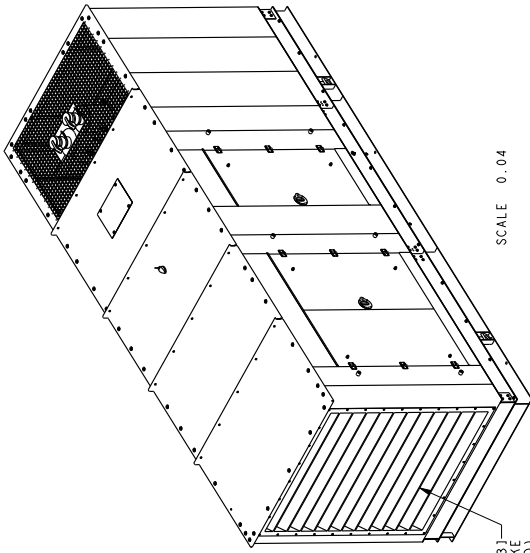
DATE	DESCRIPTION
11-25-13	ISSUE DRAWING WITH DIMENSIONS
7-17-17	NOTE UPDATED. SEE SHEET 2 [CT175008]

300-350kW DOORSAN  
ENCLOSURE W/LIFTING BASE

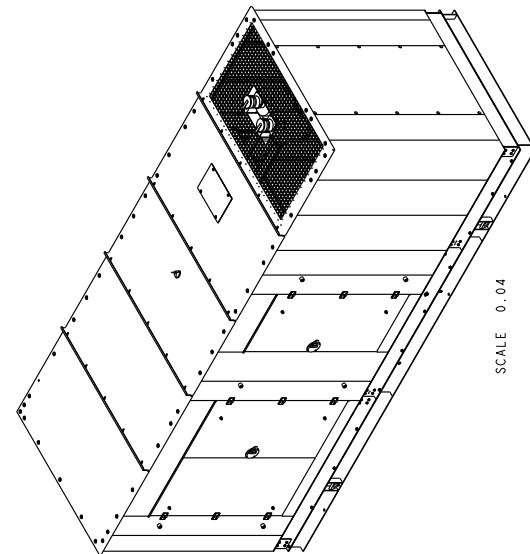
ADV-8162

METRIC PRINT

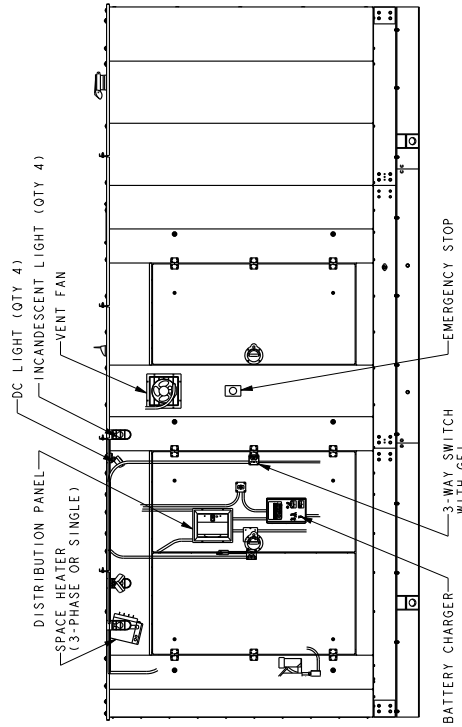
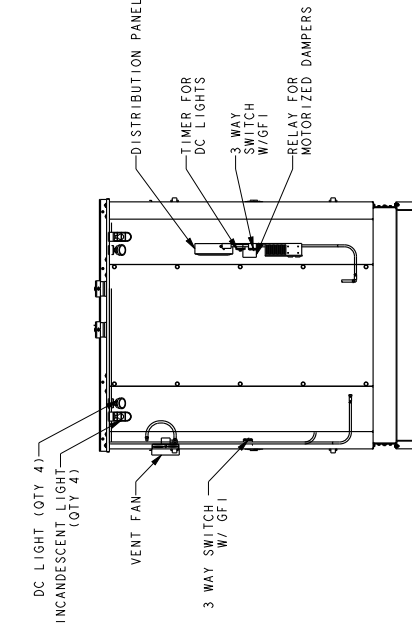
COHLETTI ENGINEERING, INC. 55004 U.S.A.  
PROPERTY AND NOT BE USED EXCEPT IN WRITER'S CO.  
DESIGN OR INTENTION ARE RESERVED.



SCALE 0.04



SCALE 0.04



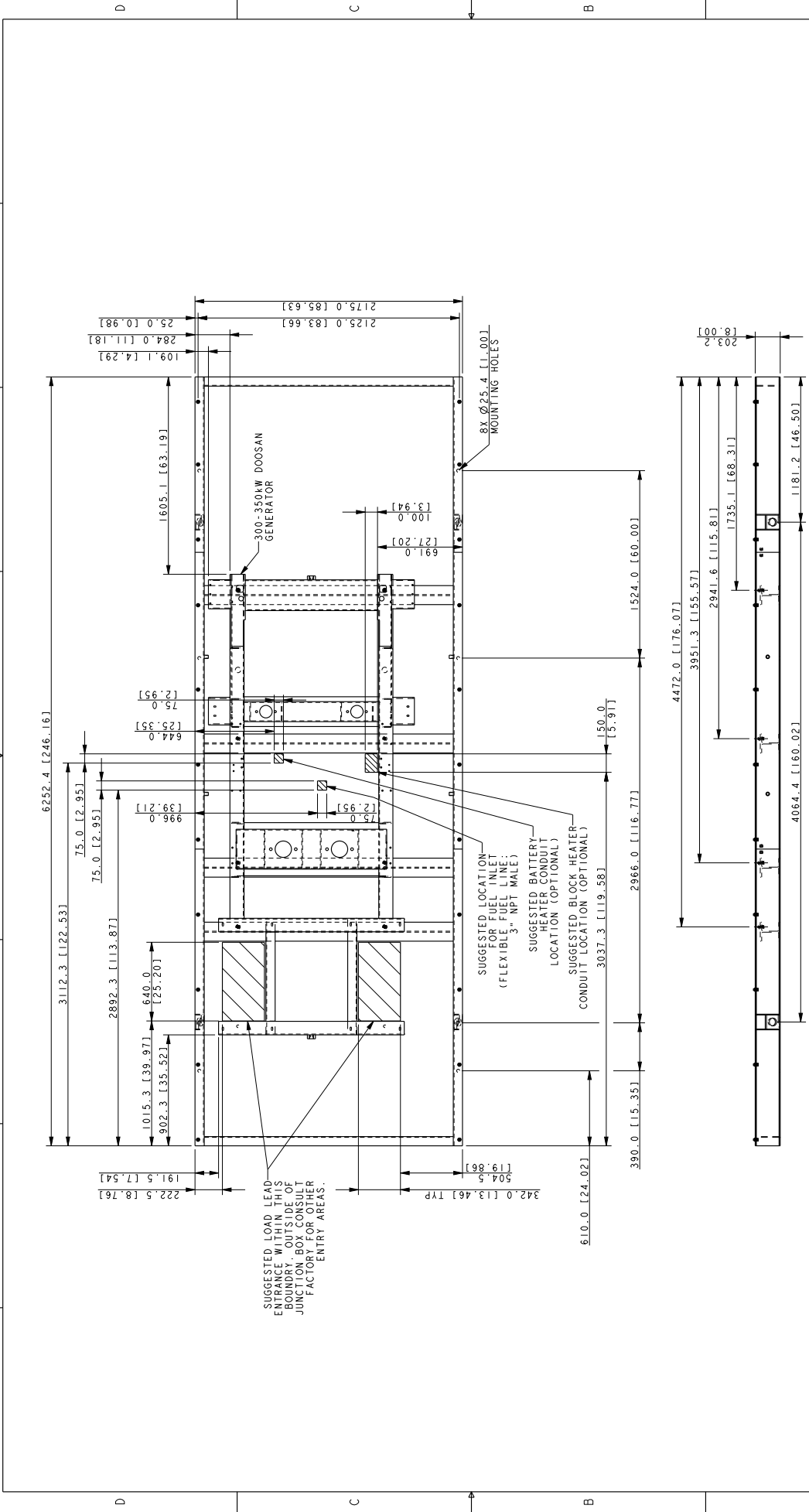
REV	DATE	DESCRIPTION	BY	CHKD	APP'D
-	6-27-11	NEW DRAWING 100394J	GFH	GFH	
A	11-25-13	SEE SHEET 1 (C164822) FOR REVISION	SMW	GFH	
B	11-17-11	EMERGENCY STOP LOCATION ADDED (B-11) VIEW REMOVED. SEE SHEET 1 (C1175008)	SMW	GFH	

ON COMPOSITE DIMS. SEE PART NO. FOR REVISION LEVEL		
KOHLER CO. METRIC PRO-POWER SYSTEMS, KOHLER, WI 53044 U.S.A.		
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TITLE	DATE	SCALE
300-360KW DOOSAN ENCLOSURE W/LIFTING BASE	6-27-11	0.05
DRAWN	GFH	6-27-11
CHECKED	JMS	6-27-11
APPROVED	AJJ	6-27-11

DIMENSION PRINT		
SIZE	DATE	SHEET
		2 OF 3

300-360KW DOOSAN ENCLOSURE W/LIFTING BASE		
SCALE	DATE	FIG. NO.
0.05	6-27-11	ADV-8162





REV	DATE	ON COMPOSITE DIMS. SEE PART NO. FOR REVISION LEVEL	BY	DESIGNED BY	QUANTITY	DATE	APPROVALS	DATE	APPROVALS	DATE	APPROVALS	DATE
A	6-2-11	NEW DRAWING [30394]	GFR	DESIGNED BY	1	6-2-11	GFR	6-2-11	GFR	6-2-11	GFR	6-2-11
B	7-17-17	SEE SHEET 1 & 2 [175008]	CCM	DESIGNED BY	1	7-17-17	CCM	7-17-17	CCM	7-17-17	CCM	7-17-17
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Fuller Middle School  
Framingham, MA  
J#680 015 00.00  
L#60589/Page 1/July 31, 2019

**TECHNOLOGY SYSTEMS**

**NARRATIVE REPORT**

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

1. CODES
  - A. All work installed under Section 270000 shall comply with the Massachusetts Building Code, IBC 2009, and all local, county, and federal codes, laws, statues, and authorities having jurisdiction.
2. DESIGN INTENT
  - A. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Technology and Security work and all items incidental thereto, including commissioning and testing.
3. TECHNOLOGY
  - A. The data system infrastructure will consist of fiber optic backbone cabling. Horizontal wiring will consist of Category 6A UTP Non-Plenum rated cabling for both data and telephone systems for gigabit connectivity. The telephone infrastructure will accommodate VOIP based voice systems. A new IP telephone system will be used.
  - B. Each classroom will have four (4) data outlets for student computers. Two (2) data with video and audio connections to a wall mounted touch screen monitor will be provided at teacher's station. A wall phone will be provided for communications with administration in each classroom. Wireless access points will be provided in all classrooms and other spaces with two (2) CAT6A cables.
  - C. A central paging system will be provided and integrated with the telephone system. The speakers shall be IP.
  - D. A wireless GPS/LAN based master clock system will be provided with 120V wireless remote clocks that act as transceivers.
  - E. The Main Distribution Frame (MDF) will contain all core network switching and IP voice switch. Intermediate Distribution Frames (IDFs) will serve each floor/wing of the school. A fiber optic backbone will be provided from each IDF to MDF. The backbone will be designed for 10 Gbps Ethernet.

Fuller Middle School  
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4. TESTING REQUIREMENTS

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

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

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

5. OPERATION MANUALS AND MAINTENANCE MANUALS

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

6. RECORD DRAWINGS AND CONTROL DOCUMENTS

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

7. COMMISSIONING

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

### 3.1.3 Building Code Analysis

Please reference the attached Building Code Analysis.



# Fire Protection and Life Safety Code Compliance Strategy

**FRAMINGHAM FULLER MIDDLE SCHOOL  
FRAMINGHAM, MA**

Prepared For:



Jonathan Levi Architects  
266 Beacon Street  
Boston, MA 02116

Prepared By:



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**SUBMITTED: AUGUST 9, 2019**

**60% Construction Documents**

**FULLER**  
**Construction Documents 60%**

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## **DOCUMENT HISTORY**

<i>50% Schematic Design Fire Protection and Life Safety Code Compliance Strategy .....</i>	<i>August 8, 2018</i>
<i>100% Schematic Design Fire Protection and Life Safety Code Compliance Strategy .....</i>	<i>September 7, 2018</i>
<i>75% Design Development Fire Protection and Life Safety Code Compliance Strategy .....</i>	<i>April 8, 2019</i>
<i>100% Design Development Fire Protection and Life Safety Code Compliance Strategy .....</i>	<i>May 13, 2019</i>
<i>50% Construction Document Fire Protection and Life Safety Code Compliance Strategy .....</i>	<i>July 8, 2019</i>
<i>60% Construction Document Fire Protection and Life Safety Code Compliance Strategy .....</i>	<i>August 9, 2019</i>

This document “Concept Design Fire Protection and Life Safety Code Compliance Strategy” is intended for use by the design team and code officials for understanding the building design concept for the proposed Framingham Fuller Middle School located in Framingham, MA. This document contains the code basis for the building design, functionality of the egress system, fire protection recommendations, the smoke control system design concept, and a comprehensive code outline.

This document is a preliminary draft based on the schematic building plans from Jonathan Levi Architects dated August 9, 2019. This document is a work in progress, will be updated as the design progresses and discussions/agreements with the Authorities Having Jurisdiction occur.

## **PURPOSE**

The purpose of this report is to document and provide the code compliance strategy, including the framework for the fire protection and life safety concept, for the Framingham Fuller Middle School in Framingham, MA. This document will also identify design concepts that are not clearly addressed by the applicable building codes, which will require approval and or interpretation by the authorities having jurisdiction (AHJ).

## **APPLICABLE CODES AND REQUIREMENTS**

The following codes are presently adopted in the State of Massachusetts:

- **Building** Massachusetts State Building Code (MSBC), 9<sup>th</sup> Edition, which adopts and amends the 2015 International Building Code and the 2015 International Existing Building Code (IEBC).
- **Accessibility** Massachusetts Architectural Access Board (MAAB), 521-CMR.  
2010 ADA Standards for Accessible Design
- **Electrical** Massachusetts Electrical Code, 527 CMR, 12.00. The Massachusetts Electrical Code is an amended version of the 2017 National Electrical Code (NFPA 70).
- **Elevators** Massachusetts Elevator Regulations, 524-CMR.
- **Energy** 2015 Edition of the International Energy Conservation Code (IECC) as amended by the State of Massachusetts; Massachusetts Stretch Code
- **Fire Prevention** 527 CMR Massachusetts Fire Prevention Code, which adopts and amends the 2015 edition of NFPA 1.
- **Mechanical** International Mechanical Code, 2015 edition, as adopted and amended by the MSBC (Chapter 28).
- **Plumbing** Massachusetts Fuel Gas and Plumbing Codes (248 CMR).
- **Other** National Fire Protection Association (NFPA) Standards, as referenced by the MSBC and the MFPR.

## **PROJECT DESCRIPTION**

Howe Engineers has prepared this document for the Framingham Fuller Middle School located in Framingham, MA. The proposed building will be a newly constructed, three (3) story building with a footprint area of approximately 64,780 square feet. The building contains primarily Group E Educational spaces for middle school students (6<sup>th</sup> to 8<sup>th</sup> grade), with accessory office and lounge spaces. There is a gymnasium and auditorium on the north side of the building that will be considered Group A-3 assembly spaces as public events will likely be held in these spaces.

This narrative addresses the requirements contained in the 9th edition of 780 CMR, The Massachusetts State Building Code (MSBC), which is an amended version of the 2015 International Building Code (IBC).

## **GENERAL OPERATING ASSUMPTIONS**

The following general operating assumptions serve as the basis for the Life Safety and Fire Protection design and should be incorporated into the new facilities operations plan. It is the responsibility of the Owner/Operator to ensure that these assumptions are enforced:

- The materials used shall meet the interior finish requirements of the International Building, and NFPA 1.
- Hazardous materials and explosives are not permitted within the Building unless protected in accordance with the International Building and Fire Codes and approved by the Authority Having Jurisdiction.

**NEW CONSTRUCTION- CODE COMPLIANCE APPROACH**

***OCCUPANCY CLASSIFICATION***

The proposed Fuller School is classified as Mixed Use, containing Educational, Group E Occupancies, along with Assembly Group A and Business Group B Occupancies. The building serves as an educational building for students from the 6<sup>th</sup> through 8<sup>th</sup> grade containing primarily classroom spaces. There is a gymnasium and auditorium on the north side of the building which will likely hold events for the general public. As these spaces will hold events for the public, they must be considered Assembly spaces as they will accommodate occupants other than the students of the Fuller School. The occupancies in the building on the respective levels are as follows:

<b>First Floor (Level of Exit Discharge)</b>	<b>USE GROUP</b>
Classrooms / Lab Spaces	E
Gymnasium	A-4
Auditorium / Lounge Space	A-3
Office / Administration	B
Storage	S-1
MEP	S-2
<b>Second Floor</b>	<b>USE GROUP</b>
Classrooms	E
Office / Administration	B
Lounge / Breakout Space	A-3
Storage	S-1
MEP	S-2
<b>Third Floor</b>	<b>USE GROUP</b>
Classrooms	E
Office / Administration	B
Lounge / Breakout Space	A-3
Storage	S-1
MEP	S-2

***OCCUPANCY SEPARATIONS***

The Building contains a number of different occupancies, not included in the same occupancy group, within the building and is classified as Mixed-Use Occupancy in accordance with MSBC Section 508.1. Therefore, the building is required to comply with the requirements of either Section 508.3 (non-separated uses) or Section 508.4 (separated uses), or combinations of these sections. As the gymnasium, auditorium, and cafeteria on the first floor of the building will be used for public events, they must be considered assembly spaces. A nonseparated, mixed-use approach will be used for the design of the building to limit the required rated separations between occupancies. Refer to the Building Construction section below for minimum construction type necessary to allow for the application of the nonseparated mixed-use provisions.

## **BUILDING CONSTRUCTION**

### ***CONSTRUCTION TYPE***

The Framingham Fuller School will be newly constructed using a nonseparated mixed-use approach. The building is three (3) stories in height, containing primarily Group A and E occupancies, with Group A Assembly spaces primarily consisting of the Gymnasium, Auditorium, and Cafeteria on the first floor. The building will be designed as Type IB fire resistive, non-combustible construction.

Under Type IB Construction, Group E occupancies are permitted to be six (6) stories in height with unlimited area per floor. Group A occupancies are permitted to be twelve (12) stories in height with unlimited area per floor. As the gymnasium, auditorium, and cafeteria will be used for public events, they are classified as Group A-3 spaces, while the balance of the school is classified as Group E educational use. The current design does not include occupancy separations as the building is permitted to be unlimited in area. As the building is 3-stories in height and permitted to have unlimited area, the current design is compliant.

In order to demonstrate compliance with the allowable building area requirements of MSBC Section 506, the sum of the ratios on each floor must be individually analyzed. This approach involves taking the area of each occupancy, and dividing this area by the allowable area of each occupancy on a floor-by-floor basis (MSBC Section 506.2.4). As the building is permitted to have unlimited area on each floor, the sum of the ratios calculation is not applicable.

As the building will be of Type IB construction, the stairs and shafts must be constructed of 2-hour construction as Type IB requires a 2-hour rated floor assembly.

### ***FIRE RESISTANCE RATING***

The fire-resistance rating requirements for Type IB construction can be found in MSBC Table 601. The fire-resistance ratings for the building structural elements are as follows:

**Fire Resistance Ratings of Structural Elements for Type IB Construction**

BUILDING STRUCTURAL ELEMENT	FIRE RESISTANCE RATING – TYPE IB
<b>Structural Frame</b> Including girders, beams and trusses (other than columns): Supporting a floor Supporting roof only Columns: Supporting a floor Supporting roof only	2-hour 1-hour 2-hour 1-hour
<b>Bearing Walls</b> Exterior Interior Walls: Supporting more than one floor Supporting only roof	2-hour 2-hour 2-hour
<b>Nonbearing Walls and Partitions</b> Exterior ( <i>not less than fire separation requirements</i> ) Interior ( <i>not less than fire separation requirements</i> )	See Fire Separation 0-hours
<b>Floor Construction</b> Including supporting beams and joists	2-hour
<b>Roof Construction</b> Including supporting beams and joists: Less than 20' in height to lowest member 20' or more in height to lowest member	1-hours 0-hours

**EXTERIOR WALLS**

The MSBC regulates the fire resistance rating of exterior walls and the extent to which protected and unprotected openings are permitted in the exterior walls of facing buildings based on the fire separation distance to the lot line or to the center of the street (MSBC Table 602 and Table 705.8).

It should be noted that the Farley building is located approximately 40-feet away from the proposed Fuller School. The Farley building is constructed of non-combustible brick exterior walls. As such, the Fuller School is not provided with 100% open frontage on all sides. **The existing Farley Building was confirmed by JLA to be of masonry construction, with no exterior openings on the portions closest to the proposed Fuller School.**

**In order to determine the allowable openings and rating of the exterior walls of the Fuller School, an assumed lot line must be developed between the Farley building and the Fuller School. Based on the masonry exterior walls of the Farley Building, it is assumed that the Farley Building is provided with 1-hour rated exterior walls. With no openings in the exterior wall, the Fuller School will be permitted to have unlimited openings and a non-rated exterior wall. Specific detail of the Farley wall construction should be provided for a detailed review to ensure a 1-hour rated exterior wall exists.**

## Fire Resistance Rating for Exterior Non-Loading-Bearing Walls

Based on Fire Separation Distance (IBC Table 602)

FIRE SEPARATION DISTANCE (Building wall to property line for each side of the building)	FIRE-RESISTANCE RATING (GROUP A, B, E, S-2)
<i>Less than 5 feet</i>	1-hour
<i>Greater than or equal to 5 feet and less than 10 feet</i>	1-hour
<i>Greater than or equal to 10 feet and less than 30 feet</i>	1-hour
<i>Greater than or equal to 30 feet</i>	0-hour

The required fire-resistance rating of exterior walls with a fire separation distance of greater than 10 feet must be rated for exposure to fire from the inside. The required fire-resistance rating of exterior walls with a fire separation distance of less than or equal to 10 feet must be rated for exposure to fire from both sides.

## Maximum Area of Exterior Wall Openings

Based on IBC Table 705.8

Fire Separation Distance to Lot Line (feet)	Allowable Area of Opening (Sprinklered)
0 to less than 3	Not Permitted
3 to less than 5	15%
5 to less than 10	25%
10 to less than 15	45%
15 to less than 20	75%
20 to less than 25	No Limit
25 to less than 30	No Limit
30 or greater	No Limit

The Farley building is not provided with openings on the portions of the building that will face the proposed Fuller School. As mentioned above, the allowable openings of the Fuller School will be determined upon confirmation of the assumed lot line between the Fuller School and the Farley Building. The Fuller School will likely be permitted to have unlimited openings based on the 1-hour rated exterior walls and lack of openings in the Farley Building.

## Fire Resistant Joint Systems

Joints installed in or between fire-rated walls, floors or floor/ceiling assemblies and roofs or roof/ceiling assemblies must be protected by an approved fire-resistant joint assembly having a rating equal to the rating of the wall, floor, or roof. Joint systems shall be tested in accordance with MSBC Section 715.0.

Listed and approved joint assemblies must be provided for all concealed locations where fire resistance rated assemblies form a joint.

## Interior Finishes and Floor Finishes

Interior finishes in the building are required to meet the requirements of MSBC Section 803 for Interior Finish. Refer to the following tables for details. Interior finish applies to wall and ceiling finishes. Interior floor finish applies to floor coverings.

**Interior Wall & Ceiling Finish Requirements by Occupancy**

Sprinklered Building (Table 803.11)

USE GROUP	VERTICAL EXITS AND PASSAGEWAYS	EXIT ACCESS CORRIDORS	ROOMS AND ENCLOSED SPACES
A-3	A or B	A or B	A, B, or C
B / E	A or B	A, B, or C	A, B, or C
S	A, B, or C	A, B, or C	A, B, or C
Atrium	A or B	A or B	A or B

**Interior Floor Finish Requirements by Occupancy**

Interior floor finish and floor coverings must comply with IBC Section 804, unless the floor finish or covering material is of traditional type, such as wood, vinyl, linoleum, or terrazzo and resilient floor covering materials not comprised of fibers.

***LABORATORY HAZARDOUS CHEMICAL STORAGE***

**Control Area Approach**

The MSBC permits limited amounts of hazardous materials in a Use Group E Educational Occupancies. Under this approach, each floor of the building is permitted to have a certain number of Control Areas that are separated by fire resistance rated construction. The number of Control Areas and quantity of hazardous materials permitted on each floor varies based on the ease of fire department access to those given spaces.

The control areas should be separated from adjacent spaces by one (1)-hour fire resistance rated separations on the First through Third Floors (MSBC Table 414.2.2). The required fire resistance rating for the floors and their supporting construction is one (1) hour rated, which is satisfied by the 2-hour floors per Type IB Construction. Doors in the one (1)-hour control area separation should be rated for ¾-hour and doors (MSBC Table 716.5). It should be noted that unprotected vertical openings are not permitted in control areas, unless a sum of the ratios for chemical quantity is utilized.

Multiple control areas per floor can be provided if they are separated with fire resistance rated fire barrier. Table 414.2.2 of the MSBC (shown below) provides the requirements for control area design by floor level in the building. It should be noted that the number of control areas permitted, and the maximum allowable quantity of hazardous materials permitted per control area is reduced on floors above and below grade. Hazardous materials in storage and in use within this control area will be limited to the quantities specified in MSBC Table 307.1 (1) and (2). The quantity limits shown include an allowable increase for approved storage and automatic sprinkler protection.



**MSBC Table 414.2.2 Design and Number of Control Areas**

Floor Level		Percentage of the Maximum Allowable Quantity Per Control Area	Number of Control Areas Per Floor	Fire-Resistance Rating for Fire Barriers in Hours	Actual Control Areas Provided
Above	3	50	2	1	2
Grade	2	75	3	1	1
Plane	1	100	4	1	2

- a. Percentages shall be of the maximum allowable quantity per control area shown in Tables 307.1(1) and 307.1(2) with all increases allowed in the notes to those tables
- b. Fire barriers shall include walls and floors and supporting construction as necessary to provide separation from other portions of the building.

As can be seen from the table above, the First Floor is allowed to have four (4) control areas. Above grade floors are permitted to have fewer control areas and each control area above grade is permitted to store less hazardous materials.

Table 414.2.2 of the MSBC (shown above) provides the requirements for control area design by floor level in the building. The IBC has a defined threshold for when an occupancy must be classified as a Group H High Hazard occupancy. The maximum allowable quantity per control area for hazardous materials is found in IBC Section 307. **If the quantities from Table 307.1(1) are exceeded, the occupancy must be classified as a Group H occupancy.** Table 307.1(1) also indicates what Hazard Occupancy Group (Group H-1 through H-5) the building must be classified as when the quantities in Table 307.1(1) are exceeded.

**As previously detailed in the report, an atrium connects the three (3) floors of the building. There should be multiple control areas per floor, which would require that rated walls separate the science classrooms from the balance of the building which entails 1-hour rated separations per NFPA 45.**

**Fire Code Requirements for Hazardous Chemicals**

The Massachusetts Fire Code 527 CMR adopts and amends the 2015 version of NFPA 1. Chapter 66 from the Massachusetts fire code contains the requirements for Flammable and combustible liquids. The Massachusetts fire code requires that the storage, handling and use of flammable or combustible liquids comply with NFPA 30. According to Section 1.5.3, a laboratory installation made in accordance with NFPA 45 is determined to be in compliance with NFPA 30.

**66.1.1\*** *The storage, handling, and use of flammable and combustible liquids, including waste liquids, as herein defined and classified, shall comply with this chapter; NFPA 30, *Flammable and Combustible Liquids Code*; Sections 60.1 through 60.4 of this Code; and NFPA 35 *Standards for the Manufacture of Organic Coatings, as applicable.**

## Most restrictive requirements NFPA 30 and NFPA 45-

It is noted that NFPA 30 does not govern storage of liquids in a laboratory. In the open work area of the laboratory, the quantity of flammable liquid in the work area is governed by NFPA 45, which is the standard on fire protection for laboratories using chemicals.

The Massachusetts Fire Code Section 66.1.4 from the states that a laboratory that is installed in accordance with NFPA 45 is considered in compliance with the NFPA 1. Furthermore, it is noted that in accordance with Section 1.5.3 of NFPA 30, a laboratory that is installed in accordance with NFPA 45 is considered in compliance with NFPA 30.

**As discussed above, Howe Engineers confirmed with the staff liaisons for NFPA 30 & NFPA 45 that a laboratory installed in compliance with NFPA 45 is considered to be in compliance with NFPA 30 per Section 1.5.3 of NFPA 30.**

### 1.5.3 Installations made in accordance with the applicable requirements of the following standards shall be deemed to be in compliance with this code:

- (1) NFPA 1, *Fire Code*
- (2) NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*
- (3) NFPA 30A, *Code for Motor Fuel Dispensing Facilities and Repair Garages*
- (4) NFPA 31, *Standard for the Installation of Oil-Burning Equipment*
- (5) NFPA 32, *Standard for Drycleaning Plants*
- (6) NFPA 33, *Standard for Spray Application Using Flammable or Combustible Materials*
- (7) NFPA 34, *Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids*
- (8) NFPA 35, *Standard for the Manufacture of Organic Coatings*
- (9) NFPA 36, *Standard for Solvent Extraction Plants*
- (10) NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*
- (11) NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*
- (12) NFPA 99, *Health Care Facilities Code*
- (13) NFPA 101, *Life Safety Code*

Figure 1: NFPA 30 Section 1.5.3 states installations made in accordance with NFPA 45 are considered in compliance with NFPA 30.

**66.1.4** Installations made in accordance with the applicable requirements of the following standards shall be deemed to be in compliance with this Code:

- (1) NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*
- (2) NFPA 30A, *Code for Motor Fuel Dispensing Facilities and Repair Garages*
- (3) NFPA 31, *Standard for the Installation of Oil-Burning Equipment*
- (4) NFPA 32, *Standard for Drycleaning Plants*
- (5) NFPA 33, *Standard for Spray Application Using Flammable or Combustible Materials*
- (6) NFPA 34, *Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids*
- (7) NFPA 35, *Standard for the Manufacture of Organic Coatings*
- (8) NFPA 36, *Standard for Solvent Extraction Plants*
- (9) NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*
- (10) NFPA 45, Standard on Fire Protection for Laboratories Using Chemicals**
- (11) NFPA 99, *Health Care Facilities Code*
- (12) NFPA 101, *Life Safety Code*

**Figure 2: NFPA 1 Section 66.1.4 states installations made in accordance with NFPA 45 are considered in compliance with NFPA 1.**

### NFPA 45 Laboratory Installation Requirements

In NFPA 45, Laboratories are classified as Laboratory Units A through D. Classification A representing a high hazard and D minimum fire hazard. The difference being the quantity of flammable and combustible liquids permitted to be utilized in the laboratory. Table 5.1.1 from NFPA 45 contains the requirements for the separation, maximum area and number of stories above and below grade that a lab can be located. This table is similar to the requirements contained in Table 414 of the International Building Code. (It is noted for reference that Table 5.1.1 has been updated in the 2015 version of NFPA 45 to clarify that Class C and D laboratories are permitted to be located in a story below grade.) In accordance with Table 5.1.1, fire separation is not required for Class C or D laboratories for Educational Buildings and be limited to 50% of the values shown in the table on the next page.

**Table 5.1.1 Separation Requirements and Height Allowances for Laboratory Units**

Laboratory Unit <sup>a</sup>	Area of Lab Unit	Fire Separation <sup>b</sup>	Permitted Stories Above Grade
A	≤929 m <sup>2</sup> (≤10,000 ft <sup>2</sup> )	2 hours	1-3 <sup>c</sup>
	>929 m <sup>2</sup> (>10,000 ft <sup>2</sup> )	Not permitted <sup>d</sup>	
B	≤929 m <sup>2</sup> (≤10,000 ft <sup>2</sup> )	1 hour	1-3 <sup>c</sup>
	≤929 m <sup>2</sup> (≤10,000 ft <sup>2</sup> )	2 hours	4-6 <sup>c</sup>
	>929 m <sup>2</sup> (>10,000 ft <sup>2</sup> )	Not permitted <sup>d</sup>	
C	Any size	Not required	1-3
	Any size	1 hour	4-6
	Any size	2 hours	Over 6
D	Any size	Not required	No limit

<sup>a</sup>Refer to Table 10.1.1 for laboratory unit classification.

<sup>b</sup>Separation in this table refers to separation from laboratory unit(s) to non-laboratory areas and/or separations from laboratory unit(s) of equal or lower hazard classification.

<sup>c</sup>Not allowed in structures below grade.

<sup>d</sup>Labs of this classification and size are not permitted.

### NFPA 45 Requirements for Maximum Allowable Quantities of Flammable Liquids.

Chapter 10 from NFPA 45 contains the quantity limitations for flammable and combustible liquids. The maximum allowable quantities for flammable and combustible liquids can be found in Table 10.1.1(b) (See Table 10.1.1(b) below).

**Table 10.1.1(b) Maximum Quantities of Flammable and Combustible Liquids in Laboratory Units Outside of Inside Liquid Storage Areas (U.S. Customary Units)**

Laboratory Unit Fire Hazard Class	Flammable and Combustible Liquid Class <sup>a</sup>	Quantities in Use <sup>a</sup>		Quantities in Use and Storage <sup>a</sup>	
		Maximum Quantity <sup>b</sup> per 100 ft <sup>2</sup> of Laboratory Unit <sup>c</sup>	Maximum Quantity <sup>b</sup> per Laboratory Unit	Maximum Quantity <sup>b</sup> per 100 ft <sup>2</sup> of Laboratory Unit <sup>c</sup>	Maximum Quantity <sup>b</sup> per Laboratory Unit
		gal	gal	gal	gal
A (high fire hazard)	I, II, and IIIA	10	480	20	480
		20	800	40	1600
B <sup>d</sup> (moderate fire hazard)	I, II, and IIIA	5	300	10	480
		10	400	20	800
C <sup>e</sup> (low fire hazard)	I, II, and IIIA	2	150	4	300
		4	200	8	400
D <sup>e</sup> (minimal fire hazard)	I, II, and IIIA	1	75	2	150
		1	75	2	150

Note: For maximum container sizes, see Table 10.1.2.

<sup>a</sup>The maximum amount in use in open systems is limited to 10 percent of the quantities listed.

<sup>b</sup>See 4.2.2 for additional requirements for educational and instructional laboratories.

<sup>c</sup>The quantities per 100 ft<sup>2</sup> do not imply the quantities must be within that 100 ft<sup>2</sup> area; the quantities per 100 ft<sup>2</sup> are for calculation purposes to determine the total quantity allowed per laboratory work area and the total amount overall in the laboratory unit.

<sup>d</sup>Reduce quantities by 50 percent for B laboratory units located above the 3rd floor.

<sup>e</sup>Reduce quantities by 25 percent for C and D laboratory units located on the 4th–6th floors of a building and reduce quantities by 50 percent for C and D laboratory units located above the 6th floor.

- The maximum allowable quantity permitted by Table 10.1.1 is based on a per 100 sq. ft. of laboratory area.

### **NFPA 45 Instructional Laboratory classification**

It is noted that NFPA 45 has a designation for Instructional Laboratories, which is classified as a lab that is used for educational purposes for college aged students. Experiments and testing in an Instructional Lab is typically conducted under supervision of a lab instructor.

**3.3.31 Instructional Laboratory Unit.** A laboratory unit used for education past the 12th grade and before post-college graduate-level instruction for the purposes of instruction of six or more persons for four or more hours per day or more than 12 hours per week. Experiments and tests conducted in instructional laboratory units are under the direct supervision of an instructor. Laboratory units used for graduate or post-graduate research are not to be considered instructional laboratory units.

### **Summary of the Maximum Allowable Quantities from IBC, NFPA 30 and NFPA 45**

Howe Engineers has provided the following table to summarize the various requirements for maximum allowable quantities from the International Building Code, NFPA 30 and NFPA 45. It is noted that NFPA 45 is most restrictive in the maximum allowable quantities for storage and use of flammable and combustible liquids. It is noted that the maximum allowable quantities in Table 1 assumed that the NFPA 45 maximum allowable quantities are not reduced due to the floor area of the laboratory. **The maximum allowable quantity permitted by NFPA 45 Table 10.1.1 is based on a per 100 sq. ft. of laboratory area and a reduction of 50% of the maximum allowable quantity listed in the table below per the Educational requirements**

Please refer to Table 1 below for the for maximum allowable quantities from the International Building Code, NFPA 30 and NFPA 45:

## ***PENETRATIONS OF DUCT AND AIR TRANSFER OPENINGS***

### **MEP Shaft Enclosures**

A shaft is required when the duct penetrates two (2) or more floor/ceiling assemblies (MSBC Section 717.6.1). A shaft is not required in occupancies other than Groups I-2 and I-3, for a duct constructed of approved materials in accordance with the International Mechanical Code that penetrates not more than one (1) fire-resistance-rated floor/ceiling assembly (connecting only 2 stories), provided a listed fire damper is installed at the floor line or the duct is protected in accordance with MSBC Section 714.4 (MSBC Section 717.6).

MSBC Section 713.4 provides that shafts connecting less than four (4) stories, a 1-hour fire rated shaft enclosure is required. Shafts connecting four (4) or more stories require a fire-resistance rating of at least two (2) hours. Additionally, shaft enclosures must not have a fire resistance rating that is less than the rating of the floor that they are penetrating, but need not exceed two (2) hours. Openings in a shaft enclosure are required to be limited to those necessary for the purpose of the shaft (MSBC Section 713.8.1). Where shafts do not extend to the top or bottom of a building, adequate protection should be provided (MSBC Section 713.11 and Section 713.12). **It should be noted that as the building is of Type IB construction, shafts must be provided with a 2-hour fire resistance rating as they penetrate 2-hour rated floor assemblies.**

**The building will have shafts at each bathroom suite to accommodate bathroom exhaust. Additionally, shafts will be located above the administrative suites to accommodate ductwork associated with these office areas. Finally, kiln exhaust and various fume hoods throughout the building will be provided with 2-hour rated shafts.**

### **Fire Dampers**

Fire dampers should have a fire resistance rating in accordance with the table below (MSBC Table 717.3.2.1). The actuation temperature of the actuating device should be approximately 50°F above the normal temperature within the duct system (MSBC Section 717.3.3.1). If a fusible link is used, it should have a temperature rating not less than 160°F (MSBC Section 717.3.3.1).

### **Fire Damper Rating**

<b>Type of Penetration</b>	<b>Minimum Fire Damper Rating</b>
Less than 3-hour fire-resistance rated assemblies	1½ hours
3 hour or greater fire-resistance rated assemblies	3 hours

Fire dampers are required at locations where ducts or air transfer openings of an air distribution system penetrate fire resistance rated assemblies including the following:

- Fire barriers (MSBC Section 717.5.2);
- Shaft enclosures (MSBC Section 717.5.3);
- Fire partitions (MSBC Section 717.5.4);

- Horizontal assemblies (MSBC Section 717.6).

### Smoke Dampers

Actuation of smoke dampers should be achieved in accordance with the table below (MSBC Section 717.3.3.2).

#### Smoke Damper Actuation Methods

Damper Location	Activation Method
Within a duct	Activation controlled by a smoke detector within 5-feet of the damper with no air outlets or inlets between the detector and the damper.
Above smoke barrier doors in a smoke barrier	Activation controlled by a spot type detector listed for releasing service should be installed on both sides of the smoke barrier door opening.
In an un-ducted opening in a wall	Activation controlled by a spot type detector listed for releasing service should be installed within 5-feet of the damper.
In a corridor wall	Activation controlled by smoke detector system in the corridor.
All	Where a total-coverage smoke detector system is provided within areas served by HVAC system, dampers are permitted to be controlled by the smoke detection system.

Smoke dampers are required at locations where ducts or air transfer openings of an air distribution system penetrate assemblies; including:

- Shaft enclosures (MSBC Section 717.5.3);
- Smoke barrier walls (MSBC Section 717.5.5);
- Horizontal Exits in fire walls (MSBC Section 717.5.1);
- Corridors (MSBC Section 717.5.4.1);
- Smoke Partitions (MSBC Section 717.5.7).
- Smoke-tight construction (MSBC Section 509.4.2)

**It should be noted that smoke dampers are not required in smoke control systems where actuation of the damper would interfere with the operation of the smoke control system (717.5.3 Exception 3).**

**The table below reiterates smoke damper (SD) requirements and provides a number of exceptions in accordance with the MSBC.**

## **Combination Smoke/ Fire Dampers**

Where penetration of a smoke barrier is required to be provided with a fire damper, a combination fire and smoke damper equipped and arranged to be both smoke and heat responsive should be provided (MSBC 717.5).

Combination smoke / fire dampers are required in the following location:

- Shaft penetrations (MSBC 717.5.3).

**The table below reiterates combination smoke / fire damper requirements and provides a number of exceptions in accordance with the MSBC.**

### **Through Penetration Protection**

Penetrations into or through fire barriers, smoke barrier walls, fire partitions, floor/ceiling assemblies, or the ceiling membrane of a roof/ceiling assembly are required to be protected with an approved penetration or membrane penetration assembly (MSBC 708). See MSBC 708 for exceptions.

### **Damper Exceptions**

The table below been developed by Howe Engineers in identifying where dampers are required and where exceptions exist.



	FD	SD	MSBC	Applicable SD, FD & SD/FD Damper Exceptions
<b>Fire Barriers (including horizontal exits)<sup>1</sup></b>	Required	Not Required (NR)	717.5.2	Penetrations tested in accordance with ASTM E119 as part of a fire-resistance rated assembly (FD). [MSBC §717.5.2 Exception 1]
				Ducts used as part of an approved smoke control system (FD). [MSBC 717.5.2 Exception 2]
				Where fire barriers walls have a FRR of less than 1-hour and the following conditions apply: <ul style="list-style-type: none"> <li>• The Building is protected throughout by automatic sprinklers;</li> <li>• Penetrations are limited to a ducted HVAC system conveying supply, return or exhaust air;</li> <li>• HVAC ducts are minimally 26 gage;</li> <li>• HVAC ducts are continuous from the AHU to the air outlet and inlet terminals (FD). [MSBC 717.5.2 Exception 3]</li> </ul>
<b>Smoke Barriers<sup>2</sup></b>	NR	Required	717.5.5	Smoke dampers are not required where openings in ducts are limited to a single smoke compartment and ducts are constructed of steel (SD). [MSBC 717.5.5 Exception 1]
<b>Floor / Ceiling Assemblies</b>	Required	NR	717.6.1	A duct is permitted to penetrate two floors or less with a fire damper at each floor provided it meets all the requirements in 717.6.1 Exception (FD). [MSBC 717.6.1 Exception]
<b>Shafts</b>	Fire / Smoke Dampers Required		717.5.3	Steel exhaust sub ducts extending at least 22-inches vertically in an exhaust shaft provided there is a continuous upward airflow to the outside (FD). [MSBC 717.5.3 Exception 1.1]
				Penetrations tested in accordance with ASTM E119 as part of a fire-resistance rated assembly (FD). [MSBC 717.5.3 Exception 1.2]
				Ducts used as part of an approved smoke control system (FD). [MSBC 717.5.3 Exception 1.3]
				Fire dampers and combination fire/smoke dampers are not required in kitchen and clothes dryer exhaust systems when installed in accordance with the International Mechanical Code (SD/FD). [MSBC 717.5.3 Exception 5]. A duct that penetrates a fire-resistance rated floor/ceiling assembly that connects not more than 2 stories is permitted without a shaft enclosure, provided that a listed fire damper is installed at the floor line. [MSBC 717.6.3].
				Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust sub ducts, having a minimum wall thickness of 0.187-inch (No. 26 gage), the sub ducts extend at least 22 inches vertically, and an exhaust fan providing continuous airflow to the outside is installed at the top of the shaft terminal. The exhaust fan should be provided with an uninterruptible power system for the first 15 minutes of loss of primary power (SD). [MSBC 717.5.3 Exception 2 for Group B and R occupancies only]
<b>Corridors</b>	NR	Required	717.5.4	Ductwork has a minimum wall thickness of 0.019 inches and there are not openings that serve the corridor (SD). [MSBC 717.5.4.1 Exception 2]
<b>Fire Partitions</b>	Required	NR	717.5.4	Ductwork does not exceed 100 square inches, constructed of steel a minimum of 0.0217 inch in thickness, does not have openings that communicate with the corridor, installed above the ceiling, shall not terminate at a wall register in the fire resistance rated wall, 12-inch long by 0.060-inch-thick steel sleeve centered in each duct opening and secured by rectangle angles (SD). [MSBC 717.5.4 Exception 3]

### Protected Vertical Openings

Vertical openings through floors will be protected by fire-rated assemblies in accordance with MSBC Section 707.3. Vertical openings include exit stairs, elevator shafts, and mechanical shafts. Shafts and exit enclosures, other than *exit access stairways* complying with MSBC Section 1019.3 Item 4, will be enclosed with listed and approved shaft enclosure assemblies that provide a 2-hour fire-resistant rated noncombustible shaft assembly per MSBC Section 707.3, as the shafts will connect less than four (4) stories but penetrate 2-hour rated floor slabs (Type IB Construction). **Enclosed exit stairs within the building will be designed with 2-hour fire-rated separations.**

<sup>1</sup> **Fire barriers within the building will include:** Occupancy separations (if provided) and special use room enclosures.

<sup>2</sup> **Smoke barriers within the building will include:** Fire service elevator lobby separations.

The floor openings requiring shaft protection will include, but are not limited to:

- Grease Ducts, Trash chutes and linen chutes
- Elevator Shafts
- Mechanical, electrical and plumbing shafts
- Exit Stairways, other than exit access stairways complying with MSBC Section 1019.3 Item 4.

Duct systems throughout the building that do not connect more than two (2) stories and are not required to be enclosed in shafts and are not required to be provided with smoke dampers, provided the annular space around the shaft is sealed with an approved material (MSBC, Section 714).

### ***ATRIUM DESIGN***

The current Fuller School design includes a three (3) story opening in the center of the building, with numerous breakout spaces within the opening. As the opening connects more than two (2) stories, the space is considered an atrium and must be designed in accordance with MSBC Section 404. Atriums are only permitted to be installed in buildings provided with approved automatic sprinkler protection (MSBC 404.3). Initially, it should be assumed that the building will require approximately 200,000 cfm of exhaust and associated make up air at the First Floor.

Section 404.5 requires a smoke control system to be installed in accordance with MSBC Section 909. The smoke control system can either be designed using natural or mechanical-ventilation but will require an engineering rational analysis to ensure adequate system performance. Equipment for the smoke control system must be provided with standby power. **The atrium will be provided with a smoke control system utilizing mechanical exhaust. Refer to the smoke control rationale analysis report drafted by Howe Engineers for further clarification on the system design. A basis of design addressing the preliminary FDS model results is presented in Appendix A of this document.**

Section 404.6 requires atrium spaces to be separated from adjacent spaces by a 1-hour fire barrier constructed in accordance with Section 707. A fire barrier is not required to enclose an atrium space when one (1) of the following arrangements are met:

- A glass wall forming a smoke partition is provided and sprinklers are provided along both sides of the separation walls and doors. Sprinklers must be located between 4 and 12-inches away from the glass at intervals along the glass not more than 6-feet. The sprinkler system must be designed to wet all surface of the glass upon activation. The glass wall must be installed in a gasketed frame in such a manner that the framing deflects without breaking the glass before the sprinkler operates. Where glass doors are provided, they must be self or automatic-closing.
- A glass block wall assembly complying with section 2110 having a ¾-hour rating is provided.
- A fire barrier is not required when the design is accounted for in the design of the smoke control system.

Atrium interior finishes must be class B or higher, with no reduction for sprinkler protection (Section 404.8).

It should be noted that unique egress requirements exist for atrium spaces in Section 404.9. Exit access travel distance through the atrium, not at the level of exit discharge, must not exceed 200-feet within the bounds of the atrium. Refer to the means of egress section of this report for further information.

### ***STAGE DESIGN***

The current Fuller School design includes a stage in the auditorium space on the First Floor. The requirements for stages are provided in MSBC Section 410. Section 410.3.1 requires stages to be constructed of materials as required for floors of the type of construction in which the stage is located. **As the building will be of Type IB Construction, the stage must be constructed of materials as required for floors.** In all types of construction, the finished floor must be constructed of wood or non-combustible materials. Openings through the stage floor must be equipped with tight-fitting, solid wood trap floors with approved safety locks.

Where the stage height is greater than 50-feet in height, all portions of the stage must be completely separated from the seating area by a proscenium wall with not less than a 2-hour fire-resistance rating extending continuously from the foundation to the roof (Section 410.3.4). Where a proscenium wall is required to have a fire-resistance rating, the stage openings must be provided with a fire curtain complying with NFPA 80, horizontal sliding doors complying with Section 716.5.2 having a fire protection rating of at least 1-hour, or an approved water curtain complying with section 903.3.1.1. **Based on the current set of drawings, the stage height is approximately 29-feet, thus a proscenium curtain is not required.**

Combustible scenery used in sets must meet the fire propagation performance criteria of Test Method 1 or 2, as appropriate of NFPA 701 in accordance with Section 806 of the International Fire Code.

It should be noted that the current stage design was measured to be approximately 1,580 square feet. Section 410.3.7 requires emergency ventilation for stages larger than 1000 square feet in floor area, or stages with a height greater than 50-feet. Ventilation must comply with Section 410.3.7.1 (roof vents) or 410.3.7.2 (Smoke control). **The stage will be provided with roof vents.**

Dressing and appurtenant rooms are required to be separated from the stage with rated construction in accordance with Section 410.5.1. Stages must be separated from dressing rooms, scene docks, workshops, storerooms and compartments appurtenant to the stage by fire barriers or horizontal assemblies. The fire-resistance rating must be 2-hour for stage heights greater than 50-feet, and not less than 1-hour for stage height of 50-feet or less. **As the stage is less than 50-feet in height, dressing rooms must be separated from the stage with 1-hour rated construction. Additionally, the AV rooms on the east and west sides of the stage will be provided with a 1-hour fire resistance rating.**

Stages must be provided with automatic sprinkler protection in accordance with Section 903.3.1.1. Sprinklers must be installed under the roof and gridiron and under all catwalks and galleries over the storage. Sprinklers must be installed in dressing rooms, performer lounges, and storerooms accessory to the stage (Section 410.7). Section 905.3.4 requires that stages greater than 1,000 square feet in area be provided with a Class III wet standpipe system with 1 ½-inch and 2 ½-inch hose connections on each side of the stage. **As the stage is greater than 1,000 square feet, it must be provided with a standpipe system as required by Section 905.3.4.**

It should also be noted that an accessible route must be provided to access the stage. **Refer to the accessibility section of this report for further clarification on the accessibility requirements associated with the auditorium space.**

## **MEANS OF EGRESS SYSTEM DESIGN**

### ***GENERAL REQUIREMENTS***

#### **Occupant Load**

The occupant load for each space within the Building is determined using the occupant load factors listed in MSBC Table 1004.1.2, as shown in the table below.

<b>OCCUPANT USE GROUP</b>	<b>OCCUPANT LOAD FACTOR PER PERSON</b>
Classrooms	20 square feet (net) per person or actual occupant load
Lab Classrooms	50 square feet (net) per person
Unconcentrated Assembly Areas (Lounge, Collab, Cafeteria)	15 square feet (net) per person
Office/Business	100 square feet (gross) per person
Locker Rooms	50 square feet (gross) per person
Athletic Facility (Gymnasium)	50 square feet (gross) per person
Stage	15 square feet (net) per person)
Fixed Seating (Auditorium)	Actual Number of Seats
Circulation Space	100 square feet (gross) per person
Kitchen	200 square feet (gross) per person
Storage, Mechanical, Electrical	300 square feet (gross) per person
Bleacher Seating	18-inches per occupant

**Refer to the 60% CD Life Safety Drawings prepared by Howe Engineers for the occupant load of each floor of the proposed building.**

It should be noted that the design of the building entails classrooms with moveable partitions between individual rooms. As such, the calculated occupant load of individual classrooms does not represent the actual occupant load expected in each space. The life safety drawings depict an "actual" occupant load of 25-people per classroom, which includes students and staff members. **The approach of using a planned occupant load requires discussion and approval from the Authority Having Jurisdiction.**

### **Number of Exit Access Doorways**

Section 1006.2.1.1 requires that three (3) or more exits be provided when a space has a calculated occupant load of 501 to 1,000 and four (4) exits are required when the occupant load is greater than 1,000 occupants. Section 1006.2.1 requires two exits for all areas exceeding the occupant load in table 1006.2.1. For an A-3/E occupancy, two exits are required if the occupant load exceeds 49 occupants or where the common path of travel exceeds 75 feet. In Group B occupancy areas, two exits are required if the occupant load exceeds 49 occupants or where the common path of travel exceeds 100 feet. Further, in Group S-1/S-2 occupancy areas, two exits are required if the occupant load exceeds 29 occupants or where the common path of travel exceeds 100 feet.

**It should be noted that the first-floor occupant load exceeds 1,000, thus requiring four means of egress. The auditorium and gymnasium space are provided with their own dedicated egress doors leading directly to the exterior. The occupant load of the main school area is provided with four means of egress by means of doors to the exterior, and two (2) interior atrium stairways. It should be noted that the tech maker space, fab lab, art room, and media room on the first floor are all provided with a single 36-inch door that leads directly to the exterior of the building. Occupants in these rooms are expected to egress directly to the exterior of the building and do not need to enter the main building in order to egress. As such, the remainder of the first floor only requires three (3) means of egress, served by the two primary egress stairs, and the open stair within the atrium bounds.**

It should be noted that the means of egress for unique spaces such as boiler rooms, furnace rooms, and refrigeration machinery rooms is governed by Section 1006.2.2. Boiler rooms, incinerator rooms, and furnace rooms require two (2) means of egress where the area of the space is over 500 square feet and any fuel-fired equipment exceeds 400,000 BTU input capacity (Section 1006.2.2.1). Where two means of egress are required, one (1) is permitted to be a fixed ladder or an alternating tread device. The exits must be remotely located at a distance equal to one-half the length of the maximum overall diagonal dimension of the room. Refrigeration machinery rooms larger than 1,000 square feet must have at least two (2) exits (Section 1006.2.2.2). All portions of the machinery rooms must be within 150-feet of an exit or exit access doorway. Doors must swing in the direction of egress travel regardless of the occupant load served.

The current egress strategy involves occupants on the first-floor egressing upwards one story to exit through the main entry doors on Floor 2. MSBC Section 1006.3 permits the path of egress travel to pass through one (1) adjacent story to reach an exit. Occupants from Floor 1 would only pass through one adjacent story to reach the main entrance to the building, thus the approach complies with Section 1006.3.

### Arrangement of Means of Egress (MSBC Section 1007.1.1)

Where two (2) exits, or exit access doors are required from a space, they must be placed not less than one-third the overall diagonal distance of the space, measured in a straight line between the exit doors or exit access doors.

Where there are three (3) or more exits, or exit access doors, at least two (2) of the exits or exit access doors are required to meet the remoteness as defined above. The additional exits shall be located as remotely as possible.

**The current arrangement of means of egress meets these criteria. The primary egress stairs are on opposite sides of the building, satisfying the one-third remoteness criteria.**

### Exit Capacities

The exits within the building will be designed using the exit capacity factors listed in MSBC Sections 1005.3.1 and 1005.3.2. The exit capacity for stairs is calculated at 0.20 inches per occupant, while all other means of egress are calculated at 0.15 inches per occupant as the building will be fully sprinklered and provided with emergency voice/communication capabilities (Section 1005.3). The minimum required clear width shall not be less than those outlined within other sections of this report, which have been excerpted in the table below for reference.

LOCATION	EXIT CAPACITY NON-SPRINKLERED	MINIMUM REQUIRED CLEAR WIDTH
Stairways	0.20 inches per person	44 inches (MSBC Section 1011.2)
Doors	0.15 inches per person	32 inches (MSBC Section 1010.1.1)

**Refer to the 60% DD Life Safety Drawings prepared by Howe Engineers for the egress capacity and exiting strategy of each floor level. As seen in the life safety drawings, the means of egress capacity exceeds the occupant load on all floors. The use of the unenclosed egress stairs as a means of egress requires further discussion with Howe Engineers.**

### Exit Access Travel Distance (MSBC Section 1017)

The Travel distance for each of the occupancies will be in accordance with the requirements contained in MSBC Section 1017.2 and Table 1017.2. Refer to the Table below:

OCCUPANCY	MAXIMUM ALLOWABLE TRAVEL DISTANCE (Sprinklered)
Group A, E, S-1	250 feet
Group B	300 feet
Group S-2	400 feet
Atrium	200 feet within atrium

Exit access travel distance must be measured from the most remote point within a story along the natural and unobstructed path of horizontal and vertical egress travel to the entrance of an *exit* (MSBC Section 1017.3). Where an exit access stairway or ramp is used as part of the means of egress system, the travel distance along the exit access stairway or ramp must be included in the exit access travel distance measurement (MSBC Section 1017.3.1). The measurement along exit access stairways and ramps must comply with the following:

- Stairways: measurements must be made on a plane parallel and tangent to the stair tread and nosings in the center of the stair and landings.
- Ramps: measurement along ramps must be made on the walking surface in the center of the ramp and landing.

Note that an “exit” is defined by MSBC Section 202 as that portion of a means of egress system between the exit access and the exit discharge or public way. Exit components include exterior exit doors at the level of exit discharge, *interior exit stairways* and *ramps*, *exit passageways*, *exterior exit stairways* and *ramps* and *horizontal exits*.

As addressed in the atrium design section of this report, the travel distance within the atrium is governed by Section 404.9. Where the path of egress travel is not on a level of exit discharge (i.e. Floor 3), the portion of the total permitted exit access travel distance that occurs within the atrium must not exceed 200-feet (Section 400.9.3).

#### **Egress through Intervening Spaces (MSBC Section 1016.2)**

Exit access from a room or space should not pass through an adjacent room or space, except where the room or area is accessory to the area being served. Exit access is not permitted to pass through kitchens, storerooms, restrooms, closets or other similar spaces. In addition, the exit access is not permitted to pass through rooms subject to locking.

#### **Common Path of Travel Limits (MSBC Table 1006.2.1)**

Maximum common path of egress travel distance is limited based on individual occupancies as outlined below.

- Business and Storage Occupancies 100 feet
- Assembly / Educational occupancies 75 feet

**Common path of travel is less than 75-feet in the Fuller School and thus is compliant.**



### **Dead End Corridor Limits (MSBC Section 1020.4)**

Per MSBC Section 1020.4, where more than one exit or exit access doorway is required, the exit access must be arranged such that there is no dead ends more than:

- Assembly Occupancies 20 feet
- Business Occupancies 50 feet
- Storage Occupancies 50 feet
- Educational Occupancies 50 feet

Note that a dead-end corridor is not limited where the length is less than 2.5 times the minimum width of the dead end. **Dead ends in the building will not exceed 20-feet.**

### **Exit Access Corridors (MSBC Section 1020)**

Corridors used for the exit access portion of the means of egress will be constructed in accordance with the MSBC Section 1020. The exit access corridors will provide sufficient clear width to accommodate the number of occupants exiting through the corridor, but will never be less than 44 inches unless serving an occupant load of less than 50 people, in which case they can be 36 inches.

**Per MSBC Table 1020.1, as the building will be fully sprinklered, rated corridors are not required.**

**It should also be noted that corridors in Group E occupancies with greater than 100 occupants are required to be 72-inches in width (Section 1020.2).**

### **Exit Stair Discharge**

The MSBC requires 50-percent of the enclosed interior exit stairways discharge to the exterior of the building and through the atrium. The remainder of the enclosed interior exit stairways are permitted to discharge to interior lobbies and vestibules (MSBC Section 1028.1). **The primary egress stairs on the east and west sides of the building both discharge directly to the exterior on the first floor and thus are compliant.**

### **Doors (MSBC Section 1010)**

Doors throughout the building must comply with MSBC Section 1010.1.

1. Dimensional Requirements (MSBC 1010.1.1)
  - Minimum clear width: 32 inches
  - Maximum size of a door leaf: 48 inches
  - Minimum Clear Height: 6 feet – 8 inches
2. Doors shall be side-hinged swinging in all spaces except within storage areas.
3. Doors serving a space with 50 people or more are required to swing in the direction of egress travel towards the exit.
4. While opening, doors are not permitted to project more than 50 percent of the required clear width in an exit stair or exit access stairway at any moment during the swing when opening. In addition, doors, when fully open, are not permitted to project more than 7 inches into the required exit clear width

### **Exit signage (MSBC Section 1013)**

1. Exit signs must be provided in each room or space that requires more than one (1) exit or exit access.
2. Exit signs must be placed such that no point within an exit access corridor is more than 100 feet or the listed viewing distance of the sign, whichever is less, from the nearest visible sign.
3. Main exterior exit doors or gates which obviously and clearly are identifiable as exits are not required to be provided with an exit sign where approved by the building official.
4. Every exit sign and directional exit sign must have plainly legible letters not less than 6 inches high with the principal strokes of the letters not less than  $\frac{3}{4}$  inch wide. The word "EXIT" must be in high contrast with the background and shall be clearly discernible when the exit sign illumination means is or is not energized. When an arrow is provided as part of the exit sign, the construction shall be such that the arrow direction cannot be readily changed.
5. Exit signs and exit directional signs can be externally or internally illuminated. The level of illumination at the sign's surface must be no less than 5-foot candles.
6. Exit signs shall be illuminated at all times and connected to an emergency power source having a duration of not less than 90 minutes. Emergency power shall conform to the National Electrical Code (NFPA 70).
7. Exit signs must be provided within 18-inches of the floor in electric rooms if the electric room has over 1,200 amperes and is more than 6-feet wide. In addition, panic hardware should be provided from these spaces.
8. **The International Symbol of Accessibility must be included on exit signs at exits to grade.**
9. Directional signage indicating the location of other means of egress and in which are accessible means of egress must be provided at the following locations:
  - a. At exits serving a required accessible space, but not providing an approved accessible means of egress.
  - b. At Elevator Landings
  - c. Within areas of refuge

### **Means of Egress Lighting (MSBC Section 1008)**

**Work areas will meet the following criteria as MSBC Section 1008 requires the following for means of egress lighting:**

- The means of egress, including the exit discharge, must be illuminated at all times the building space served by the means of egress is occupied, except aisle access ways in Group A occupancies.
- The means of egress illumination level must not be less than 1 foot-candle (11 lux) at the walking surface.
- The power supply for means of egress illumination must normally be provided by the premises' electrical supply. In the event of power supply failure, an emergency electrical system shall automatically illuminate all of the following areas:
  - Aisles and unenclosed egress stairways in rooms and spaces that require two or more means of egress.
  - Corridors, exit enclosures and exit passageways in buildings required to have two or more exits.
  - Exterior egress components at other than their levels of exit discharge until exit discharge is accomplished for buildings required to have two or more exits.

- All components to the access to public way must be illuminated
  - Interior exit discharge elements, as permitted in Section 1027.1 of the MSBC, in buildings required to have two or more exits.
  - Exterior landings as required by Section 1008.1.6 for exit discharge doorways in buildings required to have two or more exits.
- The emergency power system must provide power for a duration of not less than 90 minutes and must consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system must be in accordance with Chapter 27 of the MSBC.
- Emergency lighting facilities must be arranged to provide initial illumination that is at least an average of 1 foot-candle (11 lux) and a minimum at any point of 0.1 foot-candle (1 lux) measured along the path of egress at floor level. Illumination levels are permitted to decline to 0.6 foot-candle (6 lux) average and a minimum at any point of 0.06 foot-candle (0.6 lux) at the end of the emergency lighting time duration. A maximum-to-minimum illumination uniformity ratio of 40 to 1 must not be exceeded.

## **FIRE PROTECTION SYSTEMS**

### ***SUMMARY OF FIRE PROTECTION FEATURES***

*The following Fire Protection and Life Safety Features are being provided in the building:*

1. The building will be constructed of a Type IB fire resistive non-combustible construction.
2. The building will be fully sprinklered and provided with standpipes as outlined in this section.
3. A manual fire alarm system will be provided in the building and will meet current NFPA 72 spacing requirements
4. Emergency voice/alarm communication systems will be installed in accordance with Section 907.2.3
5. Emergency Power and Standby Power for all life safety systems
  - a. At least one elevator will be available to operate on Standby power
  - b. Egress Signage and Lighting will be provided with Emergency Power.
  - c. The atrium smoke control system will be provided with Standby Power.
6. Portable fire extinguishers are being provided in supervised locations in accordance with NFPA 10.
7. The system will be zoned relative to an atrium zone and non-atrium zone.

### ***AUTOMATIC SPRINKLER PROTECTION***

The Fuller School will be provided with an automatic sprinkler system as required for Group E occupancies with fire areas larger than 12,000 square feet and as required by the M. G. L. 148 26 G. The atrium and stage are also required to be provided with sprinkler protection. The design densities of the sprinkler system will be determined by the engineer of record.

### ***STANDPIPES***

Standpipes are required throughout the building when the highest floor is greater than 30 feet above the lowest level of fire department access (MSBC Section 905). **Based on the building elevation drawings provided by JLA, the building height from the lowest level of fire department vehicle access to the highest occupiable floor is 28-feet. It should be confirmed by JLA that the lowest level of fire department access is the first floor and that the landscape around the building is not sloped to provide fire department access at a lower point. It should be noted that Class I standpipes are permitted in buildings provided with automatic sprinkler protection in lieu of a Class III standpipe.**

It should also be noted that the stage will require a Class III wet standpipe system with a 1 ½-inch hose connection installed in accordance with NFPA 13 or NFPA 14 on each side of the stage (Section 905.3.4). This requirement is applicable as the stage is greater than 1,000 square feet in area.

## ***FIRE ALARM***

Section 907.2.3 requires a manual fire alarm system for group E occupancies having an occupant load that exceeds 50. The manual fire alarm system must initiate emergency voice/alarm communication features in the building. Where smoke detectors or automatic sprinkler systems are installed, the systems must be connected to the building fire alarm system. **It should be noted that manual fire alarm boxes are not required in Group E occupancies where the building is fully sprinklered, the emergency voice/alarm communication system will activate upon sprinkler waterflow, and where manual activation is provided from normally occupied spaces.**

### **Manual Fire Alarm Pull Stations**

Manual fire alarm devices will be located no more than five (5) feet from the entrance to each exit. Additional manual fire alarm boxes will be located so that travel distance to the nearest box is no more than 200 feet. A Manual pull station will also be provided in a constantly attended locations to provide the capability to manually activate the fire alarm system in an emergency situation.

## ***SMOKE CONTROL***

As indicated in the atrium design section of this report, the atrium will require a smoke control system designed in accordance with MSBC Section 909. The system may be designed as either a natural or mechanical ventilation system, and an engineering rational analysis should be provided to document the intended design of the system function. A smoke control panel must be provided in accordance with MSBC Section 909.16. As indicated throughout this report, the smoke control system must be provided with standby power.

**Refer to Appendix A for the atrium smoke control basis of design letter. A full smoke control rational analysis will be drafted by Howe Engineers and included in future submissions.**

## ***EMERGENCY POWER***

The following systems shall be provided with emergency power:

1. Emergency lighting along the means of egress in the building and along the exit discharge at a minimum level of 1-foot candle. Emergency lighting shall be provided in those rooms when the area is occupied. Subject to the approval of the Authorities Having Jurisdiction.
  - a. Complete Emergency Lighting shall be provided to the exit discharge of the building exits as determined by the Authorities Having Jurisdiction.
2. Fire Alarm System and all associated equipment including but not limited to the following:
  - a. Fire alarm control panels (including all fire alarm control equipment throughout the facility).
  - b. Fire alarm controls.
  - c. Fire alarm power supply booster panels.
  - d. Digital fire alarm communicators and interface equipment.
  - e. Dedicated telephone line from the Fire Alarm Control Panel dialer.

- f. Manual pull stations
3. Exit and Directional Exit Signs.
4. Elevators (transferable)
5. Power Operated Locks (if provided)
  - a. Manual override controls for any electric locking or hardware in the entire building.

It should be noted that the atrium smoke control system will be required to be provided with standby power.

### ***ELEVATOR PROVISIONS***

An elevator is proposed in the southwest portion of the building which will serve the first through the third floor and will provide roof access.

Phase I and Phase II recall equipment prescribed by the ASME 17.1 elevator code will be provided for the elevators. Accessible elevators shall be located with the required travel distance as per the Accessibility Standards.

**Two-way communication devices must be provided at elevator lobby areas above grade (i.e. second and third floors).**

**It should be noted that the elevator machine room may require a fire-resistance rating matching the rating of the elevator shaft. This rating must be provided if openings are provided from the elevator machine room into the elevator shaft as the machine room directly abuts the elevator shaft. The elevator machine room is currently designed with openings into the elevator shaft, thus the machine room will be provided with a 2-hour rating to match the rating of the elevator shaft.**

### ***PORTABLE FIRE EXTINGUISHERS***

The Massachusetts State Fire Code (MSFC) adopts and amends the 2015 edition of NFPA 1, which requires fire extinguishers in Groups A, B, and E occupancies. As such, fire extinguishers must be provided throughout all enclosed areas of the building. Portable fire extinguishers will be provided in locations where required by NFPA 10. Basic requirements are as follows.

In accordance with MSBC Section 906.1, extinguishers will be required in the following locations:

- Not more than 75 feet of travel distance to a fire extinguisher. Fire Extinguishers need not be located in each room if the travel distance can be achieved and the extinguisher has the correct hazard classification for each hazard within the 75-foot travel distance.
- Portable Class BC in elevator machine rooms and kitchens (kitchens may require class K depending on contents and use)
- Shall not exceed 40 lbs. capacity

### **Actual Mounting Locations (2013 Edition NFPA 10)**

- Bottom of extinguisher at least 4" above the floor
- Top of extinguisher not more than 5 ft. above the floor
- 1-6.6 Fire extinguishers shall not be obstructed or obscured from view
- 1-6.5 Cabinets shall not be locked (However, if extinguishers are in locations subject to malicious use, the cabinets can be locked, but there must be a means to open them in an emergency. Example: breaking the glass)
- 1-6.3 Fire extinguishers shall be conspicuously located where they will be readily accessible and immediately available in the event of a fire. Preferably they shall be located along normal paths of travel, including exits from areas.
- 1-6.11 Operating instruction shall be located on the front of the extinguisher and be clearly visible (manufacturer requirement)
- 1-6.12 Fire extinguishers mounted in cabinets or wall recesses shall be placed so that the fire extinguisher operating instructions face outward.
- The location of such fire extinguishers shall be marked conspicuously (see 1-6.6)

### ***FIRE DEPARTMENT ACCESS***

Per 527 CMR Section 18.2.3.2, a fire department access road must be maintained / provided in a manner that allows for at least one (1) exterior door to be within 50 feet of the access road that can be opened from the outside. In addition:

- All points of the building must be within 150 feet of the fire department access road which is increased to 250 feet when the building is protected throughout by an automatic sprinkler system.
- The fire department access road must have an unobstructed width of not less than 20 feet, and an unobstructed vertical clearance of 13 feet 6 inches.
- A minimum 25-foot turning radius must be provided / maintained.
- The access road must be designed and maintained to support the imposed loads of fire department apparatus and must be provided with an all-weather driving surface.
- Turning radius must be approved by the AHJ, with a minimum turning radius of 25 feet.
- Where necessary, dead ends are permitted provided they do not exceed 150 feet in cumulative length.
- The access road plan must include an analysis and evaluation of fire apparatus maneuvers throughout the access roads created by sweep path analysis and turn simulation software.

***EMERGENCY RESPONDER RADIO COVERAGE***

Per the MSBC Section 916.1, all buildings must have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. This section does not require improvement of the existing public safety communication systems. The emergency responder radio coverage must be in accordance with Section 510 of the International Fire Code.

The building is considered to have acceptable emergency responder radio coverage when signal strength measurements in 95 percent of all areas on each floor of the building have a minimum signal strength of -95 dBm must be receivable within the building and a minimum signal strength of -100 dBm must be received by the agency's radio system when transmitted from within the building. **A bi-directional antenna should be provided for the project. Further discussion with Framingham is required to determine the number of antennas needed for Fire, Police and EMS.**



## **ACCESSIBILITY**

As a new construction building, the Fuller School will be designed to be fully accessible and comply with MAAB as well as the 2010 Americans with Disabilities Act.

### ***GENERAL REQUIREMENTS***

The Fuller School must be designed to meet MAAB as well as the 2010 Americans with Disabilities Act. Both ADAAG and MAAB require that all entrances are accessible, changing rooms and showers are accessible, and that all bathrooms be designed to be accessible. Finally, it should be noted that MAAB requires all exterior pathways to be fully accessible and that if parking is provided that a certain percentage be accessible.

The following accessible features should be provided in the building.

- All bathrooms and locker rooms should be accessible. Locker rooms should include the following features:
  - 36-inch wide accessible routes around all lockers. (including between benches and lockers)
  - 5% but not less than one accessible locker
  - At least one accessible shower stall
  - Accessible toilet and plumbing fixtures
- The elevator will be fully accessible and meet gurney requirements
- All entrances must be accessible
- All exterior walkways must be accessible
- Classrooms must be accessible including all laboratory/ science classrooms. 5% but not less than one (1) of each type of equipment/ learning station should be accessible

### ***Public and Common Use Spaces***

The public and common use spaces are those spaces inside or outside the buildings that are used by residents and/or visitors. This includes the parking and assembly spaces on the ground floor. These spaces must be accessible per the requirements of 521 CMR and the 2010 ADAAG. These spaces should be on an accessible route at least 36- inches wide which connects accessible parking, accessible entrances, and public and common use spaces. Wherever possible, the accessible route should be the shortest possible route (521 CMR 10.2). All doorways and openings located in common use and public use spaces and along accessible routes should comply with 521 CMR Sections 26.2 through 26.11 and ADAAG Section 404.

**Accessible Means of Egress**

All spaces or elements that are required to be accessible must be provided with at least one accessible means of egress. In spaces required to be provided with multiple means of egress, each space must be served by at least two accessible means of egress. Exit access stairways are permitted to be considered part of the accessible means of egress when they are provided with a clear width of at least 48 inches between the handrails and two-way communication is provided at the elevator landings in accordance with 780 CMR Section 1009.3. The building is fully sprinklered and areas of refuge are not required to be provided at the exit access stairways. Two-way communication is required to be provided at the elevator landings, so that the exit access stairways in the school can be considered as part of the accessible means of egress.

**Parking**

Parking will be provided in accordance with the following MAAB table based on the number of spaces provided for the residential occupants and the potential assembly occupants. **One in eight accessible spaces, but not less than one, must be van accessible.**

23.2.1	<u>Total Parking in Lot</u>	<u>Required Minimum Number of Accessible Spaces</u>
	15-25	1
	26-50	2
	51-75	3
	76- 100	4
	101-150	5
	151-200	6
	201-300	7
	301-400	8
	401-500	9
	501-1,000	2% of total
	1,001 and over	20 plus 1 for each 100 over 1000

**Accessible Seating Requirements**

In places of assembly with fixed seating, the minimum number of accessible spaces provided must be in accordance with the table below:

<u>Total Seating</u>	<u>Wheelchair Spaces</u>
4 to 25	1
26 to 50	2
51 to 300	4
301 to 500	6
over 500	6, one additional space for each total seating capacity increase of 100.

When more than 150 seats are provided, the wheelchair seating locations must be provided in more than one (1) location and must be dispersed through the seating area. Accessible seating must be integral with the rest of the seating (i.e. shoulder to shoulder). Bleachers should be ordered with cutouts where accessible seating will be provided.

It should also be noted that ADAAG requirements will be applicable to the project. ADAAG Table 221.2.1.1 also requires six (6) wheelchair spaces to be provided in the auditorium as the space will have 421 fixed seats.

In addition to wheelchair seating locations, 1% of all fixed seats must be a companion seat consisting of an aisle seat with no armrests on the aisle side (or with removable or folding armrests on the aisle side).

Accessible seating positions are permitted to be clustered for bleachers, balconies and other areas having sight lights with a slope greater than 5%. Equivalent accessible viewing positions may be located on levels having accessible egress.

Ticket box offices and concession stands must be located on an accessible route, and a portion of the counter must be a maximum of 36 inches high for a length of at least 36 inches. A counter or auxiliary counter can be used to achieve this requirement.

**It should be noted that accessible seating must be provided in both the auditorium and the gym, which is provided with telescoping bleacher seating. The auditorium is provided with 421 fixed seats, thus must be provided with six (6) wheelchair seats (with a companion seat directly adjacent to the wheelchair space). The gymnasium must be provided with cutout sections in the telescoping seating to accommodate wheelchair spaces.**

**Additionally, within the auditorium spaces, assistive listening devices must be provided.** Assembly areas that accommodate at least 50 persons or with an audio-amplification systems must be provided with permanently installed assistive listening systems (521 CMR 14.5.1). If the assistive listening system serves individual fixed seats, such seats must be located within a 50-foot viewing distance of, and including the stage, and must have a complete view of the stage (521 CMR 14.5.3). Signage must be provided to notify patrons of the availability of a listening system and must comply with the signage provisions of 521 CMR 41.00.

**An accessible route must be provided to the performance area within the auditorium.**

**Where classrooms are provided with fixed seating, at least 5% but not less than one will be provided with an accessible route, accessible clear floor space, knee clearance, and table heights.**

## **PLUMBING FIXTURES**

The Massachusetts Plumbing Code requires specific plumbing fixtures for various spaces in the building. The number of plumbing fixtures shall be determined based on the following factors, as excerpted from the Massachusetts State Plumbing Code, Section 10.10 Table 1.

The following table outlines the plumbing fixture requirements for new construction. The factors that dictate the fixture counts for the building depend on the intended and future function of the Fuller School. It should be noted that separate toilet facilities are required for staff and students.

Occupancy	Water closets			Lavatories		Drinking Fountains	Other Fixtures
	Male	Female	Urinals	Male	Female		
Education (Secondary)	1 per 90	1 per 30	1 per 90	1 per 90	1 per 90	1 per 75	1 service sink per floor
Education (Staff)	1 per 25	1 per 20	33% substitution	1 per 40	1 per 40	-	1 service sink per floor
Auditorium	1 per 600 seats	1 per 200 seats	1 per 200 seats	-	-	-	-

The following tables outline the required plumbing fixtures for the Fuller School based on the use of a programmatic occupant load. A program occupant load captures the intended use of spaces, as opposed to the calculated occupant load which tends to be more conservative in nature. **The use of a program occupant load requires discussion and approval from the plumbing official.**

Gender neutral toilets have been discussed for the building. The following provisions are applicable for the installation of gender neutral toilets in the Fuller School:

1. Gender neutral facilities are permitted for employees
2. Gender neutral toilets can only be counted one time towards plumbing fixture counts. Thus, they may be counted as either Male or Female.
3. When two (2) or more toilet facilities are required, Gender Neutral Toilets may replace these fixtures but only in pairs (E.g. one replaces a Male and the other replace a female fixture).
4. Once the minimum number of fixtures is provided Gender Neutral Toilets can be singularly provided.

**It should also be noted that 248 CMR Section 10.10(18)(h).6 requires all secondary schools that conduct physical activities on the school premises to be provided with separate men’s and women’s shower facilities to accommodate students. Based on preliminary discussion with the plumbing official, showers will be required at Framingham Fuller School. Showers should be provided for the largest population expected to use them at a given time (e.g. physical education class, or after school sporting event).**

**Fuller Plumbing Fixtures Calculation**  
630 Students 120 Staff

**Educational Use - Use Group E (elementary)**

Required Fixtures per Code	Toilet Female Required 1 per 30	Toilet Male Required 1 per 25	Urinals Male Required 1 per 90	Lavatories each sex Required 1 per 90	Drinking Fountain Required 1 per 75
Students					
Staff					

Floor Level	Occupants		Unisex Toilet		Toilet - Female		Toilet - Male		Urinals		Lavatories		Drinking Fountain		Classrm Sinks	Showers	Map Sinks	Notes
	Total	Male	Female	Required	Provided	Required	Provided	Required	Provided	Required	Provided	Each sex Required	Female Provided	Male Provided				
Floor 1 Students	210	105	105	0	1	4	12	2	5	7	2	11	11	3	3			
Floor 1 Staff	40	20	20	0	13	1	-	1	-	1	1	1	1	-	-			3
Floor 2 Students	210	105	105	0	1	4	8	2	2	6	2	8	8	3	3			
Floor 2 Staff	50	25	25	0	3	2	-	1	-	1	1	1	1	-	-			2
Floor 3 Students	210	105	105	0	1	4	8	2	2	6	2	8	8	3	3			
Floor 3 Staff	30	15	15	0	2	1	-	1	-	1	1	1	1	-	-			2
<b>750</b>	<b>375</b>	<b>375</b>	<b>375</b>	<b>0</b>	<b>21</b>	<b>16</b>	<b>28</b>	<b>9</b>	<b>9</b>	<b>19</b>	<b>9</b>	<b>30</b>	<b>30</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>7</b>

Unisex Toilets provided:  
Students 3 SPED  
1 at Lockers

Staff 1 Central Office  
1 Medical Suite  
1 Kitchen  
6 General

Total Toilet Fixtures Required 34  
Total Toilet Fixtures Provided 77

**Community Service Areas - Use Group E - Non-Simultaneous Use**

420 Auditorium, 600 Gym

Required Fixtures per Code	Toilet Female Required 1 per 200	Toilet Male Required 1 per 600	Urinals Male Required 1 per 200

Assembly Use

Floor Level	Occupants Total	Occupants Male	Occupants Female	Toilet Female Required 1 per 200	Toilet Female Provided	Toilet Male Required 1 per 600	Toilet Male Provided	Urinals Male Required 1 per 200	Urinals Male Provided	Notes
Floor 1	1,020	510	510	3	7	1	2	3	5	Plus 2 Unisex
<b>Total Toilet Fixtures Required</b>	<b>7</b>	<b>14</b>	<b>17</b>	<b>7</b>	<b>17</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>5</b>	

Total Toilet Fixtures Required 7  
Total Toilet Fixtures Provided 14 17 With Unisex

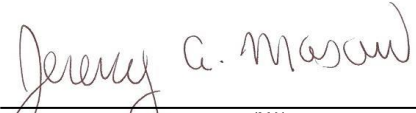
## CONCLUSION

The building is to be constructed in accordance with the requirements of the applicable Codes. During this process, the building will be designed to provide levels of safety at least equivalent to the provisions contained in the applicable codes. To achieve these levels of safety, the following primary features are provided:

1. The Building will be of Type IB fire resistive non-combustible construction and will comply with the separated mixed-use provisions of the MSBC.
2. The building will be fully sprinklered and provided with standpipes as outlined herein.
3. The means of egress system will be provided as outlined in this report and will meet the requirements of MSBC. Classrooms are proposed to use the actual number of students/ staff as opposed to the calculated occupant load.
4. The building will be provided with a manual fire alarm system and emergency voice/alarm communication abilities.
5. The atrium will be provided with a smoke control system that maintains tenability 6-feet above the highest walking surface. The smoke control system will be provided with standby power.
6. The building will be designed to be fully accessible in accordance with MAAB and ADAAG.
7. Plumbing fixtures will be provided in accordance with the provisions in the tables detailed above.

Prepared by,

Howe Engineers, Inc.



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Jeremy A. Mason, P.E.<sup>(MA)</sup>  
Project Director

**APPENDIX A: SMOKE CONTROL BASIS OF DESIGN**





### 3.1.4 Proprietary Items

Please find attached the updated listing of Proprietary Specifications, dated May 22, 2019, recommended to be included in the Fuller Middle School project. The proprietary items were approved by the following elected bodies of the District:

School Building Committee on Monday, June 3, 2019

School Committee on Wednesday, June 5, 2019

Approval documentation is included in the School Committee Meeting Minutes from June 5, 2019.

## Memorandum

To:	Fuller Middle School Building Committee	Date:	6/3/2019
From:	Joel G. Seeley	Project No.:	17050
Project:	New Fuller Middle School		
Re:	Proprietary Specification		
Distribution:	School Building Committee (MF)		

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School Building Committee Members,

Please find the updated listing of Proprietary Specifications, dated May 22, 2019, recommended to be included in the project by Framingham Public Schools Building and Grounds Department. These have been reviewed by the architect and the engineers and they agree with the recommendation. This is an update of the list reviewed at the April 8, 2019 School Building Committee Meeting.

Also attached is an excerpt from the MSBA's Detailed Design Requirements Module 6, which requires a vote by an elected body of the District for proprietary specifications.

The School Building Committee is requested to approve the attached recommended listing of Proprietary Specifications and recommend approval by the School Committee.

**MEMORANDUM**DATE: March 15, 2019, *Revised March 21, 2019, Revised April 8, 2019, Revised May 22, 2019***PROJECT: Fuller Middle School Framingham, MA****SUBJECT: Proprietary Items**

TO: Joel Seeley, SMMA

FROM: Elizabeth Bugbee, AIA Jonathan Levi Architects

On February 20, 2019 the Framingham Public Schools Building and Grounds Department identified and recommended the following items to be listed as proprietary in the specifications for the new Fuller School. These items were reviewed with the architect and MEP engineers, who agree with the recommendations. These will need to be voted on and approved by the SBC in order to be included in the specification for the new Fuller Middle School.

SYSTEM	MANUFACTURER	REASON FOR RECOMMENDATION
Automatic Temperature Controls	Tridium Niagara N4 Supervisor - JACE Controller	Tridium Niagara N4/Supervisor is the current City standard for the Building Management System (BMS). This would be an extension of the City's existing building management Architecture system with Tridium Niagara N4/JACE controllers and will provide a seamless tie-in to the existing City's building management system BMS Server. The Tridium Niagara N4/Jace would therefore result in the reduction of costs of maintenance staff training and servicing, to improve reliability of service from contractors, and improve integration of systems into the existing Facility control network. The Tridium Niagara N4 Supervisor system provides an open platform to allow integration of a variety of other control system protocols with JACE Controller (eg BACNet IP, etc.)
Network Switches	HP	Maintaining a standard set of manufacturers for this type of equipment helps to lower the total cost of ownership of the system by allowing the City to maintain a standard operating procedure for installation, operation, support and maintenance.
Access Control	S2	Maintaining a standard set of manufacturers for this type of equipment helps to lower the total cost of ownership of the system by allowing the City to maintain a standard operating procedure for installation, operation, support and maintenance.
Closed Circuit TV	Cisco Meraki System	Maintaining a standard set of manufacturers for this type of equipment helps to lower the total cost of ownership of the system by allowing the City to maintain a standard operating procedure for installation, operation, support and maintenance.
Door Hardware Key System and Lock Cylinders	Schlage Classic Keyways: C, E, EF and F.	The existing Framingham Public Schools master key system is a registered system with Schlage Lock. The school district would like Fuller Middle School keyed into the existing registered master key system.
Classroom Door Hardware	Securitech QID	Allows user to quickly lock classroom door via push button in lieu of thumb turn or key and has visual indicator to notify occupants that the door is deadbolted and the outside lever is locked.

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- Provide a list identifying all proposed proprietary items (if any) with an affidavit which shall indicate an elected body of the district (school committee, city or town council, or selectmen, - but not an ad-hoc building committee) has been presented with proposals for proprietary requirements approval action, has had an opportunity to investigate, or to require staff or consultant investigation upon each item so proposed, and has majority voted in an open public session that is in the public interest to do so. Provide MSBA with a certified copy of the vote of the elected body.
- An interior color theory statement describing proposed paint and material selections and colors for typical and special spaces, why they have been selected and how these selections relate to exterior materials and colors. Confirm that color and material selections have been presented to and approved by the District
- Confirmation of project registration with CHPS or USGBC
- Structural narrative including methods of lateral bracing and how requirements of earthquake code will be met
- Structural calculations and required floor loads
- Energy calculations
- Life Cycle cost analysis for energy and water consuming devices
- Heat gain and loss calculations for Heating, Ventilating and Air Conditioning systems
- Calculations showing total electrical load
- Security and visual access requirements:
  - 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
  - Identification of any other security related items particular to the District and/or the proposed project
  - Verification that the following safety and security related issues have been reviewed and are in accordance with the District's procedures as noted above:
    - Main entrance design – describe District protocol for visitor entry and check-in related to the current design for visitors to remain in the vestibule versus a side sub-vestibule
    - Classroom lockset hardware - confirm hardware functions are compatible with the District's protocols related to lockdown
    - 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
    - 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



# Framingham Public Schools

Robert A. Tremblay, Ed.D., Superintendent of Schools

## SCHOOL COMMITTEE

Adam Freudberg, Chair • Gloria Pascual, Vice Chair • Tracey Bryant, Clerk  
Noval Alexander • Geoffrey Epstein • Richard A. Finlay  
Beverly Hugo • Tiffanie Maskell • Scott Wadland  
Yvonne M. Spicer, Mayor  
73 Mount Wayte Avenue, Second Floor, Framingham, MA 01702  
Telephone: 508-626-9121 Fax: 508-877-4240

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### SCHOOL COMMITTEE: OPEN MEETING MINUTES

**DATE AND TIME:** June 5, 2019 at 7:00 p.m.

**LOCATION:** Memorial Building-Blumer Room  
150 Concord Street, Framingham

**MEETING CALLED BY:** Chair Adam Freudberg

**PRESENT:** Noval Alexander  
Tracey Bryant  
Geoffrey Epstein  
Richard A. Finlay  
Adam Freudberg  
Beverly Hugo  
Tiffanie Maskell\*  
Gloria Pascual\*  
Mayor Yvonne Spicer\*

**ABSENT:** Scott Wadland

**ALSO PRESENT:** Nicholas Small, Chair of Student Advisory Committee  
Dr. Tremblay, Superintendent  
Lincoln Lynch, Director of Finance and Operations  
Rose Bailey, Student Advisory Committee  
Matt Torti, Director of Building and Grounds

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The Chair called the meeting to order at 7:01 p.m.

#### Call to Order

The Chair announced that this meeting was being broadcast live on local cable, as well as for later playback, and on Facebook Live.

### Public Comment

Ron Chick said he is a representative for the Sue Haskell Watershed for Framingham, and he brought Riverfest brochures. He said that there are many events coming up, including a water cleanup on June 22nd at 151 Central Street starting at 8:00 a.m., and a senior tour of the river at 11:00 a.m. He said he is looking for volunteers, especially student volunteers, for various clean ups in the area, and would like to work with the Ecology Club at the High School. He said he is working on a project on invasive vegetation on the Cochituate Rail Trail in Saxonville, and eliminating invasive water chestnuts on the Sudbury River. He suggested that students could possibly get credits for volunteering. He said he is also the Chair of the Friends of Saxonville and welcomes participation. The Chair asked the Superintendent to have someone from his team follow up on the ideas regarding student participation.

Noval Alexander said he wanted to make a brief comment on commemorating D-Day tomorrow and asked for a moment of silence. He said that on this day 75 years ago, hundreds of thousands of young soldiers, sailors, marines and airmen were staging in southern England to commence Operation Overlord, otherwise known as D-Day, where they crossed the English Channel to liberate Europe from Nazi Germany. He said that no matter what race, religion or natural origin, all had the common purpose to defeat the tyrannical German dictator Adolf Hitler. He said that day, over 10,000 allied soldiers died on the beach in Northern France, and he would like to take a moment of silence and remember that.

Richard Finlay said he wanted to send get well wishes to Mr. Wadland who is home recovering.

### Announcements from the Chair

No announcements from the Chair.

### Student Advisory Committee Presentation on Intramural Sports and School Spirit

Student Advisory Committee members Nicholas Small and Rose Bailey presented a report based on a survey sent to students regarding interest in intramural sports and thoughts on school spirit. They said that they found from these surveys that a large number of students are interested in intramurals, and school spirit at FHS is good but could be improved - with ideas such as adding more pep rallies, themed events and improved faculty support at student events.

**Questions.** Mr. Epstein asked what the next steps are in regards to starting intramurals. Mr. Small said they had a brief discussion with Mr. Spear, the Athletic Director, and he said that the biggest issue would be space, but an intramural like Dance would be more do-able because there are specific classrooms that could accommodate Dance. Mr. Epstein said that there are a lot of high intensity sports that take over all the facilities and a lot of money spent on those: Maybe they could skip those sports one day a week or use the facilities when they have games out of town. He said there is a need to look at how to service intramurals, rather than just say it is an interesting idea that we cannot do.

### Action Civics Commission Presentation on Homework Policy

Dr. Tremblay said starting the Action Civics Commission was one of his goals, and it will provide grades 9-12 with a representation of government. Action Civics Commission members Mira

Donaldson, Hailey Vanaelstyn, Laura Scaria, Anne Culhane-Williams, Sanga Esther Kalembe, Ava Caiola, and Harold Pacheco Diaz presented their proposed homework policy, which they developed after they had reviewed other policies from other schools, and news articles, as well as taking information from interviewing students and teachers. Ava Caiola said that along with the proposal of no homework for those who are in MCAS testing, they also want to add the ACCESS testing for ELL and ESL students, but that was not included in this draft. She said that they also met with the faculty to present their draft, get feedback, and answer questions on their proposed policy. Mira Donaldson added that edits from that meeting were able to be added to the policy.

Mr. Freudberg said that last year this policy was voted on to refer to the Policy Subcommittee, so now they have some insight to determine next steps.

**Questions.** Mr. Finlay spoke about the stress on students for homework and having to balance it with extracurricular activities and sports. Ms. Bryant asked which neighboring schools' policies were looked at, as well as how they decided that homework on weekends should not exceed that of a weekday. She added that sometimes students who have extracurricular activities during the week, use the weekend to catch up on schoolwork. Mira Donaldson said they looked at policies from Hopkinton, Holliston and Natick. Ava Caiola said that the biggest issue seems to be that whenever there is time to relax, teachers have tried to fit an extra assignment in to fill the time, and students have felt a bit of an overload. She said that they felt that students should still have homework on the weekend, but with a limit; this will allow students to still be able to do activities they want to do, while still staying involved with school. She added that this is the same with school vacations - for students to keep on track and be thinking of school work, but also be able to enjoy time away from school. Ms. Pascual suggested the possibility of forms being used for the observance of religious holidays, to be able to make it clearer to teachers to put this consideration into action, for equity, and forms could possibly be used for other things going on in life besides just holidays. She also suggested that teacher communication to students be improved - such as the family and guidance counselor being contacted after two missing assignments, so everyone is aware before students get too far behind, and are not able to recover. Ava Caiola said that teacher feedback suggested the possibility of students being referred for after-school help with peer tutoring after a few missed assignments. Ms. Pascual said there is a need to look at holding teachers accountable for putting this into place, and making sure there is a measurement, as well as to allow teachers, counselors, and parents to know when there is a need to help students and get them that help. Ms. Maskell asked what the expectation for the amount of homework per night is currently, and suggested that there be a defined amount of time for homework; since students work at different levels and if they can't master it by a certain point, should they really be spending hours on it. Mira Donaldson said that the current policy has a three hour minimum and no maximum. Anna Culhane-Williams said that when they talked to the teachers this came up, and they discussed how the amount of time each student spends on homework depends on each individual student, and defining a specific time would be a bigger discussion. Ava Caiola said they also discussed possibly defining it per department, but this again would be a larger conversation, and would take more time to get into and implement.

\*Mayor Spicer arrived at 7:40 p.m.

Ms. Maskell said that the proposed policy notes that homework is lessened for all classes, except for AP classes. Laura Scaria said AP classes have a set curriculum to get through for the year in order to take the AP test, so it is hard to limit the homework. Ms. Maskell said she's

sure some kids would abuse it if there was a set amount of time defined, but the majority of students seem to be working hard at whatever level they are at. Hailey Vanaelstyn said that AP tests happen earlier than the end of the year testing, so that time is made up in the school breaks, which is why a break is not listed during vacation week for AP classes. Ms. Hugo asked if the students researched the types of homework that seemed to be most beneficial vs. homework that just seemed like busy work; and if they had researched flipped classrooms where students listen to the lesson at home and do a project or discussion in class. Esther Kalemba said she had talked to a teacher about flipped classrooms, and it seems like it wouldn't work for all teachers. She added that it seems like it would mostly work for math classes, but for english and history it would be harder for students to do at home, and harder for teachers to create a lecture. Anne Culhane-Williams said flipped classrooms would possibly take away from in-class learning - being able to learn and ask clarifying questions, and she thinks it would vary between students if it would be beneficial or not. Hailey Vanaelstyn said a lot of students' complaints were that teachers were assigning busy work to just give homework. Ava Caiola said it was a point of contention with teachers, as teachers argue that they can think everything they assign is important and beneficial, and pushed back on how the students define what's meaningful. Mr. Epstein said part of this touches on learning style, and asked how many students contributed feedback when they were gathering it. Anna Culhane-Williams said they asked friends, along with the members of the Commission, but it was not sent out as a survey. Mr. Epstein asked if students find that teachers coordinate homework assignments, and suggested that teachers look to spread out the homework and coordinate, so not everyone is assigning a lot on a certain night. Mira Donaldson said teachers within the same department sometimes coordinate, but the classes are not always at the same place in the curriculum. Ava Caiola said if all teachers used the same program, such as Google Classroom or Canvas, they could see what other teachers assigned, but teachers all use different programs and there is no coordination; students can have multiple tests on the same day. Mr. Epstein asked if students felt that homework was graded in a timely fashion. Hailey Vanaelstyn said that it varies widely depending on the teacher, and that it seems that teachers may not be able to keep up with grading the amount of homework that they are assigning. Mr. Epstein asked that the administration look into an information management system, so teachers can see who has homework assigned etc., as well as keep track of when it is graded. Ava Caiola said within this proposed policy, they added that teachers try to give a weeklong look at homework, so students are able to plan ahead.

#### Update on BLOCKS Capital Project

Director of Building and Grounds Matt Torti gave an update on the Blocks Capital Project. He said that the library, which is now closed, was being used as breakout learning spaces for special programs and multiple functions, and these programs are now displaced. He said that in January there was a roof leak, and once opened up there was some structural damage and the insurance company would not pay for any remedial work. He said they have enlisted the services of an architect to do a preliminary design, provide cost estimates, and that the project still needs to go out to bid. He said that this is past the date of the Capital Project Request, so this has been deemed as an emergency capital budget request. He said that the Chair has sent a letter to the Mayor asking for additional funding, but they are currently paying for the architect out of the operating budget to make sure the project is started as soon as possible. He said they are presenting on this to the City Council on June 12th, and the full vote is on June



18th. Mr. Lynch said, originally they were thinking to swap out this project with the Potter Road project, but that is no longer the case. He said that they are keeping the initial request and adding this project on top of the Capital Budget Request, which increases the request from \$3,295,277 to \$3,785,277. Mr. Freudberg said this does not need a vote from the School Committee since it is an off-cycle appropriation, and the City Council voted last night to refer it to the City Council's Finance Subcommittee. He said it is a 2,500 square foot room that cannot be currently used. Mayor Spicer asked if there are plans to add anything besides the original footprint. Mr. Torti said the cost estimate is to just refurbish and put the area back to the former use. He said that due to it being an added modular unit, they were able to completely isolate it from the rest of the school and no-one is allowed in there, as it is currently an unsafe situation. Mayor Spicer suggested there be a complete assessment of all the buildings done in order to determine if any more of the buildings are currently in jeopardy, and going forward, to prioritize project order based on building conditions. Mr. Torti said the only other modules are at the Hemenway and Brophy Schools. He said that they do periodic inspections, annually have the City's Building Department perform inspections, and get occupancy permits. He said that this roof was different than the other modular units.

\*Ms. Pascual left the meeting for a short break.

#### Approval of Proprietary Specification for the Fuller Building as Required by the MA School Building Authority

The Chair said that the School Building Committee voted to approve the proprietary specifications for the Fuller Building Project this past Monday night, and a step required by the Massachusetts School Building Authority is for another elected board, in this case the School Committee, to concur with the vote.

**Motion:** To affirm the vote of the School Building Committee to accept the approval of proprietary specifications for the Fuller Building Project.

**Moved:** Ms. Bryant

**Seconded:** Mr. Alexander

**Vote:** Unanimous (7-0-0)

(Yes: Hugo, Finlay, Freudberg, Alexander, Epstein, Maskell, Bryant. Ms. Pascual had stepped out of the meeting momentarily at the time of the vote.)

Mr. Torti said that the Design Day for the **McCarthy Playground** is tomorrow, hosted by Kaboom who gave the grant, and will involve the PTO, volunteers, parents, and children and they can help with the design. He said that TJX Sierra Trading Post is a main donator, and are providing 120 volunteers on build day. Mr. Freudberg asked about keeping the tires that are in the current playground, and asked for scheduling between the build day and construction on the Fuller Project. Mr. Torti said they will be planning in conjunction with the Fuller Project, due to parking. He said that they cannot put in new tires because of code issues; but they are going to try and leave the current tires in place. He said that most of the existing playground will be removed to make way for new equipment, and the total value is probably upwards of \$120,000.

#### Progress Report on Superintendent's Goals

Mr. Freudberg reminded members that the Evaluation of the Superintendent is due June 11, 2019. Dr. Tremblay presented an orientation on the evaluation and went over his progress report on his goals, and said that in the Team Drive there are items of evidence, which is also embedded within his progress report. He said that last year members gave feedback on him

being more involved in the instructional practices, and he believes that he has been fully invested in that this year, including the visits to the schools every morning, meeting with senior team and principals. He asked that if members had any questions on any of the indicators, or want to see any other evidence, to let him know. He said that this upcoming year is going in to the third and last year of the current Strategic Plan, and they will be starting to work on the next Strategic Plan in August. He also spoke about the progress that has been made within the District: The dual language programming will be expanded to four elementary schools beginning next year and they already have a wait list; they created a Bilingual Parent Advisory Council; senior advisors have been going to events in the community to engage with families and constituents in a program they call “Be Heard Tours” - to talk to them about their needs in school; they have expanded the King School autism strand; and by moving away from ACCEPT for transportation, the District saved \$800,000 in next year’s budget; and many other accomplishments.

**Questions.** Mr. Finlay asked if there were any grants available to start implementing free Pre-K programs, such as they used when the District implemented free universal Kindergarten. Dr. Tremblay said part of the current research is to find out how Pre-K - K programs are being funded, as well as the availability of money and a location. He said that this can be worked on with the Strategic Initiatives and Financial Oversight Committee. Mr. Finlay said that there was \$75,000 earmarked for a feasibility study for Hemenway, and he would like to see this be done. Dr. Tremblay said they have already done this, and the Request for Qualifications (RFQ) for the Feasibility Study and will be looking to see other possible viable options in the City. Mr. Epstein asked if Barbieri’s small cafeteria, that has five lunch sessions, will be looked into. Mr. Lynch said this will be looked at next year. Mr. Epstein asked about the role of online and remote instruction in the high school, and suggested offering this to students who are advanced and want more material, or for the lower-enrolled classes that sometimes get cut. Dr. Tremblay said that they have online credit recovery, and many teachers use a hybrid approach with online elements. Dr. Tremblay said they have looked at Virtual University, but would need to look at the space to do this which would come into play in the next phase of the High School Space Study. Ms. Bryant said time in actual classes also help students learn socialization, how to ask for help, and how to interact with authority figures - so we would need to balance any online classes, and use them to augment the students’ experiences. Mr. Alexander asked about the use of technology such as using blizzard bags when there are snow days. Dr. Tremblay said that currently DESE has put a halt on approving any more districts using blizzard bags, in order to take a look at the districts that are currently implementing it, to see if they actually are meeting the requirements of the 180 school days. Dr. Tremblay said they are piloting a 1:1 with chromebooks in some of the schools, and will see what kind of problems they encounter, such as internet accessibility at home. Ms. Hugo said she did not see any S.M.A.R.T. goals in the Strategic Plan. Dr. Tremblay said that the Strategic Plan is the framework, and the School Improvement Plans improve upon it, and they show the percentages and S.M.A.R.T. goals, as they are different for each school. Ms. Hugo said she only saw one mention of advanced learners, and nothing about SAGE. Dr. Tremblay said the plan for these are within the budget documents, and he will also do a presentation at the next meeting with the SAGE Department Head Judy LeBlanc about the forward movement of SAGE and investments in it. He said part of the discussion at the schools with the principals is how they are differentiating between English Language Learners, gifted students and special needs students. He said that they have more work to do for gifted kids, but first they are looking to make sure they are providing for ELL and

special needs students. Mr. Alexander asked about the lottery system and what the plans are for the goal going forward. Dr. Tremblay said he is continuing to try and fix school choice every year, it is very difficult to fix and the majority of students are largely in one part of the community, while the majority of the schools are on the other side. He said there are only so many seats available in each school, and the District looks to make sure there is a good representation of our kids across all the schools; they look to spread ELL and special needs students throughout to be balanced, and there has been an increase of ELL students. He said that they were able to accommodate 91% or so, for first choices and are constantly looking to see how to make it better. He added that they are looking at this within the Equity, Diversity and Community Development Office, in conjunction with the Parent Information Center. He said he is not sure it will be fixed without considering another school, possibly on the South Side. Mr. Alexander asked if parents are getting a basic overview on how it works, when they come to place their student in the lottery, as he is getting the sense that they don't know exactly what the process is. Dr. Tremblay said they talk about it at Kindergarten Orientation Night, and provide the information in multiple languages. He said that he is striving to make every single one of the nine elementary schools desirable, then it will not matter what choice you get.

\*Ms. Maskell left the meeting at 9:15 p.m

\*Mr. Finlay stepped out of the meeting from 9:15-9:18 p.m.

#### Superintendent's Update

Mr. Lynch said that at the meeting on June 19th, he will be giving a full narrative with recommendations for any end-of-year transfers for **FY19**. He said that there is just under 80% expended, and salaries are not encumbered. He added that he will have a projected end budget for June 30th. He said that the food service negative balance will be covered by the operating budget before June 30th.

Mr. Lynch said that last night was the first reading by the City Council on the **FY20 Budget**, the second reading will be on June 18th. He said that the current District proposed budget is the 4.11% the School Committee voted on.

Ms. Bryant asked if there is currently a soft freeze. Mr. Lynch said that there was, but they are still spending money - departments and schools just have to submit what they want to expend, with information on amount and what for, to get approved; and salaries still need to be taken out.

Dr. Tremblay said that the District participates in two educational collaboratives, he is the voting member for ACCEPT and the law requires a formal vote for him to continue in that capacity.

**Motion:** To appoint Dr. Tremblay as the School Committee's representative to the ACCEPT Board of Directors for the 2019-2020 fiscal year.

**Moved:** Ms. Bryant

**Seconded:** Ms. Hugo.

**Vote:** Unanimous (7-0-0)

#### Subcommittee Reports

##### **Policy**

**Motion:** To approve Policy JF: Student Activity Accounts for a first reading.

**Moved:** Ms. Hugo

**Seconded:** Mr. Alexander

**Discussion:** Mr. Epstein asked for a friendly amendment within this proposed policy, as it is not clear if there are other accounts besides the agency account and the checking account, and he

thinks the structure should be explained - the hierarchy of accounts should be part of the definitions. All in agreement. Mr. Epstein will work with Mr. Lynch on adding this information.

**Vote:** Unanimous (7-0-0)

**Finance and Operations.** Mr. Epstein said that two warrants were signed. He said that the Finance Subcommittee met and the auditor will be making one amendment to the audit report in order to follow the DESE requirements. He said that then, from the subcommittee's view, the audit will look complete, acceptable, and satisfy the requirements. He said that the audits for FY19 are going to be different: Next year the School Committee will hire their own auditor as opposed to being part of the City's audit, and will be in charge of how it is done, what they should be looking for, what level should be considered acceptable, and the timeframe. Mr. Lynch said that he will look into material donations that were brought up in the subcommittee meeting, and will report on these to the subcommittee as it comes in.

#### Approval of Grants/Gifts/Field Trips

**Motion:** To approve the Open Session Minutes of April 24, 2019 with the suggested minor amendments.

**Moved:** Ms. Bryant                      **Seconded:** Mr. Finlay                      **Vote:** 6-0-1

(Yes: Hugo, Finlay, Freudberg, Alexander, Epstein, Bryant. Abstained: Pascual)

#### Adjournment

**Motion:** To adjourn.

**Moved:** Mr. Epstein                      **Seconded:** Mr. Finlay                      **Vote:** Unanimous (7-0-0)

Meeting adjourned at 9:32 p.m.

#### Meeting Materials

Agenda

Student Advisory Committee Presentation

Action Civics Commission Presentation on Homework Policy

BLOCKS Estimate Report

Proprietary Specification Vote for Fuller Project

Progress Report on Superintendent's Goals

FY19 Year to Date Budget

Food Services Negative Balance report

Memo on ACCEPT Collaborative Representative

Policy Summary

Policy JJF: Student Activity Account Audits

Warrants

April 24, 2019 Open Session Draft Minutes

*These minutes were approved at the School Committee Open Session held on July 17, 2019.*

*These minutes were sent to the City of Framingham for posting on July 18, 2019.*

### 3.1.5 Color Theory Statement

The material and the range of color selection choices have been reviewed by the Framingham Fuller School Building Committee and confirmed during their meeting on 7/1/19. However, by agreement with the committee, finalization of color values within those materials will be concluded during construction when availability of manufacturer's options can be confirmed prior to submittal approval.

A list of finish material, including location in the building and when it was presented is attached.

#### *Exterior:*

Color at the exterior of the new Fuller Middle School is conceived with a priority on responding to the existing context of surrounding school buildings including the adjacent Farley and McCarthy buildings. Civic or institutional buildings in Framingham tend to be constructed of brick. However the Fuller/Farley/McCarthy campus is sited in the midst of a residential neighborhood. Therefore the materials and color palette for new building will be mixed with accents of artificial or 'phenolic' wood trim. The primary color will be established by the brick which has been selected on a preliminary basis in a brown/ochre to reddish range relating to the directly abutting Farley school. Mortar color will be selected to minimize contrast with the brick but without an overt color of its own.

To complement the brick, trim around the bay window projections and interspersed field accent panels have been depicted, again, on a preliminary basis, in a light to medium wood tone. The combination of reddish brown brick and wood tone reflects similar combinations of masonry and wood found in the immediate context of residences.



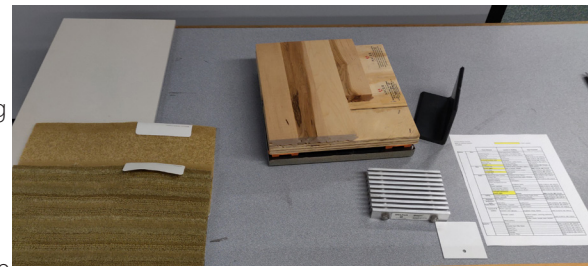
Metal window trim will be finished with metallic paint in a similar range of color, perhaps, as was shown on a preliminary basis, in a copper color.

**Interior:**

The color palette on the interior is set primarily by the criteria of maximizing the collection and distribution of natural light to create a bright, uplifting atmosphere throughout all spaces. Therefore the floor will be a light grey for reflectivity. Bumper rails and parapet cap trim consisting of a natural light grey bamboo finish or cohort color coded painted MDO will provide a feature horizontal accent running through all public circulation and program areas.

To provide some variation and identification of grade cohorts, lockers will be assigned colors relating to the three grade cohorts – on a preliminary basis in chartreuse, yellow, light blue and red.

Complementing the flooring material at each program space, upper wall surfaces out of student reach and painted soffits will have matching but lighter toned color. Upper exposed metal deck ceilings and light shelves will be bright white for maximum reflectivity. The auditorium and gymnasium spaces and adjacent corridors will be surfaced with low maintenance ground face CMU or CMU tile in grey concrete with primarily white aggregate – again to allow for maximum reflectivity. The auditorium will also be accented by suspended acoustic reflector clouds in bamboo veneer.



Flooring finishes presented at School Buildign Committee meeting 7/1/19.



Finishes presented at School Buildign Committee meeting 7/1/19.

= Finish Updates

	Finish Material	Location in Building	Date Presented	
Interior	Floor	MakerSpace/Shop, Auditorium		
		Sealed Concrete	Back of house, Emergency Stairs	
		Linoleum Tile	Academic Areas, Corridors, Admin	SBC 6/3/19
		Quarry Tile	Kitchen	EWG 3/18/19, SBC 4/8/19
		Wood Performance Floor	Gymnasium	EWG 3/18/19, SBC 4/8/19
		Recessed Entrance Grid	Entryways	B&G 7/1/19, SBC 7/1/19
		Epoxy Floor	Toilet Rooms, Locker Rooms	EWG 3/18/19, SBC 4/8/19
		Porcelain Tile	Learning Common	SBC 6/3/19
		Carpet	Auditorium (aisles)	B&G 7/1/19, SBC 7/1/19
	Base	Linoleum Tile	Academic Areas, Corridors, Admin	SBC 6/3/19
		Rubber Base	Back of house, Closets	B&G 7/1/19, SBC 7/1/19
		Epoxy Base	Toilet Rooms, Locker Rooms	EWG 3/18/19, SBC 4/8/19
		Vented Base	Gymnasium	B&G 7/1/19, SBC 7/1/19
		Quarry Tile	Kitchen	EWG 3/18/19, SBC 4/8/19
	Walls	Magnetic Writable Surface	Academic Areas, Admin	EWG 3/18/19, SBC 4/8/19
		Ceramic Tile	Toilet Rooms/wet walls, Drinking	SBC 6/3/19
		Tackable Surface	Admin	EWG 3/18/19, SBC 4/8/19
		Athletic Padding	Gymnasium	
		Fabric Wrapped Acoustic Panel	Academic Areas	EWG 3/18/19, SBC 4/8/19
		Plastic Laminate	Auditorium	EWG 3/18/19, SBC 4/8/19
		Glass Interlayer Pattern	Teacher Planning	EWG 3/18/19, SBC 4/8/19
		Wood Fiber Wall Panel	Gymnasium, Music	EWG 3/18/19, SBC 4/8/19
		Fiberglass Reinforced Panels (FRP)	Kitchen	B&G 7/1/19, SBC 7/1/19
	Ceiling	Acoustic Ceiling Tile	Academic Areas, Public Areas	EWG 3/18/19, SBC 4/8/19
		Plastic Laminate	Auditorium (Clouds)	EWG 3/18/19, SBC 4/8/19
	Guardrail	Perf Metal	Atrium guardrail, stairs	SBC 6/3/19
	Auditorium Seats	Seat Fabric	Auditorium	EWG 3/18/19, SBC 4/8/19
	Toilet Rooms	Solid Surface - Counter	Toilet Rooms	EWG 3/18/19, SBC 4/8/19
		Solid Resin Toilet Partitions	Toilet Rooms	EWG 3/18/19, SBC 4/8/19
	Casework & Lockers	Plastic Laminate Counters and Cabinets	Academic Areas, Admin	EWG 3/18/19, SBC 4/8/19
		Phenolic Lockers	Student Lockers, Learning commons, balconies	EWG 3/18/19, SBC 4/8/19
		Metal Lockers	Locker rooms, break room, kitchen area	
	Exterior	Brick		EWG 3/18/19, SBC 4/8/19
		Ground Face CMU Block		EWG 3/18/19, SBC 4/8/19
		Metal Trim		EWG 3/18/19, SBC 4/8/19
		Metal Panel		EWG 3/18/19, SBC 4/8/19
		Phenolic		EWG 3/18/19, SBC 4/8/19
		Exterior Glass		TBD





### **3.1.6 Structure Narrative**

Please reference the attached Structural Narrative.

### **3.1.7 Structure Calculations**

Please reference 3.1.6 Structure Narrative and the Structure Drawings included in the Construction Development-60% drawing set for calculations.





**Fuller Middle School  
Framingham, MA**

Early Steel & Concrete Package

August 6, 2019

**STRUCTURAL NARRATIVE**

FOUNDATIONS/GROUND FLOOR

- Geotechnical information is found in a report by RSE Associates dated May 2, 2019.
- Foundations bearing on ground improvement are reinforced concrete spread footings. There is a perimeter frost wall and footing between column footings extending at least 4 feet below grade.
- The soil under the ground floor slab should be removed down to the suitable bearing material or improved. A 5" slab on grade reinforced with welded wire fabric should bear on ground improvement or on controlled backfill.
- Groundwater was encountered at a depth of 0 to 8 feet below ground surface. Temporary dewatering will likely be required during construction, and any slabs or elevator pits that are below the design water elevation will be designed for hydrostatic pressure. These areas should be waterproofed on the underside. Perimeter and underslab drainage should be included to shed water away from the building. A vapor barrier should be placed below the slab on grade.
- Foundation walls on the perimeter of the building are 16" thick reinforced concrete to support façade elements. They have integral pilasters to support the building steel columns.

SUPERSTRUCTURE

- Floor construction
  - 3/4" light-weight concrete over 3"-18 gauge galvanized composite deck. The slab is reinforced with 6x6 W2.1xW2.1 welded wire fabric.
  - Floor structure consists of steel beams & steel columns.
- Roof construction
  - The central roof pop-up above the atrium will have 3"-18 gauge galvanized metal roof deck on heavy wide flange steel framing.
  - The remainder of the main roof uses 2.5" light-weight concrete over 3"-18 gauge galvanized composite deck and will support mechanical units on curbs or dunnage.
  - Steel roof screens (to shield mechanical units) will be anchored to the roof beams.
  - Some roof framing will be designed to be "PV-ready".
- Columns supporting 3 floors vary between HSS and wide flange columns.
- Gymnasium & Auditorium
  - The roofs are framed with 52" deep long-span open web trusses designed for gym equipment and mechanical roof units
  - The gym deck is 1.5" cellular acoustic metal roof deck.
  - The auditorium deck is 3" cellular acoustic metal roof deck
  - Load bearing 12" CMU walls will be used on 4 sides of the gym & auditorium.
  - The auditorium stage will be built-up from cold-formed metal framing and lowered seating is accommodated via depressed slabs on grade

- Atrium
  - The atrium floor is supported by building columns and cantilevered steel beams
  - Steel plate hangers from the atrium roof are used to support atrium stairs & some of the breakout spaces
  - A steel bent plate forms the slab edge with vertical steel angles structuring the integrated lockers & railing system.
  - The atrium roof is supported by heavy wide flange steel beams

#### LATERAL SYSTEM

- The lateral force resisting system (resisting earthquake and wind forces) consists of steel concentrically braced frames. The diagonal braces are HSS members spanning between columns.
- The gym & auditorium will use CMU shear walls as the lateral system.

#### DESIGN CRITERIA

The building is designed in accordance with the IBC 2015 as amended by the Massachusetts State Building Code, 9<sup>th</sup> Edition. Snow drift diagrams & special loading criteria for roof and auditorium open web steel joists can be found on the drawings. The following basis of design criteria and design load schedule is taken from structural drawing S000.

LIVE LOAD

SEE DESIGN LOAD SCHEDULE

SNOW LOAD

Pg.....	40 PSF
Pf.....	35 PSF
Ce.....	1
I.....	1.1
Ct.....	1

WIND LOAD (SPEED AND PSF IN ULTIMATE)\*

BASIC WIND SPEED.....	137 MPH
RISK CATEGORY.....	III
EXPOSURE.....	C
INTERNAL PRESSURE COEFFICIENT.....	±0.18
MWFRS DESIGN LOAD.....	67 PSF

\*TO CONVERT ULTIMATE WIND PRESSURES TO ALLOWABLE, MULTIPLY BY 0.6. TO CONVERT ULTIMATE BASIC WIND SPEED TO ALLOWABLE, MULTIPLY BY  $\sqrt{0.6}$ . (IMPORTANCE FACTOR IS ALREADY INCLUDED IN SPEED AND PRESSURES).

SEISMIC LOAD

I/ RISK CATEGORY.....	1.25/III
Ss/S1.....	0.194/0.067
SITE CLASS.....	D
SDS/SD1.....	0.207/0.107
SEISMIC DESIGN CATEGORY.....	B
SEISMIC-FORCE-RESISTING SYSTEM.....	STEEL CONCENTRICALLY BRACED FRAMES (NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE) AND INTERMEDIATE REINFORCED MASONRY SHEAR WALLS
DESIGN BASE SHEAR.....	1070 KIPS
Cs.....	0.086
R.....	3
ANALYSIS PROCEDURE.....	EQUIVALENT LATERAL FORCE

## DESIGN LOAD SCHEDULE

OCCUPANCY  LOADS	ASSEMBLY AREAS AND 1ST FLOOR CORRIDORS	2ND AND 3RD FLOOR CORRIDORS	CLASSROOMS	MAIN ROOF	MAIN ROOF WITH FUTURE PV AREAS	TERRACE	STAIRS	MAIN ROOF POP UPS	LOW ROOFS	MECHANICAL ROOF AREAS	GYM	AUDITORIUM
*3¼" LWC ON 3" METAL DECK	54	54	54									
*2½" LWC ON 3" METAL DECK				43	43	43			43	43		
3" ROOF DECK								4				
1.5" ACOUSTIC ROOF DECK											4	
3" ACOUSTIC DECK												6
STEEL	13	13	13	13	13	13		9	13	13	10	10
CEILING AND MECHANICALS	10	10	10	10	10	10		10	10	10	15	15
FLOOR FINISH	5	5	5									
ROOFING AND INSULATION				10	10	10		10	10	10	10	10
PAVERS						25						
RTU ACTUAL WEIGHT**											**	
MECHANICAL AREAS										60		
FUTURE PV					10							10
METAL PAN STAIR							50					
<b>TOTAL DEAD LOAD</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>76</b>	<b>86</b>	<b>101</b>	<b>50</b>	<b>33</b>	<b>76</b>	<b>136</b>	<b>39</b>	<b>51</b>
LIVE LOAD	100	80	40			100	100					
PARTITIONS			15									
SNOW LOAD +				35	35			35	35	35	35	35
<b>TOTAL LOAD</b>	<b>182</b>	<b>162</b>	<b>137</b>	<b>111</b>	<b>121</b>	<b>201</b>	<b>150</b>	<b>68</b>	<b>111</b>	<b>171</b>	<b>74</b>	<b>86</b>

\*INCLUDES 5 PSF FOR CONCRETE PONDING

\*\*SEE PLAN FOR VALUES FOR ACTUAL RTU WEIGHT

+ INDICATES SNOW DRIFT ADDED TO FLAT ROOF SNOW LOAD.

### 3.1.8 Independent Structure Review

Please reference the attached review prepared by LeMessurier.





# LeMessurier.

Fuller Middle School - Framingham  
19.0153

## Structural Peer Review Comments

Number	Drawing	LeM Comment (2019-08-02)	Response
1	General	ground improvement does not appear to be defined on foundation plans, information required for bidders will include column footing loads, wall loads, and slab loads for proper design of system and bidding	
2	General	details for brick relieve showing extent, elevations, connections, etc. are lacking other than typical not and section which generally leads to bidder confusion, coordination challenges, and change orders	
3	General	slab diaphragm reinforcement does not appear in set	
4	General	significant architectural stairs lacking structural information – leaving these stairs up to delegated design may lead to serviceably problems, missing scope, or solutions not consisting with architectural design intent	
5	General	no slab edge bent plate information provided – example is interior atrium slab edge on architectural drawings shows structural steel slab edge	
6	General	footing elevations not clearly defined on plans	
7	General	hanger details in atrium do not appear in set	
8	S101C	grade beam reinforcement does not appear in set	
9	S101D	reinforcement for footing under breakout space does not appear in set	

Number	Drawing	LeM Comment (2019-08-02)	Response
10	S102A	symbol shows 5.5 on arrow but no description of system is provided	
11	S102C	breakout space structure noted as designed by others however no structural loading, load, path, configuration, connection details to base building structure, minimum ratings, etc. provided for delegated design	
12	S103A	structure for chimney does not appear in set	
13	S103C	how will bottom/top of stair be detailed to accommodate anticipated roof deflection from snow that is translated down to stair landing at level 3	
14	S103C S103D	RTU support on 1½" steel roof deck may require supplemental steel support between roof purlins	
15	S103D	RTU 5 and 6 labeled as 48,000 pounds – distribution of this load onto joists is not clear – platform is noted but not shown	
16	S103D	roof joists appear to be missing uplift bridging at first bottom panel point	
17	S103D	sloping roofs over gymnasium and auditorium not described in set including tops of sloping masonry walls and associated details	
18	S103D	joist loading diagrams do not appear in drawing set	

# LeMessurier.

Fuller Middle School - Framingham  
19.0153

## Structural Peer Review Comments

Number	Drawing	LeM Comment (2019-08-02)	Response
19	S104C	detail connections not shown for small beams framing into large flange sections at significant skewed angles – beams likely fail in shear requiring reinforcement or size change	
20	S104B S104C	review of anticipated deflections of supporting girders over atrium with hung floor and superimposed roof loads should consider sequence of construction, camber on roof, and camber at hung floors, strain on hangers, and anticipated deflections at floors based on roof deflections	
21	S104C	no details shown for support of large skylights on edge of roof framing	
22	S105B	lateral stability of stair roof may be lacking (same for elevator roof)	
23	S202	bracing elevations do not include connection design forces	
24	S500	section 4 does not include weld sizes for coped beam reinforcement	
25	S303 S400	base plate details do not appear to be coordinated with perimeter foundation sections	
26	General	loading conditions for roof does not define ponding – confirm ponding depth is considered for secondary drainage system and/or overflow	



### 3.1.9 Energy Calculations

Please reference 3.1.10 Life Cycle Cost Analysis.

### 3.1.10 Life Cycle Cost Analysis

Please reference the following reports:

- Water Use Reduction Life Cycle Analysis



# **Water Use Reduction Life Cycle Analysis**

**for**

**Fuller Middle School**

**Framingham, MA**

**Aug 1, 2019**

Prepared for:



Prepared by:

**AKAL Engineering Inc**

## Water Use Reduction Summary

Aug 1, 2019

The Fuller Middle School will utilize high water efficiency equipment in order to minimize water consumption and reduce the burden on the aquifer and well water supply. The plumbing fixtures selected for the project are intended to reduce water consumption by greater than 30% beyond a typical code required design.

High efficiency fixtures specified for the project include the following:

- High-efficiency water closets equipped with 1.28 gallon per flush flushometers in lieu of code required 1.6 gallon per flush.
- High-efficiency urinals equipped with 0.125 gallon per flush flushometers in lieu of code required 1.0 gallon per flush urinal.
- Metering lavatory faucets with 0.35 GPM aerators in lieu of code required 0.5 GPM.
- General sinks equipped with 0.5 gallon per minute restricting faucets.
- Showers equipped with 1.5 GPM shower head in lieu of 2.5 GPM.

The attached spreadsheet will quantify the water use reduction expected. The spreadsheet calculates the baseline (code required) water use and the design water use. The approximate annual water savings is 335,043 gallons of water with a simple payback of less than 1 year for the high efficiency plumbing fixtures.



### Indoor Portable Water Use Reduction

Calculation for potable water use is performed through low flow water fixtures and compared with the base case required by code.

(F) Employees =	55
(M) Employees =	55
(F) Students =	450
(M) Students =	450
<b>Actual Occupancy =</b>	<b>1010</b>

LEED- Water Efficiency							
BASE CASE (248 CMR Plumbing Code )							
PROJECT : FULLER MIDDLE SCHOOL, MA							
Credit 4- Water use Reduction							
Baseline Indoor Water Consumption Calculation							
Fixture Type	Flow-rate	Rate	Duration		Occupants	Daily Uses	Water Use
Conventional Toilet -Staff	1.6	gpf	1	flush	110	3	528
Conventional Toilet (Male Student	1.6	gpf	1	flush	450	1	720
Conventional Urinals (Male)	1	gpf	1	flush	450	2	900
Conventional Toilet (Female Stude	1.6	gpf	1	flush	450	3	2160
Lavatory (per MA code)	0.5	gal/min	0.5	min.	1010	3	758
Class Room Sinks	2.5	gal.min	0.25	min.	110	1	68.75
Shower	2.5	gpm	15	min.	11	1	413
Hand sink-kitchen	2.2	gal/min	15	min.	4	1	132
Wash Down Spryer	1.5	gal/min	15	min.	1	1	22.5
Clothes Washer	40	gal/load	1	load	1	4	160
Total Daily Volume							5861
Number of School Days							180
Design Total Annual Volume (gal)							1,055,025.00

<b>DESIGNED</b>							
<b>PROJECT : FULLER MIDDLE SCHOOL, MA</b>							
<b>Credit 4 Water use Reduction</b>							

**Design Indoor Water Consumption Calculation**

Fixture Type	Flow-rate	Rate	Duration	Unit	Occupants	Daily Uses	Water Use
Conventional Toilet -Staff	1.28	gpf	1	flush	110	3	422.4
Low flow Flush Toilet (Male Student)	1.28	gpf	1	flush	450	1	576
Urinals (ultra low flow)-Male student	0.125	gpf	1	flush	450	2	112.5
Low Flow Flush Toilet (Female Student)	1.28	gpf	1	flush	450	3	1728
Lavatory (low flow hand free)	0.5	gal/min	0.5	min	1010	3	757.5
Class Room Sink s	1.5	gal/min	0.25	min	110	2	82.5
Shower	2.5	gpm	15	min.	11	1	413
Hand Sink- Kitchen	1.2	gal/min	15	min	4	1	72
Wash Down -Sprayer	0.67	gal/min	15	min.	1	1	10.05
Efficient Clothes Washer	20	gal/load	1	load	1	4	80
<b>Total Daily Volume</b>							<b>3831.05</b>
<b>Number of School Days</b>							<b>180</b>
<b>Design Total Annual Volume (gal)</b>							<b>689,589.00</b>

**Credit Water Efficiency-Credit for water use reduction.**

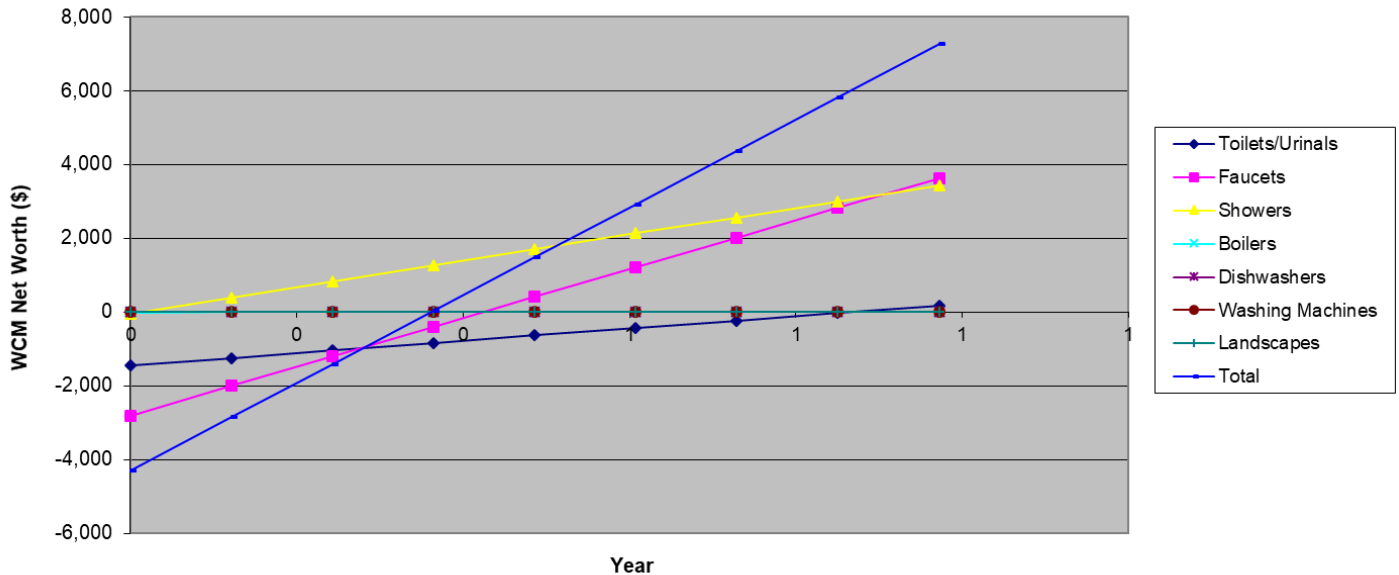
Design	Annual Water Consumption (gal)	Annual Water Saving (gal)	% of water Reduction
<b>Designed</b>	<b>689,589.00</b>	<b>365,436.00</b>	<b>34.64%</b>
<b>Baseline</b>	<b>1,055,025.00</b>	<b>-</b>	<b>-</b>

Total annual water saving will be 365,435 gallon or 48,855 cubic feet water and sewer saving. Cost saving can be calculated based on the town of Framingham Water Department.

## Water Conservation & LCCA

Conservation Method	Number of Installations	Total Initial Cost (\$)	Annual Savings (\$)			Payback Period* (yrs) <small>*Includes Direct Energy Only</small>
			Direct Water	Direct Energy	Indirect Energy	
Installation of ULF toilets and ULF urinals	72	\$6,500	\$7,828	\$0	\$90	0.83
Installation of automatic faucets	83	\$6,480	\$6,445	\$1,856	\$376	0.78
Installation of faucet aerators	83	\$2,200	\$1,463	\$4,800	\$85	0.35
Low Flow showerhead	1	\$140	\$256	\$5,800	\$78	0.02
Boiler blowdown optimization	0	\$0	\$0	\$0	\$0	0.00
Efficient dishwashers	2	\$150	\$4,000	\$3,500	\$791	0.02
Efficient washing machines	1	\$300	\$11,688	\$4,034	\$791	0.02
Landscape irrigation optimization	#N/A	\$6	\$12	\$0	\$0	Annual
<b>Total (excluding Landscape)</b>		<b>\$15,770</b>	<b>\$31,680</b>	<b>\$19,990</b>	<b>\$2,211</b>	<b>0.31</b>

**Payback Periods and Net Worth of Each WCM Including only Direct Energy and Water Savings**





**3.1.11 Heat Gain and Loss Calculations**  
Please reference 3.1.2 Basis of Design narrative.

**3.1.12 Electrical Load Calculations**  
Please reference 3.1.2 Basis of Design narrative.



### 3.1.13 Security and Visual Access Requirements

#### *City Representatives Consulted:*

The design team has met with representatives of the Framingham Police Department and Framingham Fire department on 2/6/18, 4/5/18, 7/30/18, 3/11/19, 4/8/19, 6/28/19 and 7/29/19 to consult on the planning process for both site and building design issues. The Director of Safety and Security for the Framingham Public School District participated as well in the meetings held during the Design Development and CD phases. Their input has been and will continue to be included in the project. Included in these meetings were discussions of:

- Main entrance design,
- Ballistic glazing treatments
- Classroom hardware (thumb turn lock function from interior, key lock function from exterior)
- Classroom Visibility – manual shades at interior and exterior windows
- Alternative entry locations, knox boxes
- Emergency vehicle access around entire building
- CCTV camera surveillance
- Site Phasing Plans
- Construction Traffic

#### *General Description:*

The floor plan of the new school has been organized to allow for a prudent balance between the need for school security and the need for a warm and welcoming environment for the grades 6 through 8 population. The transparency and interconnectedness, which are desirable features of the educational program, also make for a favorable scheme for internal school security. The open floor plans provide a high degree of visual access from one portion of the school to another. This has been enhanced through the fine adjustment of classroom corridors to allow sightlines to connect the far corners of the school, including all 3 floors. All the classroom corridors include passive supervision from both teacher planning spaces and cohort commons.

The project includes all site and building signage required by Framingham's emergency procedures to identify locations where first responders may more directly reach a person needing medical attention. A Knox Box is provided at both the main entry and the community entry, with an annunciator panel and graphic map located in each of the associated vestibules. Per discussions with the Framingham Police and Fire Departments, building plans will be delivered to each of these departments as part of the building permit process. FPD and FFD have indicated that it is anticipated that the "Command Center" in an emergency would be outside of the building, so no special location has been so designated inside the building itself.

Regarding security for the school from the visitors' perspective, the middle school central administration has been located adjacent to the main entrance of the school at the second floor level. Broad expanses of

glass will allow observation of approaching visitors from the main school reception desk to the entrance approach and to the vestibule. The main entrance approach is configured with an outer covered area and an inner vestibule. The progress of an intruder can therefore be impeded at either line of doors. It is intended that the vestibule will be attended by administrative personnel facing into the vestibule from the central administration area. The administration area is safeguarded behind a glass wall partition with a locking door.

Upon arriving, visitors will follow the following procedure:

1. Visitors will ring the bell located at the exterior door:
2. Through the voice intercom system, visitors will be asked to identify themselves and if they have an appointment in the building.
3. Once this information is received and verified for accuracy, visitors will be let into the vestibule.
4. Visitors will need to present driver's license which must be queried through the school's background check system.
5. After passing clearance, visitors will be issued a visitor badge.
6. Visitors who do not gain clearance, may be asked to leave the building immediately.
7. Anyone given a visitor badge cannot be left unattended in the building and will have staff accompany them to the designated location.
8. No visitor can ever be left unattended.

In the instance of an intruder who has successfully passed through the outer security measures of the school an intruder alarm system can be triggered. Additionally, all classrooms will be provided with roll down shades at windows facing the corridor, so that an intruder could not look directly into classrooms.

It should be noted that the intruder alarm strategy will not interfere with life safety issues during a fire alarm.

In order to allow for community access, the school is also compartmentalized for usage modes in addition to that uses during school hours. Access will be allowed through the west entrance vestibule to allow the community to utilize the auditorium and athletic facilities, and the ground floor locker rooms. This vestibule will be outfitted with security cameras and electronic door locking hardware, which may be accessed and operated remotely by building security. Sliding metal fabric partitions will prevent access to the main school space.



### 3.1.14 Quality Control Documents

JLA's primary approach to Quality Control/Quality Assurance is the full team's integration of Building Information Modeling (BIM). BIM documentation for the Fuller Middle School commenced with schematic design and is continually updated and maintained through the present submission.

The success of QA/QC during document production relies heavily on the adoption, full and complete documentation and coordination of all information through BIM by all primary disciplines including architectural, structural, HVAC, plumbing, electrical and fire protection. JLA, together with structural engineer RSE Assoc., ME engineers Garcia, Galuska, DeSousa, and Plumbing & Fire Protection engineers AKAL Engineering share a BIM platform through the utilization of REVIT 2019. We have also since included A/V and Kitchen BIM models.

Throughout the Construction Documents phase, the increasingly comprehensive REVIT model has been uploaded each week on Wednesday and shared between this core design team. Each week, the members of the individual discipline staffs review issues of conflict and coordination. We also utilize google documents for each discipline in order to record action items and progress.

In addition, the team's integrated design methodology is implemented through regular in-person sessions in the JLA studio with all primary and relevant secondary disciplines (such as acoustics). During these sessions coordination action items are identified, tasks assigned and resolution paths are scheduled.

Some highlights on each topic are below:

#### *Ceiling Heights*

BIM model shows all duct and piping sized for coordination purposes.

#### *Mechanical Room and Shaft Sizes*

BIM model shows all duct and piping sizes for coordination purposes.

#### *Coordinate Specifications and Drawings*

JLA provides marked up specifications to our spec writer for incorporation into the project manual.

#### *Filed Sub-Bid work*

Spec writer provides a public bid check document to OPM & JLA. This provides key information for spec writer to incorporate into the entire project manual.

#### *Scheduling*

The OPM, CM, and Architect meet and agree on scheduling items on a weekly basis.

### ***Equipment and Power***

We have had various meetings with the users of the current and proposed fuller middle school. This is so we can understand their equipment needs in order to include provisions in the construction documents.

### ***Existing and New Construction***

The benefit of having a Construction Manager perform pre-construction services for the client aid in the development of coordination items related to the old fuller middle school which will be demolished after the proposed fuller middle school is completed.

### ***Phasing***

The benefit of having a Construction Manager perform pre-construction services for the client aid in the development of phasing.

In addition, two complete progress check sets of both drawings and specifications were produced for redline review and mark up by Senior Associate Mark Warner and Principal in Charge, Architect of Record, Jonathan Levi. Remaining DD appropriate coordination issues were then distributed to the team and picked up prior to final DD submission.

Finally, the 60% pricing set was reviewed by both the OPM and commissioning agent, with detailed comments tracked.

### 3.1.15 Site Acoustical Report

Please reference the attached review prepared by Acentech.





May 2, 2019

Elizabeth Bugbee, AIA  
Associate  
Jonathan Levi Architects  
266 Beacon Street  
Boston, MA 02116

**Subject**      **Acoustical Consulting Services – Site Noise Survey**  
Fuller Middle School  
Framingham, MA  
Acentech Project No. 631419

Dear Elizabeth:

We have completed our site noise survey at Fuller Middle School. This report includes our measurement results and recommendations for community noise control and LEED compliance.

## COMMUNITY NOISE CONTROL

We are not aware of a specific noise ordinance for the City of Framingham; however, the project needs to comply with the MA-DEP noise guideline (301 CMR 7.10). The guideline states that the noise from new equipment should not exceed by 10 dB or more the existing noise levels at the property line and at any inhabited nearby residence, and that the noise should not be tonal. To this end, we installed two sound levels meters to continuously monitor noise at the site between April 10, 2019 and April 17, 2019 to measure the existing noise levels, shown below.

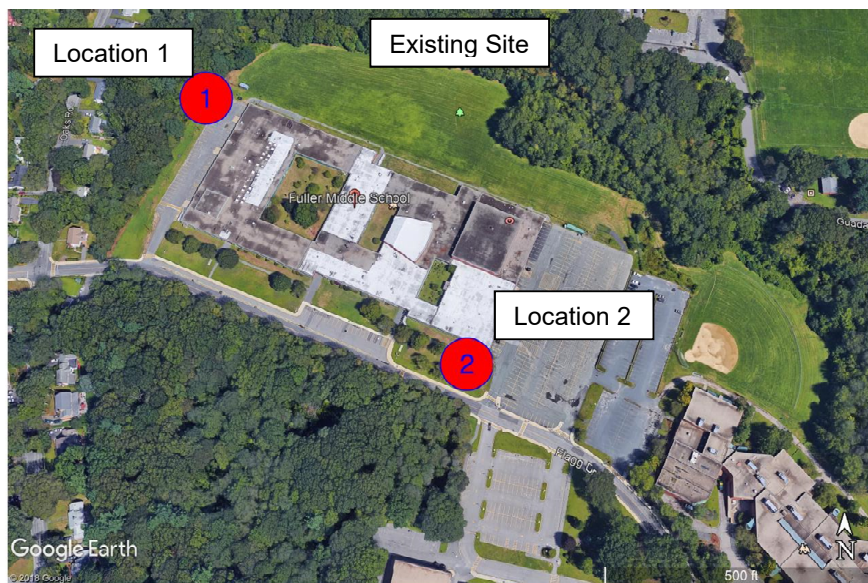


Figure 1 - Site Map and Meter Locations

## LEED REQUIREMENT

The project needs to comply with LEED requirements for environmental noise, which says that schools located on high-noise sites (peak-hour Leq above 60 dBA during school hours) need to implement acoustic treatment to minimize noise intrusion from exterior sources and control sound transmission between classrooms and other core learning spaces.

## MEASUREMENT RESULTS

The results of our ambient measurements are shown below. This is the hourly L90 (90<sup>th</sup> percentile noise level), meaning the noise level exceeds the reported value 90% of the time over the course of that hour. The lowest hourly L90 measured was **36 dBA** at location 2, as highlighted in Figure 3 below. Figure 2 shows the hourly L90 at location 1 where the levels were not as low as location 2 with the lowest hourly L90 measured at 40 dBA.

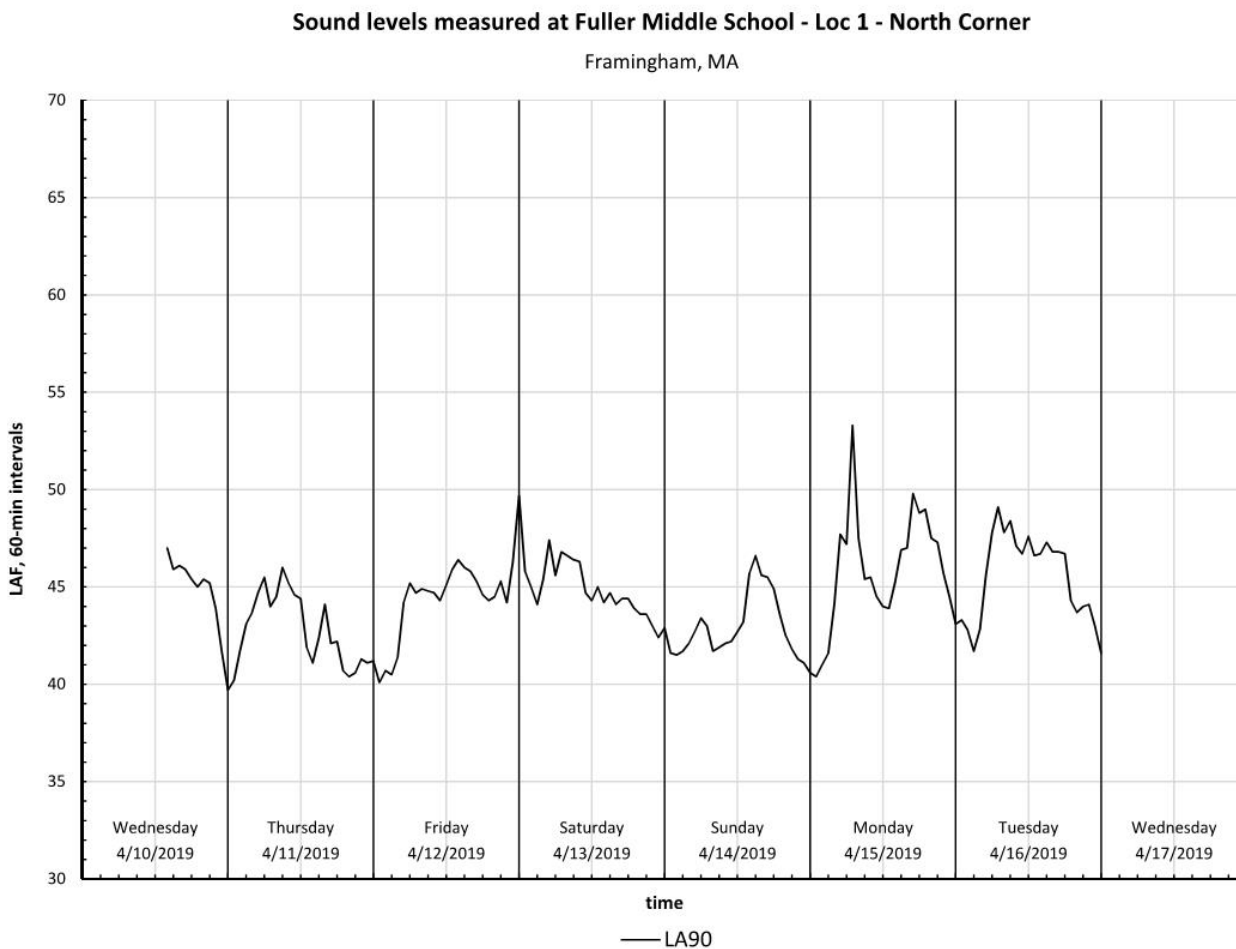


Figure 2 – Loc. 1 L90 (ambient) background noise levels for MA-DEP

Sound levels measured at Fuller Middle School - Loc 2 - South Corner

Framingham, MA

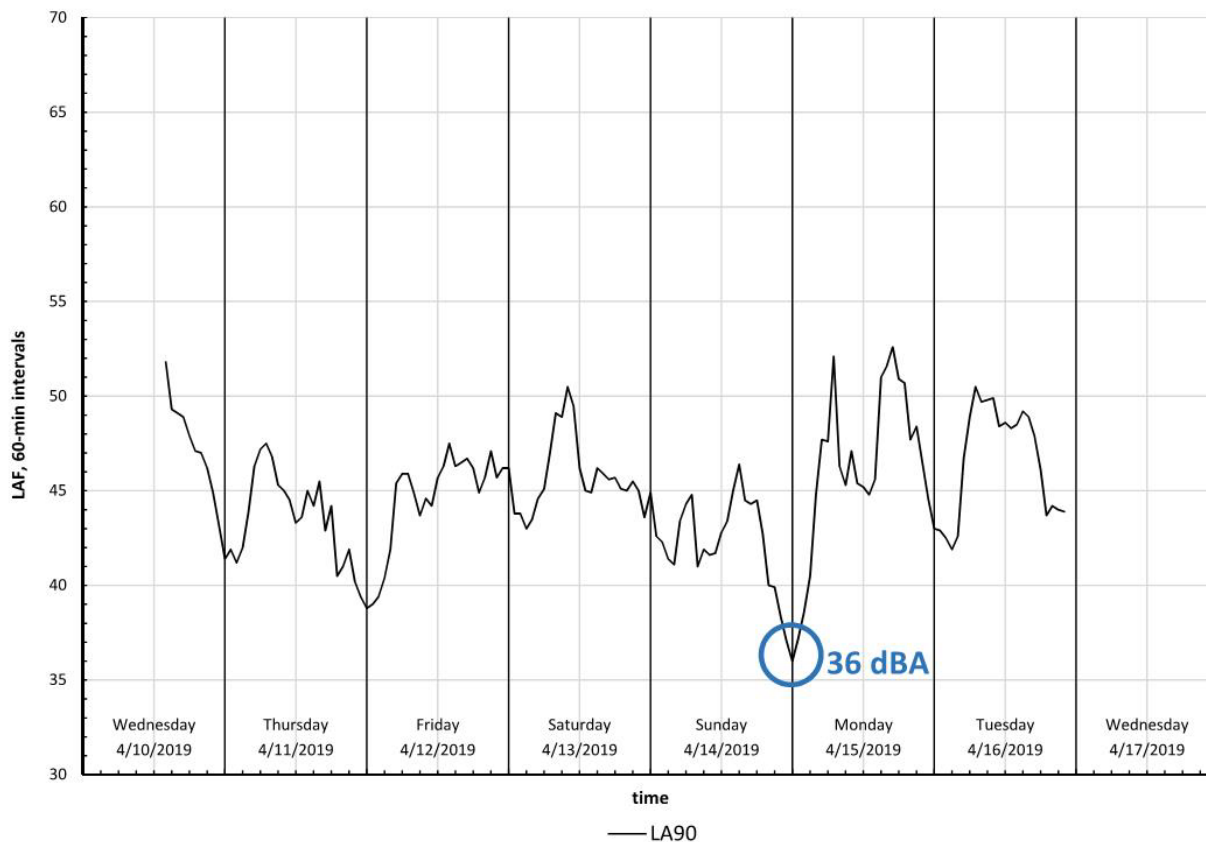


Figure 3 – Loc. 2 L90 (ambient) background noise levels for MA-DEP

Relative to the LEED requirement, we have evaluated the hourly Leq: the sound energy average over the course of an hour. We report the results below in Figures 4 and 5.

Continued on next page

Sound levels measured at Fuller Middle School - Loc 1 - North Corner

Framingham, MA

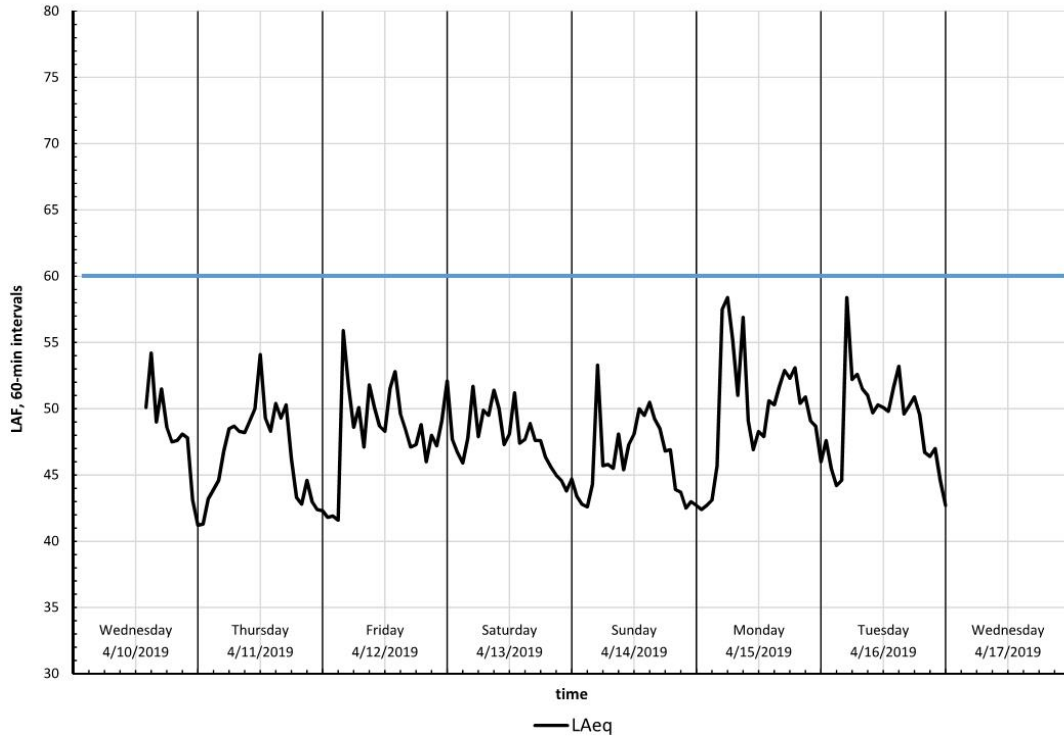


Figure 4 - Leq (energy average) noise levels for LEED

Sound levels measured at Fuller Middle School - Loc 2 - South Corner

Framingham, MA

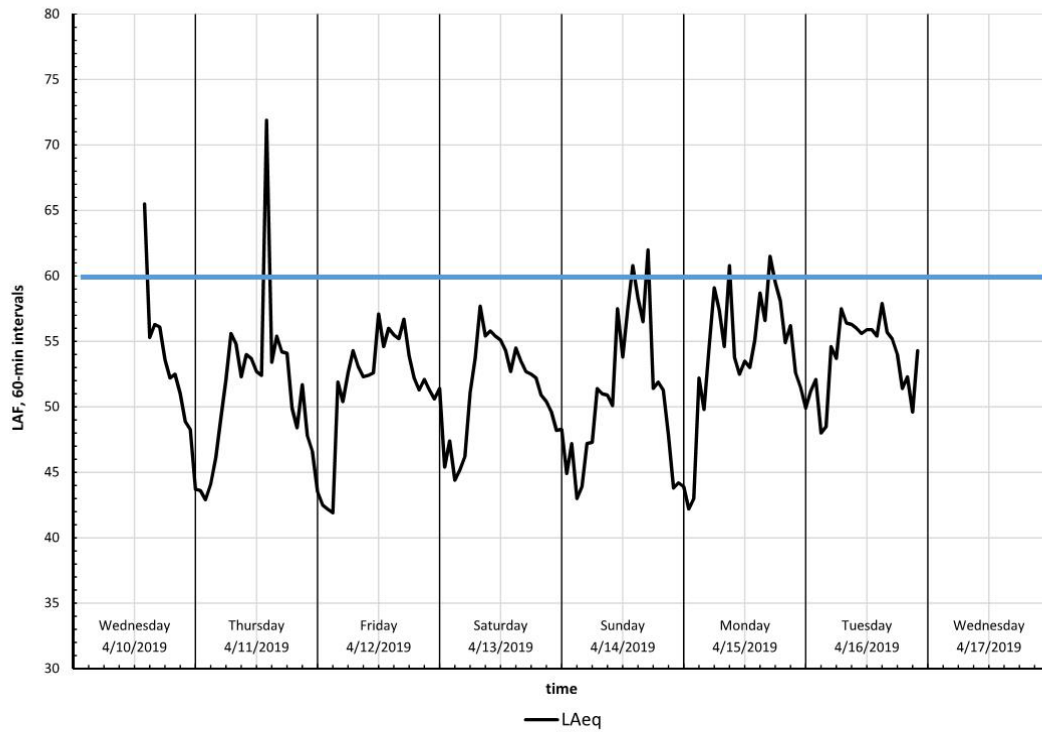


Figure 5 - Leq (energy average) noise levels for LEED



For Location 1, the measured hourly Leq remained below 60dBA for the entire measurement period. At Location 2 there were a handful of hourly Leq measurements that were above 60 dBA at the times listed below. Based on online data, we see that school starts at 8:15am and ends at 2:25pm. Most of these events either are outside of school hours or coincide with the ending of the school day and this measurement location was close to the front entrance. We did measure one hourly Leq exceeding 60dBA on April 15 that occurred during school hours. It might be prudent to follow up with the school to see if there was a special event or perhaps a late start on this day. Still, given that this is the only exceedance at 61dBA and does not follow the trend shown by the rest of the data at this location and especially at Location 1, we do not believe the noise is due to permanent sources on or near the site.

- April 10, 2019 between 2pm and 3pm – 66 dBA – Location 2 – *School Ends*
- April 11, 2019 between 2pm and 3pm – 72 dBA – Location 2 – *School Ends*
- April 14, 2019 between 2pm and 3pm – 61 dBA – Location 2 – *Outside of School Hours*
- April 14, 2019 between 5pm and 6pm – 62 dBA – Location 2 – *Outside of School Hours*
- April 15, 2019 between 9am and 10am – 61 dBA – Location 2 – *exceedance during school hours*
- April 15, 2019 between 5pm and 6pm – 61 dBA – Location 2 – *Outside of School Hours*

## CONCLUSIONS

To comply with the MA-DEP noise regulation, the project must not exceed **46 dBA** (36 dBA + 10 dB) at the nearest residential property line. We will review the next set of mechanical drawings and updated cutsheets to confirm compliance with these requirements.

Based on our evaluation of peak noise activity – where the exceedances of 60 dBA (hourly Leq) were rare and only occurred at one of our measurement locations, we do not recommend additional acoustical treatment to comply with the LEED requirements for environmental noise at this time.

\*\*\*\*\*

Please call (617-499-8070) or e-mail ([ncuff@acentech.com](mailto:ncuff@acentech.com)) if you have questions or need additional information.

Sincerely,



Nick Dragoni

cc: Nicole Cuff, Ben Markham (Acentech)



## 3.2 Space Summary

### 3.2.1 Space Summary

Please reference the attached updated CD-60% Space Summary.



### Proposed Space Summary - Middle Schools

= Change from MSBA Template over 5%  
 = Change from 6/21/19 DD Submission and 6/21 Comment Response over 5%

Date: 6/21/2019 Design Development Submittal

FULLER Middle School 630 Students Grades 6-8			
ROOM TYPE	Existing Conditions		
	ROOM NFA <sup>1</sup>	# OF RMS	area totals
<b>CORE ACADEMIC SPACES</b> <span style="float: right;">31,685</span>			
<i>(List classrooms of different sizes separately)</i>			
Classroom - General	775	20	15,500
ELL Classrooms	675	9	6,075
Teacher Planning	0	0	0
Classroom Breakout	0	0	0
Small Group Seminar (20-30 seats) / Resource	0	0	0
Science Classroom / Lab	915	10	9,150
Prep Room	240	4	960
Science Teacher Planning	0	0	0
<b>SPECIAL EDUCATION</b> <span style="float: right;">10,875</span>			
<i>(List classrooms of different sizes separately)</i>			
Self-Contained SPED	930	5	4,650
SPED Teacher Planning	0	0	0
SPED Classroom Breakout	620	7	4,340
Self-Contained SPED Toilet	0	0	0
Resource Room	935	1	935
Small Group Room / Reading	0	0	0
SPED Office w/Storage	190	5	950
<b>ART &amp; MUSIC</b> <span style="float: right;">5,620</span>			
Art Classroom	600	2	1,200
Art Workroom w/ Storage & kiln	0	0	0
Band / Chorus - 100 seats	2,120	2	4,240
Music Practice / Ensemble	60	3	180
<b>VOCATIONS &amp; TECHNOLOGY</b> <span style="float: right;">3,350</span>			
Tech Clrm. - (E.G. Drafting, Business)	1,660	1	1,660
Tech Shop - (E.G. Consumer, Wood)	1,690	1	1,690
Fab Lab	0	0	0
<b>HEALTH &amp; PHYSICAL EDUCATION</b> <span style="float: right;">24,265</span>			
Gymnasium	9,680	1	9,680
Gym Storeroom	260	2	520
Health Instructor's Office w/ Shower & Toilet	685	3	2,055
Locker Rooms - Boys / Girls w/ Toilets	3,500	2	7,000
Unisex Toilet / Shower	140	1	140
Fitness Center	4,870	1	4,870
<b>MEDIA CENTER</b> <span style="float: right;">3,720</span>			
Media Center / Reading Room	3,720	1	3,720
Cohort Commons	0	0	0
<b>DINING &amp; FOOD SERVICE</b> <span style="float: right;">13,740</span>			
Cafetorium / Dining	8,570	1	8,570
Stage	0	0	0
Chair / Table / Equipment Storage	440	1	440
Kitchen	3,485	1	3,485
Staff Lunch Room	1,245	1	1,245
<b>MEDICAL</b> <span style="float: right;">1,560</span>			
Medical Suite Toilet	50	3	150
Nurses' Office / Waiting Room	930	1	930
Examination Room / Resting	160	3	480
<b>ADMINISTRATION &amp; GUIDANCE</b> <span style="float: right;">4,600</span>			
General Office / Waiting Room / Toilet	1,540	1	1,540
Teachers' Mail and Time Room	100	1	100
Duplicating Room	130	1	130
Records Room	90	1	90
Principal's Office w/ Conference Area	560	1	560
Principal's Secretary / Waiting	80	1	80
Assistant Principal's Office - AP1	110	1	110
Assistant Principal's Office - AP2	0	0	0
Supervisory / Spare Office	170	1	170
Conference Room	310	1	310
Small Conference Room	0	0	0
Guidance Office (Student Support)	170	8	1,360
Guidance Waiting Room W/ Sto Closet	0	0	0
Guidance Storeroom	60	1	60

Schematic Design			Design Development 5/17/19			Design Development MSBA Comment Response 6/21/19			60% Construction Documents 8/9/19		
ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals
<b>36,000</b>			<b>35,600</b>			<b>35,600</b>			<b>35,530</b>		
900	21	18,900	885	21	18,585	885	21	18,585	885	21	18,585
900	6	5,400	885	6	5,310	885	6	5,310	885	6	5,310
90	15	1,350	95	15	1,425	95	15	1,425	95	15	1,425
290	7	2,030	290	7	2,030	290	7	2,030	280	7	1,960
400	1	400	405	1	405	405	1	405	405	1	405
1,195	6	7,170	1,180	6	7,080	1,180	6	7,080	1,180	6	7,080
80	6	480	80	6	480	80	6	480	80	6	480
90	3	270	95	3	285	95	3	285	95	3	285
<b>9,150</b>			<b>9,075</b>			<b>9,075</b>			<b>9,150</b>		
900	6	5,400	885	6	5,310	885	6	5,310	900	6	5,400
90	3	270	95	3	285	95	3	285	90	3	270
300	2	600	300	2	600	300	2	600	300	2	600
95	3	285	95	3	285	95	3	285	95	3	285
520	3	1,560	520	3	1,560	520	3	1,560	520	3	1,560
345	3	1,035	345	3	1,035	345	3	1,035	345	3	1,035
0	0	0	0	0	0	0	0	0	0	0	0
<b>3,675</b>			<b>3,640</b>			<b>3,640</b>			<b>3,640</b>		
1,185	1	1,185	1,175	1	1,175	1,175	1	1,175	1,175	1	1,175
150	1	150	80	2	160	80	2	160	80	2	160
970	2	1,940	950	2	1,900	950	2	1,900	950	2	1,900
200	2	400	135	3	405	135	3	405	135	3	405
<b>3,170</b>			<b>3,185</b>			<b>3,185</b>			<b>3,150</b>		
950	0	0	950	0	0	950	0	0	950	0	0
1,980	1	1,980	1,960	1	1,960	1,960	1	1,960	1,960	1	1,960
1,190	1	1,190	1,225	1	1,225	1,225	1	1,225	1,190	1	1,190
<b>9,985</b>			<b>9,795</b>			<b>9,795</b>			<b>9,765</b>		
8,300	1	8,300	8,265	1	8,265	8,265	1	8,265	8,265	1	8,265
300	1	300	315	1	315	315	1	315	315	1	315
150	2	300	150	2	300	150	2	300	150	2	300
500	2	1,000	415	2	830	415	2	830	400	2	800
85	1	85	85	1	85	85	1	85	85	1	85
<b>6,280</b>			<b>6,250</b>			<b>6,250</b>			<b>6,250</b>		
1,990	1	1,990	1,990	1	1,990	1,990	1	1,990	1,990	1	1,990
1,430	3	4,290	1,420	3	4,260	1,420	3	4,260	1,420	3	4,260
<b>8,960</b>			<b>8,690</b>			<b>8,840</b>			<b>8,840</b>		
4,725	1	4,725	4,725	1	4,725	4,725	1	4,725	4,725	1	4,725
1,590	1	1,590	1,510	1	1,510	1,510	1	1,510	1,510	1	1,510
430	1	430	270	1	270	420	1	420	420	1	420
1,915	1	1,915	1,820	1	1,820	1,820	1	1,820	1,820	1	1,820
300	1	300	365	1	365	365	1	365	365	1	365
<b>610</b>			<b>620</b>			<b>620</b>			<b>620</b>		
60	1	60	60	1	60	60	1	60	60	1	60
250	1	250	260	1	260	260	1	260	260	1	260
100	3	300	100	3	300	100	3	300	100	3	300
<b>5,250</b>			<b>5,245</b>			<b>5,245</b>			<b>5,235</b>		
425	1	425	445	1	445	445	1	445	445	1	445
95	1	95	100	1	100	100	1	100	100	1	100
200	1	200	200	1	200	200	1	200	200	1	200
200	1	200	210	1	210	210	1	210	210	1	210
375	1	375	480	1	480	480	1	480	470	1	470
125	1	125	130	1	130	130	1	130	130	1	130
150	1	150	150	1	150	150	1	150	150	1	150
150	0	0	150	0	0	150	0	150	150	0	0
150	1	150	145	1	145	145	1	145	145	1	145
350	1	350	365	1	365	365	1	365	365	1	365
210	1	210	205	1	205	205	1	205	205	1	205
150	6	900	150	6	900	150	6	900	150	6	900
75	3	225	75	3	225	75	3	225	75	3	225
15	3	45	15	3	45	15	3	45	15	3	45

MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM NFA <sup>1</sup>	# OF RMS	area totals	Comments
<b>29,580</b>			
950	22	20,900	850 SF min - 950 SF max, includes closet includes closet Shared between classrooms Shared between classrooms. Includes SPED use
500	2	1,000	Professional Development/ Itinerant / Workspace. Some uses served in Admin "Teachers Work Rooms"
1,200	6	7,200	
80	6	480	
<b>7,550</b>			Shared between classrooms
950	5	4,750	To be revised to SD figures in next submission To be revised to SD figures in next submission
60	5	300	Shared between classrooms. SPED use also in Gen Classroom Breakout
500	3	1,500	For medically fragile students
500	2	1,000	Should be divisible
<b>3,250</b>			Allows division into 2 smaller spaces
1,200	1	1,200	assumed use - 50% population 2 times / week
150	1	150	separated kiln room
1,500	1	1,500	For 70 students, Includes Teacher Planning space and music storage
200	2	400	includes additional, larger ensemble space
<b>6,400</b>			Distributed V&T in Cohort Commons
1,200	2	2,400	Functions to be served in Fab Lab
2,000	2	4,000	Assumed use - 25% Population - 5 times/week
<b>8,400</b>			Includes closed off area for 3D printers area closer to MSBA Tech classroom standard
<b>8,400</b>			Gym enlarged to fit 2 MS BB Courts
150	1	150	PE instructor - no shower or toilet
250	1	250	3 toilets, no shower, 40 lockers
1,000	2	2,000	Include 4 lockers
<b>4,003</b>			
4,003	1	4,003	Distributed Media Center and Vocations and Technology functions
<b>8,922</b>			
4,725	1	4,725	2 seatings - 15SF per seat
1,600	1	1,600	Area shared with additional custodial storage
410	1	410	1600 SF for first 300 + 1 SF/student Addt, includes Dry Storage, Office, Toilet, Scramble
1,930	1	1,930	Allows teacher collaboration
258	1	258	
<b>610</b>			
60	1	60	
250	1	250	includes interview room/ closet/ kitchenette
100	3	300	
<b>3,430</b>			
415	1	415	
100	1	100	
200	1	200	
200	1	200	
37			









### 3.2.2 Space Summary - Education Program Comparison

The overall Fuller Middle School parti documented in Schematic Design has been carried forward with the pedagogical objectives described in the Education Plan unchanged. There have been a number of refinements which are outlined below, mostly from minor adjustments resulting from building design efforts. Any changes over 5% of nsf floor area have been highlighted in orange in the attached Proposed Space Summary. Overall, the total educational NSF has gone down by 120 sf from 91,485 to 91,365 nsf since the previous submission. The building is designed, with a grossing factor of 1.50. The overall gsf has gone up 310 sf from SD and is at 137,100 gsf. This change in gsf resulted primarily from a change from a curtainwall enclosure to a more cost effective storefront / brick system, which has thicker walls, and therefore expanded the exterior perimeter by a few inches around much of the building footprint.

#### *Core Academic Spaces*

Total NSF has gone down from SD by 470 sf, due to minor adjustments resulting from building design efforts. The number of classrooms and Core Academic Spaces has remained unchanged. There has been a reduction of 70 nsf from the previous submission due to a modest change in breakout room size from 290 sf each to 280 sf.

#### *Special Education*

The Special Education room configuration and NSF remains unchanged, as approved by the DESE September 27, 2018.

#### *Art and Music*

Total NSF has gone down from the SD by 35 sf due to minor adjustments resulting from building design efforts and is unchanged from the previous submission.

#### *Vocations and Technology*

Total NSF has gone down from SD by 20 sf due to minor adjustments resulting from building design efforts.

#### *Health and Physical Education*

Total NSF has gone down from SD by 220 sf due to minor adjustments resulting from building design efforts

#### *Media Center*

Total NSF has gone down from the SD by 30 sf due to minor adjustments resulting from building design efforts and is unchanged from the previous submission.

#### *Dining and Food Service*

Total NSF has gone down from SD by 120 sf due to minor adjustments resulting from building design efforts and is unchanged from the previous submission.

***Medical***

Total NSF has gone up from SD by 10 sf due to minor adjustments resulting from building design efforts and is unchanged from the previous submission.

***Administration and Guidance***

Total NSF has gone down from SD by 15 sf. There has been a decrease of 10 sf from the previous submission.

***Custodial and Maintenance***

Total NSF has gone up from SD by 415 sf. Multiple Custodian Storage areas and Storeroom areas are distributed throughout the building including a Custodial area adjacent to the Gymnasium. An exterior Equipment Storage area is also included. The Custodial Office duals as a Custodial Break room with kitchenette and lockers and includes a Custodial Toilet.

***Other***

Total NSF has gone down by 70 sf since SD. Overall NSF of the auditorium areas have gone up by 55 sf. The nsf has reduced by 125 sf since the previous submission due to modifications to the auditorium storage and dressing rooms.

### 3.3 Project Approvals

#### 3.3.1 Approval Status

Approval status is as follows

1. ***DESE - Special Education approval by Department of Elementary and Secondary Education.***
  - APPROVED. Please see attached signed approval dated 9/27/18
2. ***MHC - Project Notification Form and approvals by MA Historical Commission.***
  - APPROVED. Please see attached signed approval dated 1/2/18
3. ***OIG - Construction Manager at Risk approval by the Office of Inspector General***
  - APPROVED. Please see attached signed approval dated 12/21/18
4. ***Executive Office of Energy and Environmental Affairs / EEA***
  - Not Applicable
5. ***MA DEP - Massachusetts Department of Environmental Protection***
  - Release Abatement Measure (RAM) Plan submitted 7/17/19. McPhail Associates, LLC has been employed to manage response actions. The objective of this RAM is to manage handling and off-site re-use of excavated natural organic soils affected by reportable concentrations of arsenic. The performance of the RAM will be completed over a period of up to 6 months. The RAM Plan and the disposal site file can be reviewed at MassDEP website using Release Tracking Number (RTN) 3-35694 at the following website:  
<http://public.dep.state.ma.us/SearchableSites2/Search.aspx>
6. ***MA DOT - Massachusetts Department of Transportation***
  - Not Applicable
7. ***MA DPH - Massachusetts Department of Public Health***
  - Not Applicable
8. ***EPA – NPDES National Pollutant Discharge Elimination System Notice of Intent approval by the US Environmental Protection Agency***
  - Please see attached application certified by CMR on 6/10/19
9. ***MAAB - Accessibility variances by MA Architectural Access Board***
  - Not Applicable. No accessibility variances are anticipated.
10. ***Framingham Zoning Board of Appeals.***
  - Variance for height approved Please see attached signed approval dated 5/15/18
11. ***Framingham Planning Board.***
  - APPROVED. Please see attached

**12. Framingham Conservation Commission.**

- APPROVED. Please see attached Order of Conditions dated 7/1/19

**13. Framingham Building Department**

- Stamped Building Permit application to be filed after approval of GMP for Structural Package, September 2019
- Supplemental Permit application to be filed after approval of GMP, January 2020

**14. Framingham Fire Department.**

- Permit application to be filed after approval of GMP, January 2020

**15. Framingham Board of Health.**

- Permit application for kitchen to be filed after approval of GMP, January 2020
- RAM plan (see #5 above) notification attached provided 7/23/19

**16. Framingham Department of Public Works**

- Framingham DPW (includes water and sewer utilities) reviewed project as part of the successful Planning Board Approval. See attached flow test letter dated 11/2/18 and letter from Framingham DPW dated 4/30/19.

**17. Framingham Utilities**

- Please see attached correspondence with Eversource confirming adequate supply of Natural Gas and Electrical / Cable work orders

### 3.3.2 Approval Letter

Attached are the following letters of Approval:

- DESE - Special Education approval by Department of Elementary and Secondary Education.
- MHC - Project Notification Form and approvals by MA Historical Commission.
- OIG - Construction Manager at Risk approval by the Office of Inspector General
- MA DEP - Massachusetts Department of Environmental Protection
- EPA –NPDES National Pollutant Discharge Elimination System Notice of Intent approval by the US Environmental Protection Agency
- Framingham Zoning Board of Appeals.
- Framingham Planning Board.
- Framingham Conservation Commission.
- Framingham Board of Health.
- Framingham Department of Public Works
  - Fire Flow Test
  - Framingham DPW Approval
- Framingham Utilities
  - Utility Services Information
  - Eversource Will Serve Letter
  - Eversource Conduit Diagram
  - Eversource Cable Diagram





# Massachusetts Department of Elementary and Secondary Education

75 Pleasant Street, Malden, Massachusetts 02148-4906

Telephone: (781) 338-3000  
TTY: N.E.T. Relay 1-800-439-2370

Jeffrey C. Riley  
Commissioner

September 27, 2018

Mary Pichetti  
Director of Capital Planning  
Massachusetts School Building Authority  
40 Broad Street, Suite 500  
Boston, MA 02109

Dear Ms. Pichetti:

We have reviewed the space summary and accompanying documentation submitted by the Framingham Public Schools for a construction project at the Fuller Middle School. We have done so in accordance with M.G.L. chapter 70B, section 6(6), which instructs us to certify "...that adequate provisions have been made in the school project for children with disabilities, as defined in section 1 of chapter 71B...".

We are satisfied with the district's proposed floor plans and believe that their special education plan will provide the community with an opportunity to serve its special education students well. We accompany this approval with a suggestion that one pair of special education rooms on the second floor be relocated to the third floor in order to more equitably distribute that programming, though we submit that there may be good programmatic reasons to have all of those rooms on the second floor.

The Massachusetts Department of Elementary and Secondary Education therefore certifies that this school project has been planned to adequately provide appropriate space to serve the programs and school populations referenced in M.G.L. chapter 70B, section 6(6) noted above.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew J. Deninger".

Matthew J. Deninger  
DESE designee on the MSBA Board of Directors

Cc: Vani Rastogi-Kelly, Director, Public School Monitoring, ESE  
Amy Paulin, Supervisor, Public School Monitoring, ESE  
Katie DeCristofaro, Capital Program Manager, MSBA

Allison Jones, Project Coordinator, MSBA  
Fenton Bradley, Project Manager, MSBA





**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

January 2, 2018

Phillip Gray  
266 Beacon Street  
Boston, MA 02116

RE: Fuller Middle School, 31 Flagg Drive, Framingham, MA; MHC# RC.63588

Dear Mr. Gray:

The Massachusetts Historical Commission (MHC) is in receipt of a Project Notification Form (PNF) for the project referenced above, received at this office on December 7, 2017. The staff of the MHC have reviewed the information submitted and have the following comments.

The proposed project consists of three options for the existing Kennedy Middle School at 31 Flagg Drive in Framingham. The options include either the renovation of the existing school building, partial demolition and construction of an addition, or full demolition of the existing school and construction of a new school on the site. The information provided indicates that the project will use funding from the Massachusetts School Building Authority

Review of MHC's files indicates that the Fuller 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 me if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Linda Santoro".

Linda Santoro  
Preservation Planner  
Massachusetts Historical Commission

xc: MSBA

220 Morrissey Boulevard, Boston, Massachusetts 02125  
(617) 727-8470 • Fax: (617) 727-5128  
[www.sec.state.ma.us/mhc](http://www.sec.state.ma.us/mhc)





The Commonwealth of Massachusetts  
Office of the Inspector General

GLENN A. CUNHA  
INSPECTOR GENERAL

JOHN W. McCORMACK  
STATE OFFICE BUILDING  
ONE ASHBURTON PLACE  
ROOM 1311  
BOSTON, MA 02108  
TEL: (617) 727-9140  
FAX: (617) 723-2334

December 21, 2018

Thatcher W. Kezer III  
Chief Operating Officer  
City of Framingham  
150 Concord Street  
Framingham, MA 01702

**Re: Application to Use the Construction Management At-Risk Alternative  
Delivery Method for the Framingham Fuller Middle School Project**

Dear Mr. Kezer:

On October 17, 2018, pursuant to M.G.L. c. 149A and 945 CMR 2.00, the city of Framingham ("Framingham") submitted an application to use the construction management at-risk ("CM at-risk") alternative delivery method for the Framingham Fuller Middle School project.

Based on all the information provided, Framingham has met the statutory requirements for using the CM at-risk delivery method. Accordingly, the Office of the Inspector General ("Office") is issuing this notice to proceed to use the CM at-risk delivery method as specified in M.G.L. c. 149A, §§ 1-13, and to use the plan and procedures submitted.

This approval is conditioned on Framingham using a CM at-risk firm that the Division of Capital Asset Management and Maintenance ("DCAMM") has certified, as well as DCAMM-certified trade contractors. Therefore, Framingham must require each CM at-risk firm to supply both a certificate of eligibility and an update statement during both the prequalification phase and the technical proposal phase of the selection process. In addition, Framingham must require each trade contractor to supply a certificate of eligibility and an update statement during the prequalification phase and again at the bidding phase of the selection process. Framingham must reject as invalid all contractors' statements of qualifications, proposals and bids that do not provide such certificates of eligibility or update statements.

If, during the course of the project, Framingham changes its owner's project manager or designer, please submit information about the new project manager or designer to the Office. Also, if Framingham decides not to proceed with the CM at-risk delivery method, please notify the Office.

Thatcher W. Kezer, III  
Chief Operating Officer  
December 21, 2018  
Page 2 of 2

Please feel free to contact me or Kerri-Anne Hollingshead, Policy Analyst, if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Glenn A. Cunha". The signature is fluid and cursive, with a large initial "G" and "C".

Glenn A. Cunha  
Inspector General

cc: Joel G. Seeley, Symmes Maini & McKee Associates, Inc.

# Fuller Middle School of Framingham

Project/Site Name: Fuller Middle School  
of Framingham  
Operator Name: Daniel Geary  
My Assigned Permissions: View, Edit,  
Sign, Manage

NPDES  
FORM  
3510-9



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460  
NOTICE OF INTENT (NOI) FOR THE 2017 NPDES CONSTRUCTION PERMIT

FORM  
Approved OMB No.  
2040-0004

Submission of this Notice of Intent (NOI) constitutes notice that the operator identified in Section III of this form requests authorization to discharge pursuant to the NPDES Construction General Permit (CGP) permit number identified in Section II of this form. Submission of this NOI also constitutes notice that the operator identified in Section III of this form meets the eligibility requirements of Part 1.1 CGP for the project identified in Section IV of this form. Permit coverage is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in Part 8 of the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Discharges are not authorized if your NOI is incomplete or inaccurate or if you were never eligible for permit coverage. Refer to the instructions at the end of this form.

## Permit Information

NPDES ID: MAR10023X

State where your construction site is located: MA

Is your construction site located on Indian Country Lands?  YES  NO

Are you requesting coverage under this NOI as a "Federal Operator" as defined in Appendix A ([https://www.epa.gov/sites/production/files/2017-02/documents/2017\\_cgp\\_final\\_appendix\\_a\\_-\\_definitions\\_508.pdf](https://www.epa.gov/sites/production/files/2017-02/documents/2017_cgp_final_appendix_a_-_definitions_508.pdf))?

YES  NO

Have stormwater discharges from your current construction site been covered previously under an NPDES permit?  YES  NO

Will you use polymers, flocculants, or other treatment chemicals at your construction site?  YES  NO

Has a Stormwater Pollution Prevention Plan (SWPPP) been prepared in advance of filling this NOI, as required?  YES  NO

Are you able to demonstrate that you meet one of the criteria listed in Appendix D ([https://www.epa.gov/sites/production/files/2017-02/documents/2017\\_cgp\\_final\\_appendix\\_d\\_-\\_endangered\\_species\\_reqs\\_508.pdf](https://www.epa.gov/sites/production/files/2017-02/documents/2017_cgp_final_appendix_d_-_endangered_species_reqs_508.pdf)) with respect to protection of threatened or endangered species listed under the Endangered Species Act (ESA) and federally designated critical habitat?

YES  NO

Have you completed the screening process in Appendix E ([https://www.epa.gov/sites/production/files/2017-02/documents/2017\\_cgp\\_final\\_appendix\\_e\\_-\\_historic\\_properties\\_reqs\\_508.pdf](https://www.epa.gov/sites/production/files/2017-02/documents/2017_cgp_final_appendix_e_-_historic_properties_reqs_508.pdf)) relating to the protection of historic properties?

YES  NO

Indicating "Yes" below, I confirm that I understand that CGP only authorized the allowable stormwater discharges in Part 1.2.1 and the allowable non-stormwater discharges listed in Part 1.2.2. Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the Stormwater Pollution Prevention Plan (SWPPP), during an inspection, etc. If any discharges requiring NPDES permit coverage other than the allowable stormwater and non-stormwater discharges listed in Parts 1.2.1 and 1.2.2 will be discharged, they must be covered under another NPDES permit.

YES  NO

## Operator Information

### Operator Information

Operator Name: Daniel Geary

Operator Mailing Address:

Address Line 1: 72 Sumner St

Address Line 2:

City: Milford

ZIP/Postal Code: 01757

State: MA

County or Similar Division: WORCESTER

### Operator Point of Contact Information

First Name, Middle Initial, LastName: Daniel Geary

Title: Superintendent

Phone: 508-328-2699

Ext.

Email: [dgeary@consigli.com](mailto:dgeary@consigli.com)

#### Project/Site Information

Project/Site Name: Fuller Middle School of Framingham

#### Project/Site Address

Address Line 1: 31 Flagg Drive

Address Line 2:

City: Framingham

ZIP/Postal Code: 01702

State: MA

County or Similar Division: MIDDLESEX

Latitude/Longitude: 42.2934°N, 71.4152°W

Latitude/Longitude Data Source: Map

Horizontal Reference Datum: WGS 84

Project Start Date: 2019-06-19

Project End Date: 2022-06-17

Estimated Area to be Disturbed: 19.25

#### Types of Construction Sites:

- Institutional
- Highway or Road

Will there be demolition of any structure built or renovated before January 1, 1980?  YES  NO

Do any of the structures being demolished have at least 10,000 square feet of floor space?  YES  NO

Was the pre-development land use used for agriculture?  YES  NO

Have earth-disturbing activities commenced on your project/site?  YES  NO

Is your project located on a property of religious or cultural significance to an Indian tribe?  YES  NO

#### Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?  YES  NO

Are there any waters of the U.S. within 50 feet of your project's earth disturbances?  YES  NO

Are any of the waters of the U.S. to which you discharge designated by the state or tribal authority under its antidegradation policy as a Tier 2 (or Tier 2.5) water (water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water) or as a Tier 3 water (Outstanding National Resource Water)? See Appendix F ([https://www.epa.gov/sites/production/files/2017-02/documents/2017\\_cgp\\_final\\_appendix\\_f\\_-\\_tier\\_3\\_tier\\_2\\_and\\_tier\\_2.5\\_waters\\_508.pdf](https://www.epa.gov/sites/production/files/2017-02/documents/2017_cgp_final_appendix_f_-_tier_3_tier_2_and_tier_2.5_waters_508.pdf))

YES  NO

001: Sudbury River The onsite adjacent wetland and streamflow s into the Sudbury River

Latitude/Longitude: 42.2975°N, 71.4271°W

Tier Designation: N/A

Is this receiving water impaired (on the CWA 303(d) list)?  YES  NO

Has a TMDL been completed for this receiving waterbody?  YES  NO

#### Stormwater Pollution Prevention Plan (SWPPP)

First Name, Middle Initial, LastName: Daniel Geary

Title: Superintendent

Phone: 508-328-2699

Ext.

Email: [dgeary@consigli.com](mailto:dgeary@consigli.com)

#### Endangered Species Protection

Using the Instructions in Appendix D of the CGP, under which criterion listed in Appendix D are you eligible for coverage under this permit? Criterion A

Provide a brief summary of the basis for criterion selection listed above (the necessary content for a supportive basis statement is provided under the criterion you selected.):

Of the federal species listed on <https://www.fws.gov/endangered/> for Massachusetts. Federal list None have a habitat at the site. Nor are there any state species.

#### Historic Preservation

Are you installing any stormwater controls as described in Appendix E ([https://www.epa.gov/sites/production/files/2017-02/documents/2017\\_cgp\\_final\\_appendix\\_e\\_-\\_historic\\_properties\\_reqs\\_508.pdf](https://www.epa.gov/sites/production/files/2017-02/documents/2017_cgp_final_appendix_e_-_historic_properties_reqs_508.pdf)) that require subsurface earth disturbances? (Appendix E ([https://www.epa.gov/sites/production/files/2017-02/documents/2017\\_cgp\\_final\\_appendix\\_e\\_-\\_historic\\_properties\\_reqs\\_508.pdf](https://www.epa.gov/sites/production/files/2017-02/documents/2017_cgp_final_appendix_e_-_historic_properties_reqs_508.pdf)), Step 1)

YES  NO

Have prior surveys or evaluations conducted on the site already determined historic properties do not exist, or that prior disturbances have precluded the existence of historic properties? (Appendix E ([https://www.epa.gov/sites/production/files/2017-02/documents/2017\\_cgp\\_final\\_appendix\\_e\\_-\\_historic\\_properties\\_reqs\\_508.pdf](https://www.epa.gov/sites/production/files/2017-02/documents/2017_cgp_final_appendix_e_-_historic_properties_reqs_508.pdf)), Step 2):

YES  NO

#### Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Signing an electronic document on behalf of another person is subject to criminal, civil, administrative, or other lawful action.

**Certified By:** Thomas J. Geer

**Certifier Title:** Superintendent

**Certifier Email:** tgeer@consigli.com

**Certified On:** 06/10/2019 7:36 AM







# CITY OF FRAMINGHAM

Valerie Mulvey, City Clerk

Lisa Ferguson, Assistant City Clerk

*Dedicated to Excellence in Public Service*

Date: May 15, 2018

Address: 31 Flagg Dr.

Name: Framingham Public Schools

MDSX. SO. DIST. DEEDS  
BOOK 78114 PAGE 260  
DATE: 5-6-1-2018  
TIME: 2:06 PM

According to the records of the Framingham City Clerk's Office, on March 16, 2018 an application was filed with the City Clerk's office for a Petition for a Variance for height.

A decision was made by the Zoning Board of Appeals on April 10, 2018 and the decision was filed in the City Clerk's Office on April 24, 2018.

Twenty days have elapsed and no appeal has been filed with the office of the City Clerk.

Valerie Mulvey  
City Clerk

**CITY OF FRAMINGHAM**  
ZONING BOARD OF APPEALS

150 Concord Street B2  
Framingham, MA 01702

CITY OF FRAMINGHAM  
CITY CLERK'S OFFICE

2018 APR 24 P 4:52

**BOARD OF APPEALS CASE NO. 18-05**

**PETITION OF FRAMINGHAM PUBLIC SCHOOLS**

**DATE OF DECISION: APRIL 10, 2018**

**1. Application**

This document is the DECISION of the Framingham Zoning Board of Appeals (hereinafter the Board) on the Application of FRAMINGHAM PUBLIC SCHOOLS (hereinafter the Applicant), for property located at 31 FLAGG DRIVE. This Decision is in response to a Petition for a Variance for height (hereinafter the Application).

**2. Property Owner and Applicant**

Framingham Public Schools  
73 Mt. Wayte Avenue, Suite 5  
Framingham, MA 01702

**3. Location**

Property is located at 31 Flagg Drive and identified by Assessors' Parcel IDs 102-82-8137-000, 102-82-4579-000, 102-82-2420-000, and 102-92-2532-000 (hereinafter the Site).

**4. Board Action**

After due consideration of the Application, the record of proceedings, and based upon the findings set forth below, on April 10, 2018 the Board voted to GRANT the requested VARIANCE by a unanimous vote in favor of the petition of three (3) members sitting on the Application. The record of the vote is stated as follows:

PHILIP R. OTTAVIANI, JR.	YES
SUSAN S. CRAIGHEAD	YES
STEPHEN MELTZER	YES

**5. Proceedings**

The Application was received by the Board on March 15, 2018 pursuant to MGL, Ch. 40A, §10, and the Framingham Zoning By-Law. The Application was considered by the Board at a duly noticed public hearing of the Board on April 10, 2018 at 7:15 P.M. in the Ablondi Room of the Memorial Building. Board Members Philip R. Ottaviani, Jr., Susan S. Craighead, Stephen Meltzer, and alternate Edward Cosgrove, were present throughout the proceedings. The minutes of the public hearing and submissions on which this Decision is based, which together with this Decision constitute the record of the proceedings, may be referred to in the Office of the Zoning Board of Appeals at the Memorial Building.

Matthew Torti, Director of Building and Grounds for the Framingham Public Schools, introduced himself, Joel Seeley of Symmes' Maini & McKee Associates, Inc. (SMMA), and Philip Gray of Jonathan Levi Architects. Mr. Seeley explained the Framingham Public Schools and

*Dedicated to excellence in public service.*

Fuller Middle School Building Committee were undertaking a feasibility study in collaboration with the Massachusetts School Building Association (MSBA). As part of the feasibility study, the School Committee began investigating options for the renovation, renovation construction, and new construction of the Fuller Middle School, which will lead to selection of a single preferred option to be submitted to the MSBA. The applicant is seeking a height Variance to be able to build up to 55 feet.

Mr. Gray continued to explain the project proposes replacing an existing 196,000 gross square feet (gsf) single story school originally built in the 1950s to accommodate 1,200 high school students with a new school building either 2 or 3 stories to comprise between 145,000 and 160,000 gsf, to serve 630 students in grades 6-8. He proceeded to explain the site is unique in that it has three existing adjacent schools and is effectively ringed by wetlands, which separate it from any adjacent residential property. He explained the four alternatives reflect site restrictions and urban design improvements. Renovation of the existing building would be substantially more expensive than new construction and would require costly and disruptive use of swing space for existing students. He explained that the proposed urban design improvements will attempt to improve campus identity between the Fuller, Farley, and McCarthy Schools. New construction proposals, with large setbacks, will have smaller apparent height than the neighboring Farley School which sits adjacent to Flagg Drive.

Mr. Gray proceeded to explain the four schematics, including the preferred Scheme C, which was 55 feet and 3 stories, the tallest of the four. He stated that a scheme had not yet been decided on and that they were still required to receive approval by the School Committee, City Council, and the MSBA. Receiving relief from the height would remove height concerns from the state and potentially avoid delays.

Mr. Cosgrove questioned the proposed available open space and its use. Mr. McKenna voiced concern regarding the removal of the softball field. Mr. Gray clarified that open space use would be determined when one of the four schemes has been decided on, but more space would be available as opposed to what currently exists.

Mr. Gerald Bloomfield (1347 Edgell Road) voiced concern regarding the City's responsibilities in regards to due diligence because this is a Dover project. He questioned if abutters were notified. Mr. Ottaviani clarified that all abutters within 300 feet were notified as required by MGL Chapter 40A.

## **6. Exhibits**

Submitted for the Board's deliberation were the following exhibits:

- 6.1. Application filed with the Building Official to construct a three-story structure, dated March 1, 2018.
- 6.2. Application for Hearing before the Zoning Board of Appeals filed with the City Clerk on March 16, 2018.
- 6.3. Planning Board comments, dated April 6, 2018.

- 6.4.' Board of Health comments, dated April 6, 2018.
- 6.5. Plan set entitled "Fuller Middle School – ZBA Variance Application Drawings" dated March 9, 2018 and including Existing Conditions Plan (C-1.0), Existing Conditions Plan (C-1.1), Existing Conditions Plan (C-1.2), Existing Conditions Plan (C-1.3), Site Plan Alternative – Scheme A, Site Plan Alternative – Scheme B, Site Plan Alternative – Scheme C, Site Plan Alternative – Scheme D, and Elevation Diagrams, prepared by Jonathan Levi Architects, 266 Beacon Street, Boston, MA 02116.

Exhibit 6.5 shall be hereinafter referred to as the "Plans".

## 7. Findings and Conclusions

Based upon its review of the Application, exhibits, and the public hearing thereon, the Board makes the following findings and conclusions:

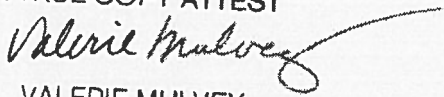
- 7.1. The property is located within the Single Family Residence (R-1) zoning district.
- 7.2. On March 1, 2018, the Building Official denied the Application for the construction of a three-story structure exceeding height requirements under Section IV.E.2 of the Zoning By-Law.
- 7.3. On March 16, 2018 the Applicant filed with the City Clerk an Application for Hearing before the Zoning Board of Appeals for the purpose of obtaining a Variance from the Zoning By-Law.
- 7.4. Notice of the public hearing was duly published in "THE METROWEST DAILY NEWS" on March 26 and April 2, 2018 and mailed to all parties-in-interest, as defined by G.L. c. 40A, §11.
- 7.5. The maximum height in the R-1 zoning district is three stories and 35 feet. Variances are needed to allow additional height. The Petitioner proposes a 55-foot-tall school building comprised of three stories. Although the proposed project is subject to the Dover Amendment, MGL Chapter 40A, Section 3, states that educational uses cannot be unduly burdened by zoning, and the City can impose reasonable regulations concerning the bulk and height of structures and determining yard sizes, lot area, setbacks, open space, parking and building coverage requirements.
- 7.6. The Variance standard established by the G.L. c. 40A §10 and the Framingham Zoning By-Law is a demanding criterion. The Board must find that owing to circumstances relating to the soil conditions, shape, or topography of such land or structures, which especially affect such land or structures but do not affect generally the zoning district in which it is located, a literal enforcement of the provisions of the ordinance or by-law would involve substantial hardship, financial or otherwise, to the petitioner or appellant, and that desirable relief may be granted without substantial detriment to the public good and without nullifying or substantially derogating from the intent or purpose of such ordinance or by-law. Also, the circumstances under which a Variance may be granted are not unlimited.
- 7.7. There are circumstances relating to the soil conditions, shape, or topography of the land or structures for which the Variance is being sought. *The Board finds that this parcel is unique, in that the site is adjacent to three existing schools and ringed by wetlands.*

- 7.8. Owing to such circumstances, a literal enforcement of the provisions of this By-law would involve substantial hardship, financial or otherwise, to the petitioner. *The alternative of building on the existing footprint would be more costly and impose a financial hardship. Students would have to be moved during demolition and construction; the preferred alternative would allow the current school to remain in operation during construction.*
- 7.9. The desired relief may be granted without substantial detriment to the public good and without nullifying or substantially derogating from the intent and purpose of the By-Law or from the intent of the district in which the Variance is being sought. *Visually, the proposed building has the same impact as the Farley School which sits adjacent to Flag Drive. The grant of a Variance for three stories/55 feet would not be detrimental to the public good, nor would the additional story derogate from the intent and purpose of the Bylaw.*
- 7.10. The Board grants these Variances with the following condition:
- 7.10.1. The proposed building shall be located and constructed as shown on the Plans. All of the proposed schemes are approved.
- 7.10.2. The maximum height shall be 55 feet.
- 7.11. This Decision applies only to the requested Variances. Other approvals or permits required by the By-Law, other governmental boards, agencies or bodies having jurisdiction, shall not be assumed or implied by this Decision.
- 7.12. If the rights authorized by these Variances are not exercised within one year of the date of grant of such Variances, such rights shall lapse. The Applicant may request an extension to the one-year period by submitting a written Application for extension prior to expiration of the one-year period. However, it is solely within the discretion of the Board to grant such an extension. An extension shall be for a period not to exceed six (6) months. If the Board fails to act on the request for extension within thirty days of the date of the requested extension, all rights authorized by these Variances shall lapse at the expiration of the one-year period. If the Variance lapses, such rights pertaining to the Variances may only be reestablished after notice and a new hearing pursuant to G.L. c. 40A, §10.
- 7.13. This Decision shall be recorded at (as appropriate) the Middlesex South District Registry of Deeds or District of the Land Court prior to the issuance of a Building Permit. A copy of the recorded or filed Decision certified by the Registry, and notification by the owner of the recording, including recording information, shall be furnished to the Board and the Building Official
- 7.14. The terms, conditions and provisions of this Decision shall run with the land and shall be binding upon the Applicant, its successors in interest and assigns, and shall be enforceable by the City of Framingham.
- 8. Appeals**  
Appeals, if any, shall be made pursuant to MGL, Ch. 40A, §17 and shall be filed within twenty (20) days after the date of filing this Decision with the City Clerk.

ZONING BOARD OF APPEALS

*Dedicated to excellence in public service.*

By: \_\_\_\_\_  
Philip R. Ottaviani, Jr., Chairman

A TRUE COPY ATTEST  
  
VALERIE MULVEY  
CITY CLERK, FRAMINGHAM

\*-----\*

Official Receipt for Recording in:

Middlesex South Registry of Deeds  
208 Cambridge St.

Cambridge, Massachusetts 02141

Issued To:

SHMA MAINI& MCKEE ASSOC  
1000 MASS AVE

CAMBRIDGE MA

Recording Fees

Document Description	Number	Book/Page	Recording Amount
DECIS	00078114	71097 260	\$75.00
			\$75.00

Collected Amounts

Payment Type	Amount
Check	\$75.00
	\$75.00

Total Received :	\$75.00
Less Total Recordings:	\$75.00
Change Due :	\$ .00

Thank You  
MARIA C. CURTATONE - Register of Deeds

By: Linda B

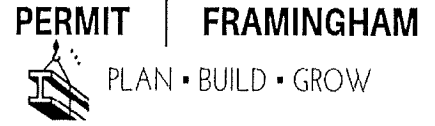
Receipt#    Date    Time  
2213301    06/01/2018    02:06p







FRAMINGHAM PLANNING BOARD
150 CONCORD STREET, FRAMINGHAM, MA 01702



MEMBERS OF THE PLANNING BOARD: CHRISTINE LONG, CHAIR - LEWIS COLTEN, VICE CHAIR - VICTOR ORTIZ, CLERK - SHANNON FITZPATRICK - JOSEPH NOTO

DECISION OF THE FRAMINGHAM PLANNING BOARD
ON THE APPLICATION OF FRAMINGHAM PUBLIC SCHOOLS
FOR LIMITED SITE PLAN REVIEW OF THE PROPERTY LOCATED AT 31 FLAGG DRIVE
DECISION DATED MAY 2, 2019

CITY OF FRAMINGHAM
CITY CLERK'S OFFICE
MAY - 3 11: 27

The Applicant filed an application for Limited Site Plan Review, notice of the opening public hearing was published in MetroWest Daily Newspaper on April 11, 2019 and April 16, 2019; and the legal ad was mailed to parties of interest pursuant to the Framingham Zoning By-Law and M.G.L. Chapter 40A. The Planning Board held public hearings for the project on April 25, 2019 and May 2, 2019.

The project includes the construction of a new Fuller Middle School, off-street parking, landscaping, and associated site improvements. The property is zoned Single Family Residential (R-1) and listed as Framingham Assessor's Parcel ID: 102-82-8137-000; 102-82-4579-000; 102-82-2420-000; and 102-92-2532-000

On May 2, 2019, the Planning Board APPROVED the application with conditions. The DECISION was filed in the office of the City Clerk on May 3, 2019.

For additional information, please see the Planning Board's webpage at www.framinghamma.gov.

Christine Long, Chair FRAMINGHAM PLANNING BOARD

Any appeal from the Decision shall be made pursuant to G.L. Ch. 40A, Sec. 17 and must be filed within twenty (20) days after the date of filing of the Decision in the office of the Town Clerk. The Notice of Decision can be found in the MetroWest Daily Newspaper and on the Massachusetts Newspaper Publishers Association's (MNPA) website.



FRAMINGHAM PLANNING BOARD  
150 CONCORD STREET, FRAMINGHAM, MA 01702



MEMBERS OF THE PLANNING BOARD: CHRISTINE LONG, CHAIR - LEWIS COLTEN, VICE CHAIR - VICTOR ORTIZ, CLERK - SHANNON FITZPATRICK - JOSEPH NORTON

**DECISION OF THE FRAMINGHAM PLANNING BOARD  
ON THE APPLICATION OF FRAMINGHAM PUBLIC SCHOOLS  
FOR LIMITED SITE PLAN REVIEW OF THE PROPERTY LOCATED AT 31 FLAGG DRIVE  
DECISION DATED MAY 2, 2019**

2019 MAY -3 A 11:28  
CITY OF FRAMINGHAM  
CITY CLERK'S OFFICE

**General Property Information**

Project Number: PB-11-19  
Property Address: 31 Flagg Drive  
Assessor's Information: 102-82-8137-000; 102-82-4579-000; 102-82-2420-000; and 102-92-2532-000  
Zoning District: Single Family Residential (R-1)

**Application Information**

Application(s): Limited Site Plan Review  
Date application(s) were filed with the Planning Board: April 8, 2019  
Date application(s) were filed with the City Clerk: April 8, 2019

**General Project Contact Information**

Applicant Name and Address: Framingham Public Schools, 73 Mt Wayte Avenue, Suite 5, Framingham, MA  
Project Contact: Jonathan Levi Architects, 266 Beacon Street, Boston, MA 02116  
Project Engineer Name: CDW Consultants, Inc., 6 Huron Drive, Natick, MA 01760  
Traffic Engineer: Vanesse & Associates  
Stormwater Engineer: CDW Consultants, Inc., 6 Huron Drive, Natick, MA 01760  
Landscape Architect: CBA Landscape Architects, 24 Thorndike Street, 4<sup>th</sup> Floor, Cambridge, MA 02141

**Legal Ad & Public Hearing Information**

MetroWest Daily News Run dates of the Legal Ad: (more than 14 days prior) April 11, 2019 and (7 days prior) April 16, 2019  
Date of abutter/7 Abutting municipalities/parties of interest mailing: April 8, 2019  
Date of opening public hearing: April 25, 2019  
Date of continued public hearing: May 2, 2019

**PLANNING BOARD PLAN APPROVAL INFORMATION**

Date of Plan: April 8, 2019

## **PROJECT DESCRIPTION**

The Project at 31 Flagg Drive was determined to be a protected use by the Building Commissioner (April 4, 2019), since it is classified as a Dover Amendment Use<sup>1</sup>. A Project classified as a Dover Amendment Use is reviewed under the Framingham Zoning By-Law with specific limited review standards set forth in Article 20: Regulations Governing Applications for Site Plan Review for Dover Amendment Uses. The Planning Board adopted Article 20 to ensure that the review of Dover Amendment Uses is legally followed since such projects are partially exempt from the Framingham Zoning By-Laws under M.G.L. c. 40A, Section 3.

The Applicant proposes to raze the existing Fuller Middle School and construct a new middle school on the same parcel. The new middle school will be designed to accommodate approximately 630 students, grades 6 through 8. The new middle school will be 136,790sf, three floors, and oriented for energy efficiency and sustainably. Furthermore, the new middle school will include a gymnasium and auditorium, which will be open for public uses but will maintain an internal separation and entry for each to allow each use to remain independent from one another.

## **PUBLIC HEARING**

The Framingham Planning Board held its opening public hearing for the project located at 31 Flagg Drive on April 25, 2019, and later held a continued public hearing on May 2, 2019. Planning Board members present throughout the public hearings were the following: Christine Long, Chair; Lewis Colten, Vice-Chair; Shannon Fitzpatrick; and Joseph Norton. Victor Ortiz recused himself from the hearing. During the course of the public hearing process, the following individuals appeared on behalf of the Applicant: David Miles, School Committee member; Matt Torti, School Facility Manager; Joel Seeley, AIA, COO, Symmes, Maini & McKee Associates; Philip Gray, AIA, Jonathan Levi Architects; Christian Riordan, Consigli Construction Co., Inc.; Michael Caputo, General Superintendent, Consigli Construction Co., Inc.; Eric Wilhelmsen, PE, CDW Consultants, Inc.

### **Summary of Minutes**

On April 25, 2019, Christine Long, Chair, read the legal advertisement and the Dover Amendment into the record stating that the application is for limited site plan review and is subject to the Dover Amendment.

Joel Seeley provided details of the project regarding storm water management, landscaping site lighting, construction phasing and the planned construction time line. The application is for the construction of a new school that will replace and demolish an existing 196,000 sf single story high school designed for 1200 students with a 137,000 sf middle school to accommodate 630 students. Mr. Seeley stated that the ZBA approved a height variance last April 2018. The plan is to provide a

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<sup>1</sup> No zoning ordinance or by-law shall...prohibit, regulate or restrict the use of land or structures for religious uses or for educational purposes...provided, however, that such land or structure may be subject to reasonable regulations concerning the bulk and height of structures and determining yard sizes, lot area, setbacks, open space, parking and building coverage requirements – MGL Chapter 40A, Section 3 cited in the Planning Board Rules and Regulations, Article 20: Regulations Governing Applications for Site Plan Review for Dover Amendment Uses, October 25, 2015

campus design that includes an amphitheatre area with a sloped area that allows students to enter on level two of the building, which reduces the appearance in height to appear as a two-story building rather than three stories. The project includes a new parking lot with 610 parking spaces and new playing fields. There is a separate community entrance to be used at all times so as not to interfere with operations while the school is in session and provides a complete separation of public use from the school use. The Applicant is meeting with the Conservation Commission again on May 1, 2019 and has met with them several times and they are adding several stormwater basins because of those meetings. Michael Caputo discussed the details of the plan for truck traffic, which requires the use of coming in from Route 9 onto Concord Street onto Normandy and with non-trailer traffic from Enzo to the Court House, back onto Concord Street to Route 9. The plan is to time the schedule of truck traffic in concert with the school schedule. A police detail will be used at Normandy and Concord to be able to make the left hand turn that is currently not allowed. Neighborhood streets that include Oaks, Warren, Prindiville Ave. and Dennison Avenue will be prohibited for use by trucks and will be part of the supplemental construction conditions provided in the information for bids when the project is offered for bid. Mr. Seeley stated they plan to start the project site work to install the foundation this summer and demolition of the existing school will take place in 2021 at the end of the construction project after all work has been completed. Matt Torti stated that this project has been evolving over the past few years and there has been many meetings held and all stakeholders have been involved and represented and thanked all those who have participated and provided input during the process to make it a success.

Mr. Torti noted that Fuller School contains other functions currently such as the Board of Health, parent information center, 25,000 sf is occupied by the building and grounds department, maintenance operation, wood shop, Early Childhood Assessment Program, and adult ESL program, which has over 500 vehicles parked at night for its program. Mr. Torti further stated that this project has been well vetted and thought out through a very long process and feels all issues have been addressed.

On April 25, 2019, the Planning Board provided the following comments:

- Shannon Fitzpatrick requested that all honey locust trees be removed from the landscaping plan and questioned the use of planting grass rather than another option. Mr. Seeley provided input received from Matt Torti regarding the reality of maintenance issues when using certain types of turf that resulted in their choices.
- Lewis Colten stated that he realizes the amount of effort that has gone into creating the plan for the construction of the school but requested clarification of the construction timeline and concern he has regarding students using the school during construction. The Applicant provided details of the plan to manage this. Mr. Colten requested clarification as to the huge amount of fill, 45,000 cubic feet, being brought in and how the truck traffic would be managed. Mr. Caputo stated there would be a daily sweeping and watering of the site. Mr. Colten asked for clarification of site lighting and requested a photometric plan for the site. Mr. Colten asked why there is a reduction in the number of students that the school services. Mr. Seeley stated

that this will be a middle school and was formerly a high school and MSBA has projected the number of students determined to be 610 but the school department petitioned the MSBA and as a result, the number was increased to 630 students. Mr. Colten requested clarification regarding drainage on the site.

- Joseph Norton requested where the staging area for fill would be and how it would be coordination with student drop off and pick up. Mr. Caputo stated there would be blackout times for truck traffic from 7:30-8:30 am and 2-3 pm while busses are queuing up there will be no truck traffic. Mr. Norton asked where truckers would park outside of this time period since it is an issue on another Planning Board project at this time.
- Christine Long asked if Consigli was hired as a Construction Project Manager at Risk for this project. Mr. Caputo stated that they are hired as such. Ms. Long also requested removal of all honey locust. Mr. Seeley stated consider them gone. Ms. Long asked if the project is union, non-union or open shop.

On April 25, 2019 and May 2, 2019, the Planning Board opened the floor for public comments. On April 25, 2019 members of the public made comments. All comments can be reviewed on the video stream capture of the public hearing and the associated meeting minutes.

## **FINDINGS**

### **A. Section VI.F.6.a Retain Community Character**

According to the Dover Amendment, M.G.L. c. 40A Section 3 and the Planning Board Rules and Regulations Article 20.3.3 the Applicant is not required to comply with the provisions related to “Retain Community Character” as referenced in the Framingham Zoning By-Law Section VI.F.6.a. In accordance with Article 20.3.3 of the Planning Board Rules and Regulations the applicant is not required to address the Traffic Impact Standards, the Environmental Impact Standards, the Fiscal Impact Standards, the Community Impact Standards, Health, Public services and utilities, Land use planning, under Section VI.F of the Framingham Zoning By-Law.

- The Fuller Middle school, originally designed as a high school was intended to accommodate approximately 1,200 high school students. The new school, which is intended for 630 middle school students, will further include 120 staff members.
- The new Fuller Middle school will include an auditorium that will accommodate 420, where the old auditorium seated 540 people.

### **B. Section IV.F.6.b. Traffic, parking, and public access**

According to the Dover Amendment, M.G.L. c. 40A, Section 3 and the Planning Board Rules and Regulations Article 20.3.3.9 the Applicant is not required to comply with the provisions related to the “Traffic” portion of Section VI.F.6.b of the Framingham Zoning By-Law. In accordance with Article 20.3.3 of the Planning Board Rules and Regulations the applicant is not required to address the Traffic Impact Standards, the Environmental Impact Standards, the Fiscal Impact Standards, the Community

Impact Standards, Health, Public services and utilities, Land use planning, under Section VI.F of the Framingham Zoning By-Law.

**Parking**

- The site has been designed to accommodate vehicular movements safely throughout the site. Vehicles will be located on the property and not idle and/or park on Flagg Drive.
- The site has been designed to accommodate queuing for 17 buses, which can be parked simultaneously in front of the school.
- The new middle school has been designed to accommodate approximately 580 parking spaces, which will be required during construction. Post construction the site will have 479 parking spaces and during the evening hours 581 parking spaces.
- Approximately 40 bicycle racks will be installed on-site.

	<b>Day Parking Requirements</b>	<b>Evening Parking Requirements</b>
<b>Adult ESL</b>	5	425
<b>Fuller Middle School</b>	100	NA
<b>Farley School</b>	250	150
<b>McCarthy School</b>	85	NA
<b>PIC</b>	15	NA
<b>Building and Grounds</b>	20	5
<b>Early Childhood</b>	3	NA
<b>Truant</b>	1	1
<b>Board of Health</b>	0	0
<b>SUBTOTAL</b>	479	581
<b>Contractor</b>	100	NA
<b>Adult ESL Off Site Parking</b>	NA	0
<b>TOTAL</b>	579	581

**Pedestrian**

- Sidewalks will be provided throughout the project, which will connect the three schools (Fuller, McCarthy, and Farley) as a campus.
- Sidewalks will be designed and install to comply with all ADA requirements for accessibility.

**Section VI.F.6.c. Environmental Impact**

According to the Dover Amendment, M.G.L. c. 40A Section 3 and the Planning Board Rules and Regulations Article 20.3.3.5 the Applicant is not required to comply with provisions relative to

“Environmental Impact” as referenced in the Framingham Zoning By-Law Section VI.F.6.c In accordance with Article 20.3.3 of the Planning Board Rules and Regulations the applicant is not required to address the Traffic Impact Standards, the Environmental Impact Standards, the Fiscal Impact Standards, the Community Impact Standards, Health, Public services and utilities, Land use planning, under Section VI.F of the Framingham Zoning By-Law.

#### **Section VI.F.6.d. Health**

According to the Dover Amendment, M.G.L. c. 40A Section 3 and the Planning Board Rules and Regulations Article 20.3.3.6 the Applicant is not required to comply with the provision relative to “Health” as referenced in the Framingham Zoning By-Law Section VI.F.6.d In accordance with Article 20.3.3 of the Planning Board Rules and Regulations the applicant is not required to address the Traffic Impact Standards, the Environmental Impact Standards, the Fiscal Impact Standards, the Community Impact Standards, Health, Public services and utilities, Land use planning, under Section VI.F of the Framingham Zoning By-Law.

#### **Section VI.F.6.e. Public Services and Utilities**

According to the Dover Amendment, M.G.L. c. 40A Section 3 and the Planning Board Rules and Regulations Article 20.3.3.7 the Applicant is not required to comply with the provisions relative to “Public Services and Utilities” as referenced in the Framingham Zoning By-Law Section VI.F.6.e In accordance with Article 20.3.3 of the Planning Board Rules and Regulations the applicant is not required to address the Traffic Impact Standards, the Environmental Impact Standards, the Fiscal Impact Standards, the Community Impact Standards, Health, Public services and utilities, Land use planning, under Section VI.F of the Framingham Zoning By-Law.

- The new school will be connected to the same sewer manhole located on Flagg Drive that the existing school presently ties into. There are no anticipated impacts to the City’s sewer infrastructure as the proposed school is replacing an existing school that was originally designed for more students.
- HVAC systems will be installed on the roof, with a penthouse enclosure for visual screening and sound abatement. The project team included an acoustical engineer that provided recommendations regarding sound attenuation for the rooftop units.
- The project has been designed to meet the LEED minimum certification, which will exceed the Massachusetts energy code by at least 20 percent.
- The new school will be connected to an 8-inch water main that presently loops around the Farley Building. The Fire Department and the Department of Public Works (DPW) recommended that such service remain looped post construction.
- Separate fire and domestic service lines will service the new school.
- The project will include the installation of three new fire hydrants; one will be located near the front entrance, one at each rear corner of the new school.
- The project is not anticipated to have any increased impact on the City’s water infrastructure.

### **Section VI.F.6.f Land Use Planning**

According to the Dover Amendment, M.G.L. c. 40A Section 3 and the Planning Board Rules and Regulations Article 20.3.3.8 the Applicant is not required to comply with the provisions relative to "Land Use Planning" as referenced in the Framingham Zoning By-Law Section VI.F.6.f In accordance with Article 20.3.3 of the Planning Board Rules and Regulations the applicant is not required to address the Traffic Impact Standards, the Environmental Impact Standards, the Fiscal Impact Standards, the Community Impact Standards, Health, Public services and utilities, Land use planning, under Section VI.F of the Framingham Zoning By-Law.

Based on the findings as shown in the submitted documentation and as presented during the public hearing process, the site plan and the proposed project complies with the requirements of Section II.B, IV.B, IV.E, and VI.F of the Framingham Zoning By-Law being consistent thereof.

### **CONDITIONS OF APPROVAL**

The Planning Board finds that the Application and Site Plans submitted by the Applicant comply with all applicable provisions of Framingham's Zoning By-Law and General By-Laws relevant to this review. Accordingly, the Planning Board votes are pursuant to relevant provisions of these By-Laws. Therefore, said approval from the Planning Board is subject to the following conditions:

#### **General Provisions**

1. Prior to the commencement of authorized Site activity, the Applicant and the general contractor shall meet with the Planning Board Administrator, Building Commissioner, and the Framingham City Engineer to review this approval.
2. Prior to the commencement of authorized Site activity, the Planning Board Office shall be given written notice within not less than 48-hours. If activity on the Site ceases for a period of longer than 30 days, then written notice shall be given within not less than 48 hours to the Planning Board Office prior to restarting work.
3. Prior to the commencement of authorized Site activity the Applicant shall provide to the Planning Board Office the name, address and emergency contact telephone number of the individual or individuals who shall be responsible for all activities on site and who can be reached 24 hours a day, seven days a week. In the event project management changes, all new contact information shall be submitted to the Planning Board within twenty-four hours.
4. A copy of this Decision shall be kept on the Site in a location that is highly visible and accessible.
5. Prior to the issuance of any Department of Inspectional Services (Building Department) permit, an electronic copy of the approved signed Site Plans shall be provided to the Planning Board Office for distribution to municipal departments in order to be reviewed for compliance with this Decision. The Site Plans shall be revised if necessary to reflect the conditions of this Decision. In the event of a discrepancy between the Decision and the Site Plans, the Decision shall take precedence.
6. No material corrections, additions, substitutions, alterations, or any changes shall be made in any plans, proposals, and supporting documents approved and endorsed by the Planning



Board without the written approval of the Planning Board. Any request for a material modification of this approval shall be made in writing to the Planning Board for review and approval by the Planning Board or the Planning Board's Administrator and shall include a description of the proposed modification, reasons the modification is necessary, and any supporting documentation. Upon receipt of such a request, the Planning Board's Administrator may, in the first instance, make a determination in writing authorizing a minor modification to the Site Plans, or the Administrator may refer the matter to the Planning Board, which may consider and approve minor modifications at a regularly scheduled Planning Board meeting. In the event the Planning Board determines the change is major in nature (e.g., resulting in material changes, newly identified impacts, etc.), the Planning Board shall consider the modification at a noticed public hearing.

7. The Applicant shall record this Decision with exhibit(s) at the Middlesex South Registry of Deeds prior to the issuance of a building permit after the required appeal period has lapsed in accordance with M.G.L., c. 40A, Section 17. The Applicant shall submit proof of the decision being recorded to the Planning Board. Failure to record the decision prior to commencement of construction or to comply with the conditions of approval herein shall, upon notice to the Applicant and the opportunity for a hearing, render this Decision null and void.
8. In the event that the permit is not exercised nor substantial use thereof has not commenced from three years of the date of recording, except for good cause as determined by the Planning Board, the permit shall be deemed null and void.
9. The failure to comply with the Framingham Zoning By-Laws, Framingham General By-Laws and/or the terms of this Decision may, upon notice to the Applicant and the opportunity for a hearing, result in revocation of the following permits/approvals: Limited Site Plan Review, issued hereunder. The Planning Board shall, by first class mail, send the owner written notification of any failure to comply with the Framingham Zoning By-Laws, the Framingham General By-Laws, the Planning Board Rules & Regulations, and/or the terms of this Decision. If the Applicant believes that it is not in violation, it may request and will be granted an opportunity to attend a Planning Board meeting to try to resolve the alleged violation. If within 30 days from the date of mailing of said notice, the Applicant has not resolved the matter with the Planning Board or remedied the alleged violation (or demonstrated it has taken steps to do so), it shall be grounds for revocation of the approvals issued hereunder. At the expiration of the 30 day period, the Planning Board after a duly noticed public hearing, including notice to the owner by first class mail, may revoke the approvals issued hereunder if it finds by a four-fifths vote that there has been a violation of the By-law and/or the terms of this Decision and that the owner has failed to remedy it; alternatively, the Planning Board may continue the public hearing, or by a four-fifth vote extend the time period in which the violation may be corrected.

#### **Site Construction**

10. Following notice to the project manager for the Project, members or agents of the Planning Board shall have the right to enter the Site and to gather all information, measurements, photographs and/or other materials needed to ensure compliance with this approval in the course of construction of the Project. Members or agents of the Planning Board entering onto

the Site for these purposes shall comply with all safety rules, regulations, and directives of the Applicant and the Applicant's contractors.

11. The Applicant shall perform daily cleanup of construction debris, including soil, on municipal streets within 200 yards from the entrance of the Site driveways caused by the Site construction.
12. Outside construction, hours are limited to 7:00 AM - 5:30 PM Monday through Friday and 8:00 AM - 4:00 PM on Saturday. Absent emergency conditions, no construction is permitted on Sunday or legal holidays (New Year's Day, Martin Luther King Day, Presidents Day, Patriots Day, Memorial Day, 4<sup>th</sup> of July, Labor Day, Columbus Day, Veterans Day, Thanksgiving, and Christmas Day – or following Monday when the holiday falls on a weekend). No equipment on-site shall be started and allowed to warm up prior the start of the allowed construction hours. No vehicles are to arrive at the construction Site before the designated construction hours, which includes no vehicle parking, standing or idling on adjacent public streets. Oversized deliveries of construction materials shall occur after peak traffic hours.
13. The Applicant shall post a construction sign that provides the address of the project, contact information of the project manager, and any other additional relevant information. In the event that site project management changes, the Applicant is required to notify the Planning Board Administrator of such changes immediately to ensure communication with the Planning Board office and other municipal departments.
14. In the event of blasting or compaction during the construction phase, the Developer's Blasting Operator shall provide no less than ten days' advance notice of the commencement of blasting operations by certified mail to those property owners entitled to a pre-blast inspection pursuant to Massachusetts Comprehensive Fire Code: 527 CMR 1.00 et seq.
  - a. Copies of said mailing shall be furnished to the Planning Board and the Framingham Fire Department.
  - b. Copies of the blasting monitoring reports, noting any vibrations in excess of that allowable by regulation, shall be mailed to the above-referenced property owners, Planning Board and the Framingham Fire Department at the termination of blasting operations.
  - c. The Blasting Operator shall provide notice to the Planning Board and the Framingham Fire Department of any reported damage to real property.
15. The Developer's Blasting Operator shall post a Blasting and/or Compaction Notice Sign in a conspicuous location along the roadway to inform the public of the proposed blasting for the property. Applicant shall notify all abutting residents of such blasting and/or compacting event at the time said notice is posted in a conspicuous location.
16. Said Blasting Notice Sign shall be posted at least ten days prior to any blasting on-site and abutters notified by mail within 500' of the property. The Developer's Blasting Operator shall encourage the abutting properties within 500' of the property boundaries to have their homes inspected prior to the commencement of blasting and/or compaction. Such reports shall be provided to the Developer's Blasting Operator prior to the commencement of blasting.

#### **Snow Storage**

17. Snow storage shall not obstruct sight lines to preserve public safety.

18. Snow storage shall be on-site in the snow storage areas designated on the Endorsed Site Plans. However, in the event of a prolonged snow event that results in all designated snow storage areas being full, then the Applicant shall be required to remove excess snow by trucking such excess snow off-site within forty-eight hours after the snowfall ends in the interest of public safety.

**Sidewalks and Landscaping and Lighting**

19. Sidewalks constructed as part of the project shall be accessible by all pedestrian users. All sidewalks shall be constructed of concrete unless otherwise agreed upon in consultation with the Planning Board Administrator.
20. The sidewalks and walkways shall be kept clear of snow and all other impediments and/or litter throughout the year. In the event of snow, the sidewalks and walkways shall be cleared within 48 hours of a snow event. Snow shall not be stored on or impede access/use of sidewalks and walkways.
21. The Applicant agrees to maintain any plantings or physical landscape features in perpetuity and in good health and at a height of two feet or less above the adjacent roadway grade where such plantings are located within the driveway sight lines. The Applicant agrees to work with the Administrator to provide all landscaping installations in accordance with the Planning Board's approved planting list. The Applicant has agreed to remove all honey locust from the landscape plan and replace with recommendations of the Planning Board.
22. The Applicant shall comply with the Planning Board Rules and Regulations relative to Site Lighting.
23. Non-security lighting within the off-street parking lot shall be turned off, one after hour the close of the structure.
24. The Applicant shall install 40-bicycle parking, in accordance with the requirements set forth in Section IV.B.7 of the Framingham Zoning By-Law.

**Framingham Department Review**

25. The Applicant shall comply with the letter of comment from the Department of Public Works (DPW), Re: Fuller Middle School – 31 Flagg Drive, Framingham, dated April 30, 2019
26. The Applicant shall comply with the correspondence sent by the Fire Department, via ACCELA on April 19, 2019
27. The Applicant shall comply with the correspondence sent by the Department of Inspectional Services (Building Department), via ACCELA on April 19, 2019
28. The Applicant shall comply with all applicable State Building and Fire Codes.

**Special Provisions/Periodic Conformance Reporting and Review**

29. The Applicant shall provide the following performance guarantees for the Project.
- a. Upon completion of the Project and prior to the request for a final use and occupancy permit, the Applicant shall provide the Planning Board with an "As Built Plan" stamped by a Professional Engineer registered in the Commonwealth of Massachusetts certifying that all improvements are completed in accordance with the approved Site Plans in a form acceptable to Framingham Department of Public Work's Engineering & Transportation Division (DPW).
  - b. The as-built plan shall be submitted in both hard copy and electronic formats (PDF and AutoCAD) to the Department of Public Works and Planning Board Administrator for

certification. The AutoCAD file must conform to the current form of the Mass GIS Standard for Digital Plan Submission to Municipalities or other standard requested by the Framingham DPW. The plan shall include, but not be limited to, site utility improvements and tie-in dimensions to all pipes and connection points. The as-built information shall be delivered to DPW a minimum of 5 business days in advance of the Applicant seeking a final certificate of occupancy sign-off to allow time for DPW review and approval of submitted information. The Applicant shall also submit a statement certifying that all conditions of approval of this decision have been met and site improvements are complete.

- 30. All accessible off-street parking shall comply with the requirements set forth in 521 CMR relative to accessible parking. The Applicant shall ensure that all accessible spaces are designed to the universal standard.
- 31. All exterior trash and recycling dumpsters shall be located in an enclosure with a latching mechanism on the gate.
- 32. The Applicant shall enforce blackout times for truck traffic from 7:30-8:30 am and 2-3 pm during days where school is in session (Fuller Middle School and the McCarty School).
- 33. All work within a public right of way shall require a Police detail for the duration of such work.
- 34. The Applicant shall submit a landscape plan to the Planning Board Administrator for review and approval prior to the issuance of a building permit from the Department of Inspectional Services (Building Department).

**WAIVER REQUESTS**

No waivers were requested for this project

**VOTES**

***The Planning Board voted four in favor, zero opposed, and zero in abstention to grant approval for the Framingham Public School's application for Limited Site Plan Review, with conditions for the construction of a new Fuller Middle School to be located at the property at 31 Flagg Drive.***

Site Plan Review

Christine Long.....yes  
Lewis Colton.....yes  
Shannon Fitzpatrick.....yes  
Joseph Norton.....yes

By: \_\_\_\_\_  
Christine Long, Chair, Framingham Planning Board  
Date of Signature: May 2, 2019

## EXHIBITS

Not attached unless indicated

The Applicant has filed with the Planning Board various plans and reports required under the requirements of the Framingham Zoning By-Laws/Ordinances and the Framingham General By-Laws. During the review process, the Applicant and its professional consultants also submitted revisions to plans in response to requests by the Planning Board and by the various town departments that reviewed the Project. All of these plans, reports and correspondence are contained in the Planning Board's files and are hereby incorporated into this Decision by reference.

1. Form A – Application Cover Letter for the property at 31 Flagg Drive (PB-11-19), which was stamped in with the City Clerk on April 8, 2019
2. Form E-2 – Limited Site Plan Review under the Dover Amendment, MGL C. 40A, Section 3 for the property at 31 Flagg Drive (PB-11-19), which was stamped in with the City Clerk on April 8, 2019
3. Form E-2 – Limited Site Plan Review under the Dover Amendment, MGL C. 40A, Section 3 – Fuller Middle School, Planning Board Application, Supplemental Information
4. Site Plans for Fuller Middle School, project #1755, prepared by Jonathan Levi Architects and CDW Consultants, Inc., Civil & Environmental Engineers, dated April 8, 2019
5. Photometric Plan – Fuller Middle School (project #1722), prepared by Jonathan Levi Architects
6. Stormwater Management Report for: Fuller Middle School, 31 Flagg Drive Street, Framingham, MA, prepared by CDW Consultants, Inc., Report Preparation Date: April 5, 2019

The Planning Board received correspondence various municipal Departments who review the Project, and has been incorporated herein by reference.

1. Form B – Building Department Recognition Form, prepared by the Building Commissioner on April 4, 2019
2. Inter Office Memo – Project Review Request and Timeline, Re: Departmental Project Review – 31 Flagg Drive (PB-11-19), dated April 8, 2019, and stamped in with the City Clerk on April 8, 2019
3. Legal ad for the opening public hearing (April 25, 2019), which was advertised in the MetroWest Daily Newspaper on April 11, 2019 and April 16, 2019, and stamped in with the City Clerk on April 8, 2019
4. Letter of comment from the City of Framingham, Conservation & Open Space Division, Subject: Conservation Review – 31 Flagg Drive, dated May 2, 2019
5. Letter of comment from the City of Framingham, Department of Public Works, Re: Fuller Middle School – 31 Flagg Drive, Framingham, date April 30, 2019
6. Statement of comment provided by the Department of Inspectional Services (Building Department) via ACCELA on April 19, 2019
7. Statement of comment provided by the Framingham Fire Department via ACCELA on April 19, 2019
8. Statement of comment provided by the Framingham Police Department via ACCELA on April 8, 2019





**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 5 – Order of Conditions**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
 158-1502

MassDEP File # \_\_\_\_\_

eDEP Transaction # \_\_\_\_\_

Framingham \_\_\_\_\_

City/Town

**A. General Information**

**Please note:**  
 this form has  
 been modified  
 with added  
 space to  
 accommodate  
 the Registry  
 of Deeds  
 Requirements

**Important:**  
 When filling  
 out forms on  
 the  
 computer,  
 use only the  
 tab key to  
 move your  
 cursor - do  
 not use the  
 return key.



1. From: Framingham  
 Conservation Commission

2. This issuance is for (check one): a.  Order of Conditions b.  Amended Order of Conditions

3. To: Applicant:

Dr. Robert

a. First Name

Tremblay

b. Last Name

City of Framingham, School Dept., S

c. Organization

73 Mt. Wayte Ave.

d. Mailing Address

Framingham

e. City/Town

MA

f. State

01702

g. Zip Code

4. Property Owner (if different from applicant):

\_\_\_\_\_

a. First Name

\_\_\_\_\_

b. Last Name

\_\_\_\_\_

c. Organization

\_\_\_\_\_

d. Mailing Address

\_\_\_\_\_

e. City/Town

\_\_\_\_\_

f. State

\_\_\_\_\_

g. Zip Code

5. Project Location:

31 Flagg Drive

a. Street Address

Framingham

b. City/Town

102-82/102-82/102-92

c. Assessors Map/Plat Number

8137/2420/5235

d. Parcel/Lot Number

Latitude and Longitude, if known:

42d17'29m1588s

d. Latitude

71d24'52m5924"s

e. Longitude



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

**WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

158-1502

MassDEP File #

eDEP Transaction #

Framingham

City/Town

**A. General Information (cont.)**

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):  
Middlesex South
- |                   |  |
|-------------------|--|
| a. County         | b. Certificate Number (if registered land) |
| 11236/11079/10654 | 397/175/396                                |
| c. Book           | d. Page                                    |
7. Dates:      April 17, 2019      June 19, 2019      July 01, 2019  
a. Date Notice of Intent Filed      b. Date Public Hearing Closed      c. Date of Issuance
8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):  
Fuller Middle School, 31 Flagg Drive (full set listed in Findings of Fact on page 13)
- |  |                                  |
|--|----------------------------------|
| a. Plan Title  | c. Signed and Stamped by         |
| Jonathan Levi, Architects and CDW<br>Consultants, Inc. | Eric Wilhelmsen, Civil No. 41596 |
| 6-13-2019  | Varies per sheet                 |
| d. Final Revision Date                                 | e. Scale                         |
| Notice of Intent                                       | 04-17-2019                       |
| f. Additional Plan or Document Title                   | g. Date                          |

**B. Findings**

1. Findings pursuant to the Massachusetts Wetlands Protection Act:
- Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:
- |   |  |   |
|---|--|---|
| a. <input type="checkbox"/> Public Water Supply           | b. <input type="checkbox"/> Land Containing Shellfish          | c. <input checked="" type="checkbox"/> Prevention of Pollution        |
| d. <input type="checkbox"/> Private Water Supply          | e. <input type="checkbox"/> Fisheries                          | f. <input checked="" type="checkbox"/> Protection of Wildlife Habitat |
| g. <input checked="" type="checkbox"/> Groundwater Supply | h. <input checked="" type="checkbox"/> Storm Damage Prevention | i. <input checked="" type="checkbox"/> Flood Control                  |
2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

**Approved** subject to:

- a.  the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.





**Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands**

**WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

158-1502

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**B. Findings (cont.)**

Denied because:

- b.  the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c.  the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**
- 3.  Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) 0 a. linear feet

**Inland Resource Area Impacts:** Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input checked="" type="checkbox"/> Bank	<u>22</u> a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	<u>292</u> a. square feet	b. square feet	c. square feet	d. square feet
6. <input type="checkbox"/> Land Under Waterbodies and Waterways	a. square feet e. c/y dredged	b. square feet f. c/y dredged	c. square feet	d. square feet
7. <input type="checkbox"/> Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. <input checked="" type="checkbox"/> Riverfront Area	<u>153,679</u> a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	<u>72896</u> c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	<u>80783</u> g. square feet	h. square feet	i. square feet	j. square feet



**Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands**

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**B. Findings (cont.)**

**Coastal Resource Area Impacts:** Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	<u>                    </u> a. square feet	<u>                    </u> b. square feet		
	<u>                    </u> c. c/y dredged	<u>                    </u> d. c/y dredged		
12. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input type="checkbox"/> Coastal Beaches	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. nourishment cu yd	<u>                    </u> d. nourishment cu yd
14. <input type="checkbox"/> Coastal Dunes	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. nourishment cu yd	<u>                    </u> d. nourishment cu yd
15. <input type="checkbox"/> Coastal Banks	<u>                    </u> a. linear feet	<u>                    </u> b. linear feet		
16. <input type="checkbox"/> Rocky Intertidal Shores	<u>                    </u> a. square feet	<u>                    </u> b. square feet		
17. <input type="checkbox"/> Salt Marshes	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. square feet	<u>                    </u> d. square feet
18. <input type="checkbox"/> Land Under Salt Ponds	<u>                    </u> a. square feet	<u>                    </u> b. square feet		
	<u>                    </u> c. c/y dredged	<u>                    </u> d. c/y dredged		
19. <input type="checkbox"/> Land Containing Shellfish	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. square feet	<u>                    </u> d. square feet
20. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	<u>                    </u> a. c/y dredged	<u>                    </u> b. c/y dredged		
21. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	<u>                    </u> a. square feet	<u>                    </u> b. square feet		
22. <input type="checkbox"/> Riverfront Area	<u>                    </u> a. total sq. feet	<u>                    </u> b. total sq. feet		
Sq ft within 100 ft	<u>                    </u> c. square feet	<u>                    </u> d. square feet	<u>                    </u> e. square feet	<u>                    </u> f. square feet
Sq ft between 100-200 ft	<u>                    </u> g. square feet	<u>                    </u> h. square feet	<u>                    </u> i. square feet	<u>                    </u> j. square feet



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**B. Findings (cont.)**

\* #23. If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23.  Restoration/Enhancement \*:

a. square feet of BVW

b. square feet of salt marsh

24.  Stream Crossing(s):

a. number of new stream crossings

b. number of replacement stream crossings

**C. General Conditions Under Massachusetts Wetlands Protection Act**

**The following conditions are only applicable to Approved projects.**

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
  - a. The work is a maintenance dredging project as provided for in the Act; or
  - b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
  - c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on **07/01/2022** unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.



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 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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**C. General Conditions Under Massachusetts Wetlands Protection Act**

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
  
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
  
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,  

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]  
 "File Number            158-1502            "
  
11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.
  
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
  
13. The work shall conform to the plans and special conditions referenced in this order.
  
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
  
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
  
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.



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**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.
19. The work associated with this Order (the "Project")
- (1)  is subject to the Massachusetts Stormwater Standards
- (2)  is NOT subject to the Massachusetts Stormwater Standards

**If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:**

- a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
- i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
  - ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
  - iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;



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**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

- iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
- v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c)* The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:
- i.)* the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and
- ii.)* the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d)* Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.
- e)* Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f)* The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.



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**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

- g) The responsible party shall:
  1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
  2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
  3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

**See Special Conditions starting on Page 13**

- 20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.



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**D. Findings Under Municipal Wetlands Bylaw or Ordinance**

1. Is a municipal wetlands bylaw or ordinance applicable?  Yes  No

2. The Framingham hereby finds (check one that applies):  
Conservation Commission

a.  that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

1. Municipal Ordinance or Bylaw

2. Citation

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

b.  that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

Framingham Wetlands Protection Bylaw, Article V, Section 18

1. Municipal Ordinance or Bylaw

2. Citation

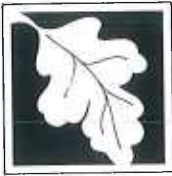
3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

Special Conditions start on Page 13

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





**Massachusetts Department of Environmental Protection**  
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### E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

1. Date of Issuance

Please indicate the number of members who will sign this form.

This Order must be signed by a majority of the Conservation Commission.

2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

*Robert B. King* \_\_\_\_\_ *W. O. M...* \_\_\_\_\_  
 \_\_\_\_\_  
*Janifer* \_\_\_\_\_  
 \_\_\_\_\_

by hand delivery on

by certified mail, return receipt requested, on

Date

Date

### F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.



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### G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Framingham  
 Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Framingham  
 Conservation Commission

Please be advised that the Order of Conditions for the Project at:

31 Flagg Drive, Framingham  
 Project Location

158-1502  
 MassDEP File Number

Has been recorded at the Registry of Deeds of:

County	Book	Page
--------	------	------

for: Property Owner

and has been noted in the chain of title of the affected property in:

Book	Page
------	------

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant



Massachusetts Department of Environmental Protection  
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**WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40 &  
Framingham Wetlands Protection Bylaw, Article V, Section 18

Provided by MassDEP:

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**Special Conditions Under  
The State Wetlands Protection Act and  
Framingham Wetlands Protection Bylaw  
31 Flagg Drive  
Fuller Middle School Campus**

**Final Approved Plans and Other Documents:**

1. Fuller Middle School, 31 Flagg Drive, Framingham, MA; prepared by Jonathan Levi Architects, 266 Beacon Street, Boston, MA 02116 and by CDW Consultants, Inc., 6 Huron drive, Natick, MA 01760; and stamped by Eric Wilhelmsen, Civil No. 41596, but not all pages. Plan of Record set timestamped by Conservation Office on June 18, 2019 at 5:25pm

Plan of Record Sheet	Sheet Title	Correct Revision Date	Stamped by Engineer	Scale
C-0.0	Overall Existing Conditions Plan	5-10-2019	N	none
C-0.1	Existing Conditions Plan (west)	5-10-2019	N	1" = 40'
C-0.2	Existing Conditions Plan (east)	5-10-2019	N	1" = 40'
C-0.3	Existing Conditions Plan ( n. east)	5-10-2019	N	1" = 40'
C-1.0	Phase 1: Overall Demolition and Vehicle Circ.	6-13-2019	Y	1" = 60'
C-1.1	Phase 1: Layout & Materials (Permanent Parking)	6-13-2019	Y	1" = 30'
C-1.2	Phase 1: Grading & Drainage (Permanent Pkg)	6-13-2019	Y	1" = 30'
C-1.3	Phase 1: Utility Plan (Permanent Parking)	6-13-2019	Y	1" = 30'
C-1.4	Phase 1: Temporary Parking Layout & Materials, Grading & Drainage	6-13-2019	Y	1" = 30'
C-2.0	Phase 2: Demolition and Vehicle Circulation	6-13-2019	Y	1" = 30'
C-2.1	Phase 2: Layout & Materials	6-13-2019	Y	1" = 30'
C-2.2	Phase 2: Grading & Drainage	6-13-2019	Y	1" = 30'
C-2.3	Phase 2: Utility Plan	6-13-2019	Y	1" = 60'
C-3.0	Phase 3: Demolition and	6-13-2019	Y	1" = 60'

	Vehicle Circulation			
C-4.0	Overall layout & Materials Plan	6-13-2019	Y	1" = 60'
C-4.1	Layout & Materials (east)	6-13-2019	Y	1" = 30'
C-4.2	Layout & Materials (west)	6-13-2019	Y	1" = 30'
C-5.0	Overall Grading & Drainage Plan	6-13-2019	Y	1" = 60'
C-5.1	Grading & Drainage (east)	6-13-2019	Y	1" = 30'
C-5.2	Grading & Drainage (west)	6-13-2019	Y	1" = 30'
C-6.0	Overall Utility Plan	6-13-2019	Y	1" = 60'
C-6.1	Utility Plan (east)	6-13-2019	Y	1" = 30'
C-6.2	Utility Plan (west)	6-13-2019	Y	1" = 30'
C-7.0	Construction Site Details	6-13-2019	Y	
C-7.1	Construction Site Details	6-13-2019	Y	
C-7.2	Construction Site Details	6-13-2019	Y	
C-7.3	Construction Site Details	6-13-2019	Y	
C-7.4	Construction Site Details	6-13-2019	Y	
C-7.5	Construction Site Details – School Signage Plan	5-10-2019	N	

2. Notice of Intent, Fuller Middle School; Prepared by CDW Consultants, Inc., Dated April 17, 2019
3. Proposed Project Summary, Fuller Middle School; Prepared by CDW
4. Application for Waiver from Framingham Wetlands Protection Bylaw – 30' NAZ
5. Stormwater Management Report (updated), Prepared by CDW; last Revised June 14, 2019

### **Findings of Fact: (See Special Condition #20)**

This project will consist of a phased construction and upgrades to the Fuller Middle School campus. Phase 1 during the summer of 2019 will include the overall demolition of some existing parking; construction of temporary detention basins; Creation of staging and materials laydown area behind existing school building; demolition of retaining wall and softball field; and construction of new permanent parking area behind (north) of location for new Fuller Middle School; construction of access roadway to parking lot; construction of temporary vehicular circulation and parking in front of existing Fuller Middle School and between locations; and installation of stormwater management system in front of existing school building. Additionally permanent detention basin around new Permanent Parking Lot will provide stormwater management treatment during construction and will then be re-constructed and prepared as final phase of project.

Erosion controls on fairly level site shall be silt fence and straw wattles. A construction vehicle apron shall be constructed and vehicles cleaned when entering or leaving the site. A copy of the final SWPP shall be provided to the Conservation Administrator prior to construction. Any changes to the SWPPP during construction shall be noted to the Conservation Administrator. A final de-watering plan shall be prepared by the contractor and submitted to the Conservation Administrator for review. (Special Condition 39)

Top soils will be stripped from playing fields and elsewhere and all stockpiled soils will be hydro seeded to prevent erosion. Soils will be screened. Soils piles not to exceed 25 feet high. (Special Conditions: 43)

Phase 2 will include the demolition of existing parking area and vehicular circulation located on east side of existing school and the construction of the new Fuller Middle School, including installation of utilities.

Phase 3 includes the demolition of the existing Fuller Middle School; construction of amphitheater in front of new school building; construction of playing fields; and construction of new parking permanent parking lot to west of new school building and over the site of part of the old building.

Overall, the final end product results in a decrease of impervious area. Management of stormwater during construction will be handled by the new permanent detention basins (to be restored upon completion of project) as well as stormwater management in front of the existing school building and two temporary construction detention basins located in front of the new building.

Submittals include an Operations and Management Plan that outlines snow management, management of detention basins, and landscaping. Submittals include a fairly robust landscaping plan that will provide more green space and trees than presently exist on site. The O&M Plan (Special Condition #47) will specifically include:

1. Information and instructions outlining access to basins:
  - a. Basin #1 and #2 shall be accessed for maintenance purposes from the fire access road.
  - b. Basin #3 will have a manhole approximately 10-ft from bus drop off road.
  - c. Basin #4 will have a manhole approximately 15-ft from bus drop off road.
2. Manufacturer's recommended maintenance procedures for proprietary water quality structures and subsurface infiltration chamber units shall be included and included in final inspection and maintenance schedule provided to the Framingham School Maintenance Department.
3. Maintenance of proposed grass and filter strips designed for TSS removal shall be added to the inspection and maintenance schedule.
4. A schematic map of at least 11"x17" showing location of the systems and facilities including all structural and nonstructural BMPs and the location of snow storage areas shall be included.
  - Snow storage areas shall be located outside of wetland resource areas and designated with signage.
  - Snow storage areas shall be coordinated with landscape plans to ensure plantings are not harmed by future snow maintenance activities.
5. Illicit discharges to the stormwater management system are prohibited and an Illicit Discharge Compliance Statement shall be part of the O&M
6. O&M Plan shall include tracking templates for School Maintenance Department to record frequencies of street sweeping; basin maintenance; inspections and servicing of underground stormwater management structures; etc.
7. Stormwater management basins shall be mowed periodically and at a minimum of once per year. If infrequently mowed (once per year), then mowed materials shall be removed from basin and composted off site to prevent buildup of organic materials within basins that could eventually compromise effectiveness of basins.

Waivers were issued to allow work within both the 30-foot No Alteration Zone (NAZ) and the 50-foot No-Build.

### **Approved Alterations within Jurisdictional Areas**

Work will take place in Riverfront, Buffer zones to Bordering Vegetated Wetlands, including within a previously disturbed 30' No Alteration Zone. A portion of the existing school building are located within riverfront – to be replaced with new grassed playing fields after demolition. New drainage outlet to the stream on the west side of the existing building will be provided, along with a new impact basin and associated grading. Temporary bank disturbance will occur during installation totaling 22 linear feet of disturbance of which 8 feet is permanent.

Within Bordering Vegetated Wetlands, the existing outlet structure on the south side of Flagg Drive near the McCarthy School will also receive a new impact basin. The total area of disturbance is 292s.f. of which 192s.f. is permanent.

There is no permanent long term increase to stormwater runoff and no increase in flooding to neighboring areas is anticipated. Two new stormwater basins are proposed on the north side of the new school building to capture runoff from the parking area and a portion of the new roof. Two additional grassed basins located to the west of the new athletic fields will capture field runoff. Underground chambers located under the amphitheater lawn area will capture roof runoff from the new building. Snow storage areas are shown on overall site plans for the post construction.

### **Special Conditions**

#### **General Requirements**

20. The Findings of Fact are incorporated as a special condition and given equal status as a special condition of this Order.

21. All Conditions (Sec. C. above) Under Massachusetts Wetlands Protection Act apply under the Framingham Wetlands Protection Bylaw.
22. The Commission or Agent of the Commission reserves the right to require additional conditions if deemed necessary to protect resource areas and interests as defined in MGL Chapter 131 Section 40 (310 CMR 10.00) and/or the Framingham Wetlands Protection By-Law (Article V, Section 18), or regulations promulgated thereunder.
23. This document shall be included in all construction contracts, subcontracts, and specifications dealing with the work proposed and shall supersede any conflicting contract requirements. The Applicant shall ensure that all contractors, subcontractor and other personnel performing the permitted work are fully aware of the permit's terms and conditions. Thereafter, the contractor will be held jointly liable for any violation of this Order resulting from failure to comply with its conditions. Nothing in this paragraph shall limit or restrict the liability of the Applicant for violations of this order.
24. This Order and a copy of approved drawings and plans shall be available at the project site at all times for easy reference.
25. Work orders associated with the Operations and Management Plan of stormwater features and utilities shall be retained by the property owner and available to the Commission and/or its Agents, by request. In addition, stormwater infrastructure shall be inspected quarterly and receipts of these inspections shall also be available to the Commission and/or its Agents by request.
26. To apprise the permittee, a Notice of Intent (NOI) for stormwater discharges associated with construction activity should be filed under the US EPA NPDES General Permit. In addition, the Permittee must prepare a Stormwater Pollution Prevention Plan (SWPPP) as required by the NPDES General Permit. This applies to projects that disturb one acre (1 Ac.) of land or more.

### **Prohibitions and Violations**

27. No work, storage, or alterations of any kind are permitted before, during, or after construction within the 30 foot No Alteration Zone (defined in Section III. C. of the Framingham Wetland Regulations) up-gradient from the edge of wetland Resource Areas, unless otherwise approved at public hearings by the Conservation Commission and demarcated on the Plan of Record. \* A waiver was issued for this project to allow for pre-determined activities and/or construction within the 30-ft NAZ and the 50-ft No-Build.
28. If unforeseen problems occur during construction which may affect the statutory interests of the Wetlands Protection Act, the Bylaw or regulations promulgated thereunder, the Commission shall immediately be notified, and an immediate meeting shall be held between the Commission or its Agent, the Applicant, and other concerned parties to determine the correct measures to be employed. The Applicant shall then act to correct the problems using the corrective measures agreed upon. Subsequent to resolution, the activity and resulting actions shall be documented in writing.
29. Any damage caused as a result of this project to any wetland resource areas, shall be the responsibility of the Applicant to repair, restore and/or replace. Sedimentation or erosion into these areas shall be considered damage to wetland resource areas. If sediment reaches these areas the Commission shall be contacted and a plan for abatement of the problem and proposed restoration/mitigation measures shall be submitted for approval and implementation by the Agent of the Commission.
30. Work shall be halted on the site if an Agent of the Commission or DEP determines that any of the work is not in compliance with this Order of Conditions.
31. Violation of any condition may result in fines (Section VI of the Framingham Wetland Regulations) and other enforcement actions.
32. Any changes to approved plans desired by the Applicant or Contractor must first be approved by the Conservation Commission or Agent of the Commission.

### **Conditions Prior to Construction**

33. Within thirty (30) days of the issuance of this Order of Conditions, the applicant, property owner, project representative, or other applicable party must record the original copy of the Order with the Registry of Deeds. Proof

of recording is required to be submitted to the Commission or Agent of the Commission prior to the Pre-Construction Meeting and commencement of work.

34. The applicant, representative, contractors and sub-contractors associated with this project shall sign an Order of Conditions Acknowledgement Form, stating that they have received and understand this Order of Conditions. This Form shall be submitted to the Commission during the pre-construction site visit. Should any of the aforementioned parties change after submitting said Form, then a new Order of Conditions Acknowledgement Form must be signed and submitted to the Agent of the Commission.
35. Prior to the commencement of any activity on this site, other than the marking of locations for erosion controls, there shall be a Pre-Construction Meeting between the project supervisor, the contractor responsible for the work, and a member of the Conservation Commission or its Agent. Please contact the Conservation Commission office at (508) 532-5460 at least seventy-two (72) hours prior to any activity to arrange for the pre-construction meeting. The meeting shall:
  - a. Ensure that the requirements of the Order of Conditions are understood;
  - b. Check administrative requirements (DEP file number sign, recording info, contact information, etc.);
  - c. Adjust, if necessary, the erosion control line.
36. Based on the Agent's judgment rendered at the pre-construction site visit, a sedimentation barrier may be required and, if so, shall serve as the limit of work. No alterations shall be permitted beyond the installed siltation barrier.
37. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The Applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary.
38. The erosion controls shall be properly installed as shown on the Plan of Record. All erosion controls shall be invasive free (salt marsh hay, straw wattles, or other invasive-free product). No clearing of vegetation, including trees, or disturbance of soil shall occur prior to the Pre-Construction Meeting. Minimal disturbance of shrubs and herbaceous plants shall be allowed prior to the Pre-Construction Meeting if absolutely necessary in order to place erosion control stakes where required. Silt retention fabric must be staked and entrenched at least six (6") inches for maximum siltation control prior to any construction or site preparation.
39. If there is a need for de-watering, the applicant shall provide a detailed plan to be approved by the Commission or Agent of the Commission.

### **Conditions During Construction**

40. All plantings within Areas Subject to Jurisdiction under the Framingham Wetlands Protection Bylaw shall be native species.
41. The applicant shall inspect and maintain all erosion controls including silt sacs within the catch basins on a weekly basis and after every storm event of a ½ inch of rain or more.
42. The applicant is responsible for the containment and proper relocation/disposal for all unearthed soils, clays and other organic debris as well as the construction waste associated with this project.
43. All top soils to be scraped and screened and stored on-site. Soil piles not to exceed 25-ft in height. Soil piles to be hydro seeded and maintained throughout duration of project until re-used on school grounds and playing fields.

### **Final Site Stabilization and Removal of Erosion Controls**

44. Once the site has been stabilized, the Applicant/Owner/Assign shall remove and properly dispose of all erosion controls. Straw wattles, which are often wrapped in poly fiber shall not be left in place.
45. The applicant shall place silt fencing or other suitable barriers on the lot to help prevent the migration of treated snow melt toward the wetlands.

46. The applicant shall retain all receipts for annual operation and maintenance activities on-site. Receipts shall be made available to the Conservation Commission and/or its Agents, upon request.
47. An Operations and Maintenance Plan shall be prepared and, amongst other things, shall include the items outlined in the Findings of Fact above. Adherence to the O&M Plan shall be yearly and ongoing.
48. Prior to planting and seeding, final grades shall be surveyed by a licensed land surveyor to ensure that grades have been achieved as shown on the plan or as agreed to by the Commission to meet the performance based conditions subject to this Order. If any changes in grade elevations were amended, the Commission shall be notified of the purpose for the change for review and approval
49. Vegetation planted as part of mitigation, replication or restoration and in accordance with approved plans, shall be monitored and maintained for a period of two growing seasons and 75% of the plantings shall survive. If less than 75% of species planted survive, then they shall be replaced at the discretion of the Conservation Commission or Agent of the Commission.

### **Conditions related to Certificate of Compliance**

50. Upon completion of construction and final stabilization, the Applicant/Owner/Assign shall submit the following to the Conservation Commission to request a Certificate of Compliance (COC):
  - a. A completed Request for a Certificate of Compliance form (WPA Form 8A or other form if required by the Conservation Commission at the time of request);
  - b. A stamped as-built plan and letter from a Registered Professional Engineer certifying compliance of the property with this Order of Conditions, and detailing any deviations from the approved plans, and their potential effect on the project. A statement that the work is in "substantial compliance" with no detailing of the deviations shall not be accepted.
51. Once items from 50a. and 50b. are submitted in full compliance, the Applicant, Contractor or Consultant shall schedule a site visit with the Conservation Administrator(s) to verify compliance with this Order of Conditions and affiliated documents.

### **Conditions in Perpetuity** – Special Conditions 46, 47





**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**Request for Departmental Action Fee**  
**Transmittal Form**

DEP File Number: \_\_\_\_\_

Provided by DEP \_\_\_\_\_

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**A. Request Information**

1. Location of Project

_____	_____
a. Street Address	b. City/Town, Zip
_____	_____
c. Check number	d. Fee amount

2. Person or party making request (if appropriate, name the citizen group's representative):

\_\_\_\_\_

Name

\_\_\_\_\_

Mailing Address

_____	_____	_____
City/Town	State	Zip Code
_____	_____	
Phone Number	Fax Number (if applicable)	

3. Applicant (as shown on Determination of Applicability (Form 2), Order of Resource Area Delineation (Form 4B), Order of Conditions (Form 5), Restoration Order of Conditions (Form 5A), or Notice of Non-Significance (Form 6)):

\_\_\_\_\_

Name

\_\_\_\_\_

Mailing Address

_____	_____	_____
City/Town	State	Zip Code
_____	_____	
Phone Number	Fax Number (if applicable)	

4. DEP File Number:

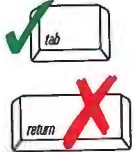
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**B. Instructions**

1. When the Departmental action request is for (check one):

- Superseding Order of Conditions – Fee: \$120.00 (single family house projects) or \$245 (all other projects)
- Superseding Determination of Applicability – Fee: \$120
- Superseding Order of Resource Area Delineation – Fee: \$120

**Important:**  
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands

DEP File Number:

**Request for Departmental Action Fee**

\_\_\_\_\_  
Provided by DEP

**Transmittal Form**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**B. Instructions (cont.)**

Send this form and check or money order, payable to the *Commonwealth of Massachusetts*, to:

Department of Environmental Protection  
Box 4062  
Boston, MA 02211

2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.
3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see <http://www.mass.gov/eea/agencies/massdep/about/contacts/>).
4. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.



July 23, 2019

Framingham Department of Public Health  
150 Concord Street  
Framingham, MA 01702

Attention: Laura Housman, Chair, Board of Health

Reference: Fuller Middle School, 31 Flagg Drive; Framingham, Massachusetts  
Notification of a Release Abatement Measure Plan; RTN 3-35694

Ladies & Gentlemen:

Pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) (MCP), a Release Abatement Measure (RAM) will be performed at the above referenced location. Response actions at this site will be conducted by Framingham Public Schools. McPhail Associates, LLC has been employed to manage response actions in accordance with the MCP.

The objective of this RAM will be to manage handling and off-site re-use of excavated natural organic soils affected by reportable concentrations of arsenic. The performance of the RAM will commence in late July/early August 2019 and it is anticipated that performance of the RAM will be completed over a period of up to 6 months.

The RAM Plan and the disposal site file can be reviewed at MassDEP website using Release Tracking Number (RTN) 3-35694 at the following website or at MassDEP, Northeast Regional Office, 205B Lowell Street, Wilmington, Massachusetts, 01887, Phone number: 978-694-3200.

<http://public.dep.state.ma.us/SearchableSites2/Search.aspx>

We trust that the above is sufficient for your present requirements. Should you have any questions, please do not hesitate to call us.

Very truly yours,

McPHAIL ASSOCIATES, LLC

A handwritten signature in blue ink, appearing to read "Joseph G. Lombardo, Jr.", is written over a light blue horizontal line.

Joseph G. Lombardo, Jr., L.S.P.

N:\Working Documents\Jobs\6473 - Fuller Middle School\6473 Notice to BOH of RAMP 072319.docx

KDJ/jgl

GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERS  
2269 Massachusetts Avenue  
Cambridge, Massachusetts 02140  
(617) 868-1420



July 23, 2019

Mayor of Framingham  
150 Concord Street  
Framingham, MA 01702

Reference: Fuller Middle School, 31 Flagg Drive; Framingham, Massachusetts  
Notification of a Release Abatement Measure Plan; RTN 3-35694

Ladies & Gentlemen:

Pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) (MCP), a Release Abatement Measure (RAM) will be performed at the above referenced location. Response actions at this site will be conducted by Framingham Public Schools. McPhail Associates, LLC has been employed to manage response actions in accordance with the MCP.

The objective of this RAM will be to manage handling and off-site re-use of excavated natural organic soils affected by reportable concentrations of arsenic. The performance of the RAM will commence in late July/early August 2019 and it is anticipated that performance of the RAM will be completed over a period of up to 6 months.

The RAM Plan and the disposal site file can be reviewed at MassDEP website using Release Tracking Number (RTN) 3-34593 at the following website or at MassDEP, Northeast Regional Office, 205B Lowell Street, Wilmington, Massachusetts, 01887, Phone number: 978-694-3200.

<http://public.dep.state.ma.us/SearchableSites2/Search.aspx>

We trust that the above is sufficient for your present requirements. Should you have any questions, please do not hesitate to call us.

Very truly yours,

McPHAIL ASSOCIATES, LLC

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Joseph G. Lombardo, Jr., L.S.P.

N:\Working Documents\Jobs\6473 - Fuller Middle School\RTN 3-35694\6473 Notice to CMO of RAMP 072319.docx

KDJ/jgl

# Fire Protection Services

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**Fire Protection Engineering  
Hydraulics Specialists  
Code Consultants**

**571 Maple Grove Road, P.O. Box 452  
Madison, New Hampshire 03849  
MA Office: 81 Laurel Street, Fairhaven, MA 02719**  
E-Mail: AJWOOD13@COMCAST.NET Phone: (508) 728-8374

November 2, 2018

Blake Lukis  
Framingham Public Works  
100 Western Avenue  
Framingham, MA 01702  
Via Email: bdl@framinghamma.gov

RE: Fire Flow Test  
Fuller Middle School – Glen Brook Way  
Medway, MA

Dear Blake,

On Wednesday, October 31, 2018 a hydrant flow test was completed to determine fire flow capacity for the Fuller Middle School located at 31 Flagg Drive in Framingham, Massachusetts. A new building is proposed to be constructed on the site of the existing school. Two fire hydrants located off of the 8 inch water main in Flagg Drive were utilized for the test.

Using standard fire protection engineering procedure, the flow was recorded at the hydrant located at the northwest corner of the school. The static and residual pressures were measured at the hydrant situated in front of the school towards its center. The flow was maintained through two Little Hose Monsters with 1 ¾" grooved inserts.

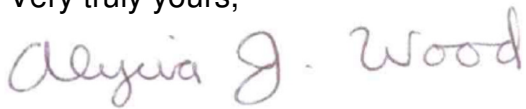
See the sketch at the end of this report for further clarification. The results of the test are summarized on the following page.

Fire Flow Test  
Fuller Middle School – Framingham, MA  
November 2, 2018

Test Date: October 31, 2018  
Test Time: 11:00 AM  
Static Pressure: 87 psi  
Residual Pressure: 78 psi  
Pitotless Nozzle Readings of the two Little Hose Monsters: 25 psi and 25 psi  
Total Flow: 1,048 gpm

Please let us know if you should have any questions.

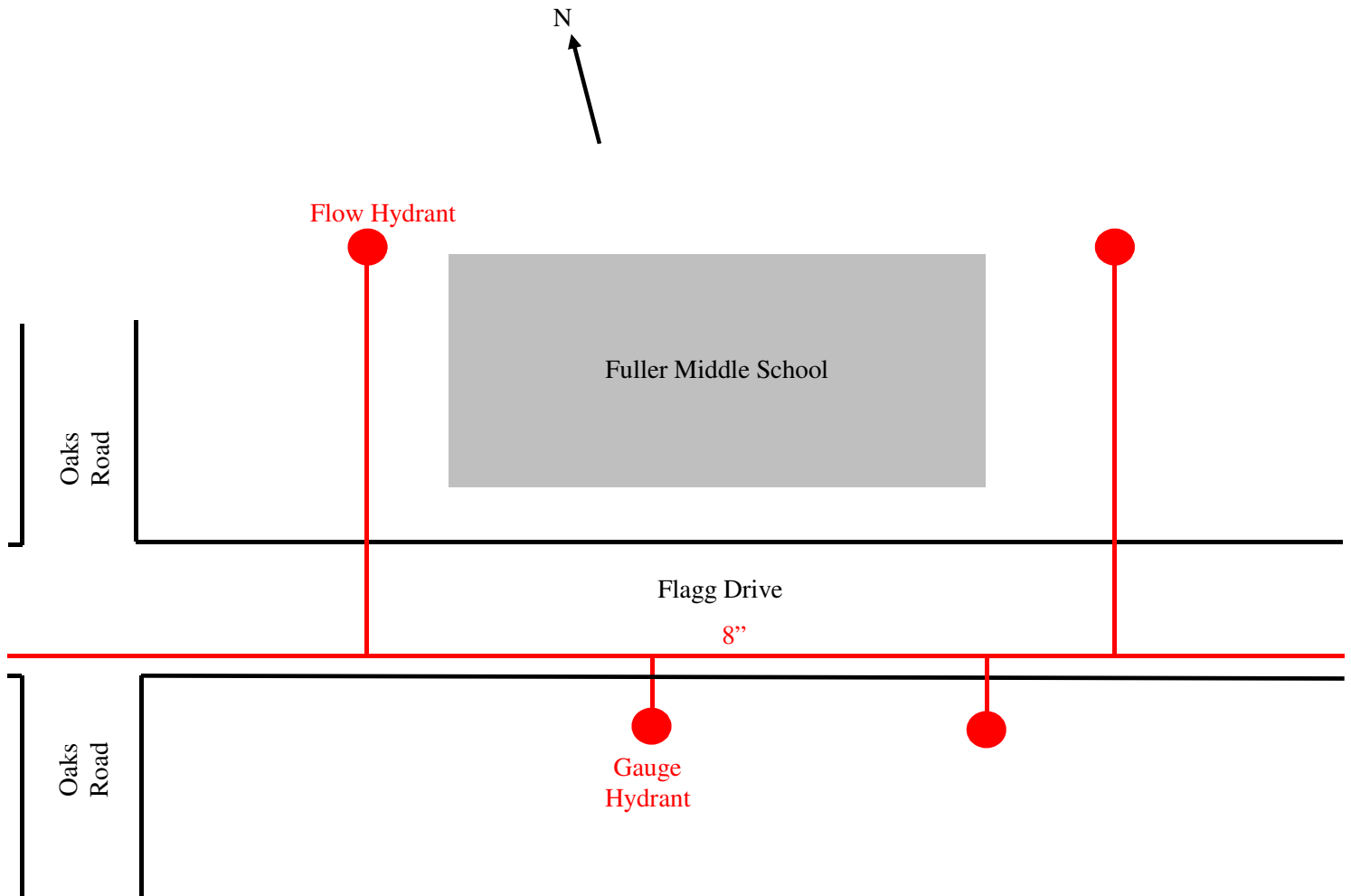
Very truly yours,



Alycia J. Wood, P.E.

Cc: Garcia, Galuska, & DeSousa, Inc.

### Diagram of the Hydrant Locations Used for Flow Testing









CITY OF FRAMINGHAM  
DEPARTMENT OF PUBLIC WORKS  
FRAMINGHAM, MASSACHUSETTS 01702

*"Dedicated to  
Excellence  
in Public  
Service"*

PETER A. SELLERS  
EXECUTIVE DIRECTOR | FDPW  
PAUL G. BARDEN  
DEPUTY DIRECTOR | FDPW  
WILLIAM R. SEDEWITZ - PE  
CHIEF ENGINEER | FDPW  
DIANE M. CONNER  
ASSISTANT DIRECTOR | FDPW

April 30, 2019

Ms. Amanda Loomis  
Framingham Planning Board  
Memorial Building Room 205  
150 Concord Street  
Framingham, MA 01702

Re: Fuller Middle School – 31 Flagg Drive, Framingham

Dear Ms. Loomis,

The Department of Public Works (DPW) is in receipt of submittals for the above referenced project. It should be noted that the DPW and the School Department have met on multiple occasions to review and discuss this project. These meetings have been beneficial and the School Department has addressed DPW issues. Therefore the comments below should be taken in context for the deliverables as submitted to the Planning Board and Conservation Commission and provided to DPW. We anticipate that many of these comments have already been addressed. Nonetheless, based on that context, we have reviewed said submittal, and subsequently offer the following observations:

GENERAL:

1. All work should be inspected by a DPW Utility Inspector. To schedule a pre-construction meeting, contact the Engineering Division at (508) 532-6022 or (508) 532-6010 forty-eight hours prior to the start of work.
2. All site drainage, water, and sewer work outside the building footprint shall be performed by a licensed Framingham Drain layer.
3. Any proposed surface openings and excavation work within the City right-of-way limits will require a Street Opening Permit (SOP) with the work conducted under said permit being performed in compliance with the City of Framingham SOP Policy.
4. A Trench Opening Permit (TOP) shall be obtained prior to the excavation of any trench. A trench is defined under MGL 82A and 520 CMR 14.00 as any excavation greater than 3' in depth and less than 15' between soil walls as measured from the bottom.
5. All proposed work shall comply with City of Framingham DPW construction standards. City of Framingham construction standards are available on the City of Framingham website.

ROADWAY:

1. The applicant should review MassDOT minimum warrants for the proposed school zone.
2. The proposed school zone needs to be reviewed and approved by the City of Framingham Traffic Commission.

DRAINAGE:

1. DPW recommends the applicant to design the stormwater system to meet the requirements of the EPA MS4 General Permit issued to the City.
2. The "Rules & Regulations Governing the Subdivision of Land in Framingham", amended April 3, 2017, states "The specified design storms shall be defined as a 24-hour storm using the rainfall distribution recommended by the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, as amended, or the Northeast

Regional Climate Center (NRCC) "Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada." The stormwater calculations should be updated using the correct rainfall data. Applicant should resubmit calculations.

WATER:

1. The existing water service shall be cut and capped at the water main prior to the demolition of the building. The existing tee shall be removed and replaced with a straight piece.
2. Tapping the proposed hydrants off 6-inch water lines is inconsistent with DPW construction standards. Hydrants shall be tapped off a minimum 8-inch water main.
3. The proposed inline gate valves should be located on the outside of the 6-inch fire service and the 2-inch domestic service.

SEWER:

1. The existing sewer service shall be cut and capped at the sewer main in Flagg Drive.
2. Provide a sewer profile for the proposed sewer lateral including the invert elevation at the building and the sewer main invert elevation in the street.
3. Provide two sewer manholes one upstream and one downstream of the proposed grease interceptor.

ITEMS REVIEWED:

1. Plan: Walnut Street Pump Station and Sewer Project 1, 31 Flagg Drive, Framingham, MA; Prepared by: CDW Consultants, LLC; Stamped & Signed by: Eric S. Wilhelmsen, P.E.; Date: April 5, 2019 (title block).
2. Doc.: Stormwater Report Fuller Middle School 31 Flagg Drive, Framingham, MA; Prepared by: CDW Consultants, LLC.

If you have any questions or require additional information, please contact the Engineering & Transportation Division at (508) 532-6010.

Yours very truly,



Tam D. Nguyen  
Civil Engineer



Eric V. Johnson, P.E.  
City Engineer

TDN/EVJ

CC: W. Sedewitz, Chief Engineer      D. Nau, Dir. of Highway & Sanitation      B. Lukis, Dir. of Water & Sewer  
S. Leone, Asst. Dir. of Water & Sewer      J. Stefanini, DPW Permit Engineer      J. Barsanti, Asst. Dir. of Water & Sewer



**GARCIA • GALUSKA • DESOUSA**

Consulting Engineers Inc.

370 Faunce Corner Road, Dartmouth, MA 02747-1271

L#66513  
J#680 015 00.00

May 6, 2019

Jonathan Levi Architects  
266 Beacon Street  
Boston, MA 02116

Attn: Elizabeth Bugbee, AIA

Re: Fuller Middle School  
Framingham, MA

Dear Ms. Bugbee:

Please find below a list of Utility Officials contacted by our design team regarding the Fuller Middle School.

<b>Utility Company</b>	<b>Date Contacted</b>	<b>Remarks</b>
Eversource 247 Station Drive, SW 340 Westwood, MA 02090	February 13, 2019	An electrical load letter has been sent to Crystal Chalapatous proposing a new incoming primary service and pad mounted transformer; also provided plans for review and comment.
Eversource 247 Station Drive, SW 340 Westwood, MA 02090	February 21, 2019	Work order application was requested and issued to Eversource.
Eversource 247 Station Drive, SW 340 Westwood, MA 02090	February 22, 2019	All information was forwarded to Bryan Rooney, Account Executive, by Crystal Chalapatous, as he will be handling this request.
Eversource, Verizon and Comcast	March 7, 2019	Meeting was held to review services for the new incoming services. Meeting notes distributed at a later date.
Eversource Energy 157 Cordaville Road Southborough, MA 01772	February 27, 2019	A gas load letter was issued to Ms. Marjorie McDonald with a preliminary gas load breakdown of equipment, also provided site plans for review and comment.
Eversource Energy 157 Cordaville Road Southborough, MA 01772	March 8, 2019	Received a "will serve" letter from Marjorie McDonald confirming Eversource has an adequate supply of natural gas available to service the projected gas loads.
Eversource 247 Station Drive, SW 340 Westwood, MA 02090	May 6, 2019	Issued revised Electrical Load Letter, Work Order Application with plans.

**GARCIA • GALUSKA • DESOUSA**

Consulting Engineers

Inc.

L#66513

J#630 015 00.00

Page 2

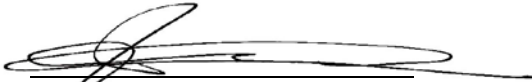
If you have any questions or comments regarding the above, please contact our office at your earliest convenience.

Very truly yours,

**GARCIA • GALUSKA • DESOUSA**

Consulting Engineers

Inc.

  
Jose M. Carreiro

Christopher M. Garcia, P.E.

JMC/CMG:ja

Cc: Philip Gray, Jonathan Levi Architects  
Carol Harris, Jonathan Levi Architects  
Carlos G. DeSousa, P.E., Garcia, Galuska & DeSousa, Inc.  
Mark Bibby, Garcia, Galuska & DeSousa, Inc.



157 Cordaville Road, Southborough, MA 01772

March 8, 2019

Chris Garcia  
Garcia, Galuska & Desousa Consulting Engineers, Inc  
370 Faunce Corner Road  
Dartmouth, MA 02747

Re: Fuller Middle School  
31 Flagg Drive  
Framingham, MA

Dear Chris,

This letter is in response to the request to confirm gas and pressure availability at 31 Flagg Drive in Framingham for a new Middle School.

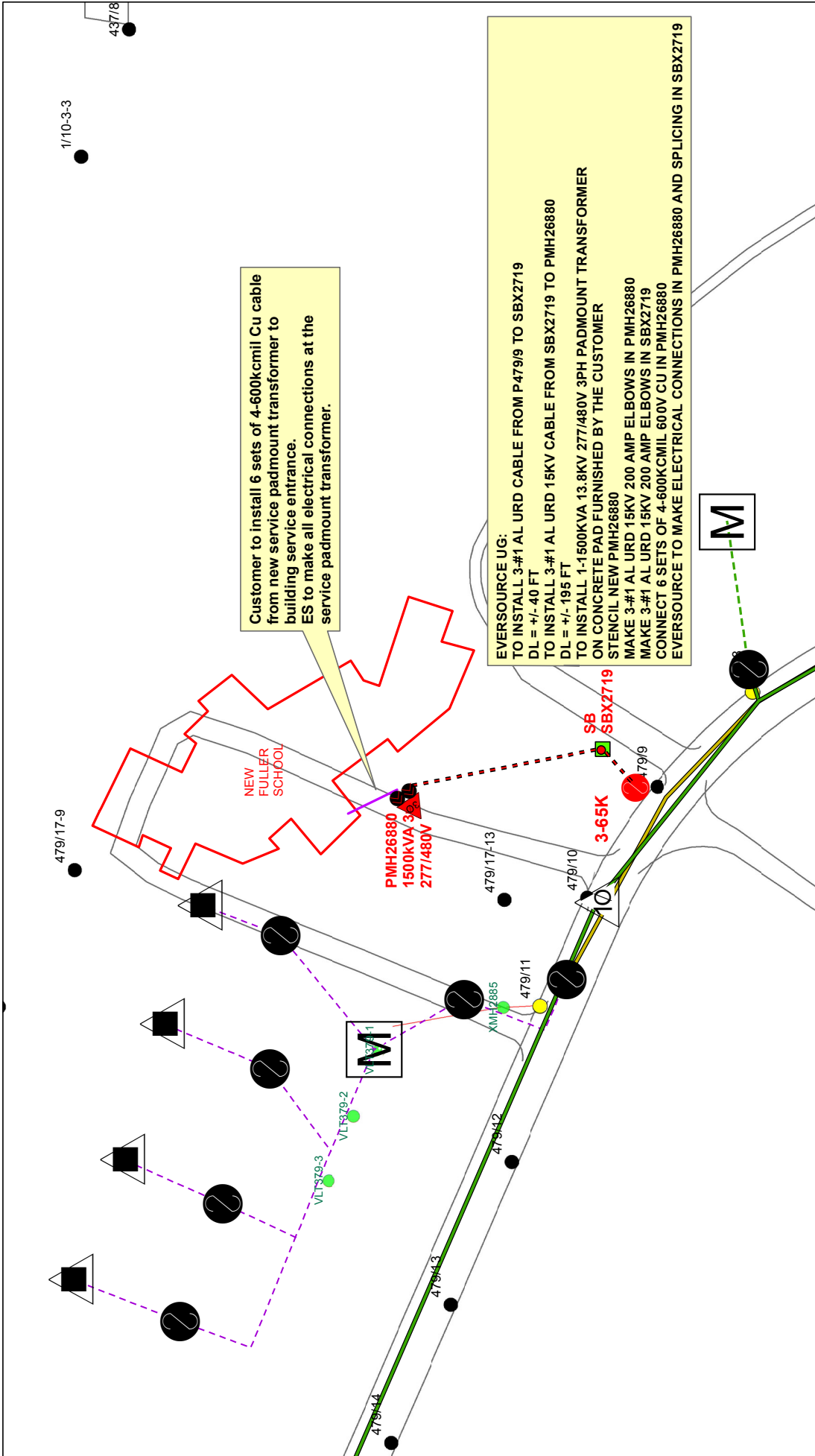
Eversource has an adequate supply of natural gas available to serve a projected gas load of 13,800 CFH. That part of our system is also able to provide 10"wc of pressure (at the time of application, cut sheets will need to be submitted by the Customer supporting the need for 10"wc pressure). If the load projections change, please contact us with the revised loads and the project will be re-evaluated with the new load requirements.

Sincerely,

Marjorie McDonald  
Strategic Account Executive  
Eversource  
157 Cordaville Road  
Southborough, MA. 01772

Phone: (508) 305-6988  
E-mail: [Marjorie.McDonald@eversource.com](mailto:Marjorie.McDonald@eversource.com)





Customer to install 6 sets of 4-600kcmil Cu cable from new service padmount transformer to building service entrance.  
ES to make all electrical connections at the service padmount transformer.

EVERSOURCE UG:  
TO INSTALL 3-#1 AL URD CABLE FROM P479/9 TO SBX2719  
DL = +/- 40 FT  
TO INSTALL 3-#1 AL URD 15KV CABLE FROM SBX2719 TO PMH26880  
DL = +/- 195 FT  
TO INSTALL 1-1500KVA 13.8KV 277/480V 3PH PADMOUNT TRANSFORMER  
ON CONCRETE PAD FURNISHED BY THE CUSTOMER  
STENCIL NEW PMH26880  
MAKE 3-#1 AL URD 15KV 200 AMP ELBOWS IN PMH26880  
MAKE 3-#1 AL URD 15KV 200 AMP ELBOWS IN SBX2719  
CONNECT 6 SETS OF 4-600KCMIL 600V CU IN PMH26880  
EVERSOURCE TO MAKE ELECTRICAL CONNECTIONS IN PMH26880 AND SPLICING IN SBX2719





### 3.3.3 Utility Certifications

Please reference 3.3.2 Approval Letter - Framingham Utilities



## Appendices

### 1. Unreconciled Cost Estimate

OPM draft estimate and comparison analysis

CMR draft estimate

Designer draft estimate



	Consigli Final DD Estimate 5/13/19		Consigli Draft 60% CD Estimate 7/26/19		Delta from Final DD Estimate	Myakoda Draft 60% CD Estimate 7/29/19		Delta from Final DD Estimate	Fogarty Draft 60% CD Estimate 7/26/19		Delta from Final DD Estimate
SF	136,790		136,790			136,790			136,790		
<b>Building</b>											
Foundations	\$ 2,038,949		\$ 1,038,003		\$ (1,000,946)	\$ 1,324,802		\$ (714,147)	\$ 987,963		\$ (1,050,986)
Slab on Grade	\$ 1,089,922		\$ 833,042		\$ (256,880)	\$ 984,489		\$ (105,433)	\$ 644,361		\$ (445,561)
Floor Structure	\$ 2,932,947		\$ 2,849,839		\$ (83,108)	\$ 2,909,479		\$ (23,468)	\$ 3,382,721		\$ 449,774
Roof Structure	\$ 2,529,286		\$ 2,317,484		\$ (211,802)	\$ 2,150,845		\$ (378,441)	\$ 2,059,731		\$ (469,555)
Exterior Walls	\$ 4,410,611		\$ 4,651,796		\$ 241,185	\$ 4,459,287		\$ 48,676	\$ 4,577,695		\$ 167,084
Exterior Windows	\$ 2,162,880		\$ 1,832,538		\$ (330,342)	\$ 2,266,656		\$ 103,776	\$ 2,152,312		\$ (10,568)
Exterior Doors	\$ 141,120		\$ 219,623		\$ 78,503	\$ 213,200		\$ 72,080	\$ 193,692		\$ 52,572
Roofing	\$ 2,081,748		\$ 2,201,527		\$ 119,779	\$ 2,461,021		\$ 379,273	\$ 2,605,175		\$ 523,427
Interior Partitions	\$ 3,738,270		\$ 4,391,687		\$ 653,417	\$ 4,440,502		\$ 702,232	\$ 4,024,048		\$ 285,778
Interior Doors	\$ 801,030		\$ 968,371		\$ 167,341	\$ 956,483		\$ 155,453	\$ 845,613		\$ 44,583
Interior Fittings	\$ 1,128,524		\$ 1,375,799		\$ 247,275	\$ 975,770		\$ (152,754)	\$ 1,848,225		\$ 719,701
Stairs	\$ 517,094		\$ 470,120		\$ (46,974)	\$ 550,570		\$ 33,476	\$ 452,145		\$ (64,949)
Interior Wall Finishes	\$ 1,578,436		\$ 1,591,276		\$ 12,840	\$ 1,593,739		\$ 15,303	\$ 1,654,945		\$ 76,509
Interior Floor Finishes	\$ 1,144,785		\$ 1,509,375		\$ 364,590	\$ 1,429,565		\$ 284,780	\$ 1,405,254		\$ 260,469
Interior Ceiling Finishes	\$ 1,774,200		\$ 1,999,738		\$ 225,538	\$ 1,934,233		\$ 160,033	\$ 2,175,480		\$ 401,280
Conveying Systems	\$ 220,450		\$ 220,450		\$ -	\$ 213,400		\$ (7,050)	\$ 218,037		\$ (2,413)
Plumbing	\$ 1,923,288		\$14 \$ 2,169,333	\$16 \$ 2,096,673	\$ 246,045	\$ 2,096,673		\$15 \$ 173,385	\$ 2,293,619		\$17 \$ 370,331
HVAC	\$ 8,143,186		\$60 \$ 8,997,111	\$66 \$ 8,665,944	\$ 853,925	\$ 8,665,944		\$63 \$ 522,758	\$ 7,500,106		\$55 \$ (643,080)
Fire Protection	\$ 788,684		\$6 \$ 802,068	\$6 \$ 13,384	\$ 13,384	\$ 861,604		\$6 \$ 72,920	\$ 867,675		\$6 \$ 78,991
Electrical	\$ 5,149,789		\$38 \$ 5,497,459	\$40 \$ 4,997,258	\$ 347,670	\$ 4,997,258		\$37 \$ (152,531)	\$ 5,083,192		\$37 \$ (66,597)
Equipment	\$ 1,638,726		\$ 1,623,789		\$ (14,937)	\$ 1,980,142		\$ 341,416	\$ 1,696,907		\$ 58,181
Furnishings	\$ 1,656,900		\$ 1,748,335		\$ 91,435	\$ 1,846,304		\$ 189,404	\$ 2,012,585		\$ 355,685
	\$ 47,590,825 \$348		\$ 49,308,763 \$360		\$ 1,717,938	\$ 49,311,966 \$360		\$ 1,721,141	\$ 48,681,481 \$356		\$ 1,090,656
Building HazMat	\$ 1,246,580		\$ 1,602,280		\$ 355,700	\$ 1,602,280		\$ 355,700	\$ 1,384,630		\$ 138,050
Building Demolition	\$ 1,465,500		\$ 1,270,100		\$ -195,400	\$ 1,465,500		\$ 0	\$ 1,470,000		\$ 4,500
Building Trade Cost	\$ 2,712,080 \$20		\$ 2,872,380 \$21		\$ 160,300	\$ 3,067,780 \$22		\$ 355,700	\$ 2,854,630 \$21		\$ 142,550
	\$ 50,302,905 \$368		\$ 52,181,143 \$381			\$ 52,379,746 \$383			\$ 51,536,111 \$377		
<b>Sitework</b>											
Site Development											
Site Preparation	\$ 3,758,369		\$ 420,700		\$ -3,337,669	\$ 456,249		\$ -3,302,120	\$ 231,124		\$ -3,527,245
Site Improvements	\$ 3,497,366		\$ 2,229,221		\$ -1,268,145	\$ 2,363,632		\$ -1,133,734	\$ 1,585,647		\$ -1,911,719
Mechanical Utilities	\$ 822,705		\$ -		\$ -822,705	\$ 14,085		\$ -808,620	\$ -		\$ -822,705
Electrical Utilities	\$ 826,219		\$ 476,535		\$ -349,684	\$ 497,865		\$ -328,354	\$ 578,166		\$ -248,053
Site Trade Cost	\$ 8,904,659		\$ 3,126,456		\$ -5,778,203	\$ 3,331,831		\$ -5,572,828	\$ 2,394,937		\$ -6,509,722
Total Trade Cost	\$ 59,207,564		\$ 55,307,599		\$ -3,899,965	\$ 55,711,577			\$ 53,931,048		
General Conditions	\$ 3,988,224		\$ 3,401,447		\$ -586,777	\$ 3,994,976		\$ 6,752	\$ 3,988,224		\$ 0
General Requirements	\$ 2,936,369		\$ 2,652,483		\$ -283,886	\$ 2,851,631		\$ -84,738	\$ 3,473,982		\$ 537,613
Insurance	\$ 780,000		\$ 668,571		\$ -111,429	\$ 668,571		\$ -111,429	\$ 780,000		\$ 0
Bonds	\$ 436,800		\$ -		\$ -436,800	\$ -		\$ -436,800	\$ 756,436		\$ 319,636
Sub Bonds	\$ 828,906		\$ 774,307		\$ -54,599	\$ -		\$ -828,906	\$ -		\$ -828,906
Builders Risk	\$ 115,218		\$ -		\$ -115,218	\$ 115,218		\$ 0	\$ 115,218		\$ 0
Permit	\$ -		\$ -		\$ 0	\$ -		\$ 0	\$ -		\$ 0
Fee	\$ 1,560,000		\$ 1,337,143		\$ -222,857	\$ 1,337,143		\$ -222,857	\$ 1,576,384		\$ 16,384
Design Contingency	\$ 4,144,529		\$ 2,765,380		\$ -1,379,149	\$ 2,785,579		\$ -1,358,950	\$ 3,132,105		\$ -1,012,424
GMP Contingency	\$ 1,652,039		\$ 1,492,960		\$ -159,079	\$ 1,484,365		\$ -167,674	\$ 1,644,355		\$ -7,684
Escalation	\$ 1,900,563		\$ 871,095		\$ -1,029,468	\$ 877,457		\$ -1,023,106	\$ 1,348,371		\$ -552,192
	\$ 18,342,648		\$ 13,963,386		\$ -4,379,262	\$ 14,114,940		\$ -4,227,708	\$ 16,815,075		\$ -1,527,573
Early Site Package			\$ 10,957,843		\$ 10,957,843	\$ 10,957,843		\$ 10,957,843	\$ 8,711,050		\$ 8,711,050
Total Construction Cost	\$ 77,550,212 \$567		\$ 80,228,828 \$587		\$ 2,678,616	\$ 80,784,360 \$591		\$ 3,234,148	\$ 79,457,173 \$581		\$ 1,906,961
Budget	\$ 77,935,429		\$ 2,293,399			\$ 2,848,931			\$ 1,521,744		



# 60% CD Estimate



Town of Framingham  
Fuller Middle School  
Framingham, MA  
July 26, 2019

SUBMITTED BY:  
Consigli Construction Co., Inc.  
72 Sumner Street  
Milford, MA 01757



CONSIGLI  
*Est. 1905*

# TABLE OF CONTENTS

Fuller Middle School



## The Right Choice

Consigli Construction Co., Inc. is a fourth-generation family owned organization that can offer the resources and experience of one of the strongest construction management firms in the Northeast with the creativity and flexibility of a start-up.

1. Uniformat Summary
2. Uniformat Detail
3. Bid Package Summary
4. Assumptions & Qualifications





**CONSIGLI**  
*Est. 1905*



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>A Substructure</b>			
<b>A10 Foundations</b>			
A1010 Standard Foundations	136,600 sf	7.60 /sf	1,038,003
A1030 Lowest Floor Construction	136,600 sf	6.10 /sf	833,042
A10 Foundations	136,600 sf	13.70 /sf	1,871,045
A Substructure	136,600 sf	13.70 /sf	1,871,045
<b>B Shell</b>			
<b>B10 Superstructure</b>			
B1010 Floor Construction	136,600 sf	20.86 /sf	2,849,839
B1020 Roof Construction	136,600 sf	16.97 /sf	2,317,484
B10 Superstructure	136,600 sf	37.83 /sf	5,167,324
<b>B20 Exterior Enclosure</b>			
B2010 Exterior Walls	136,600 sf	34.05 /sf	4,651,796
B2020 Exterior Windows	136,600 sf	13.42 /sf	1,832,538
B2030 Exterior Doors	136,600 sf	1.61 /sf	219,623
B20 Exterior Enclosure	136,600 sf	49.08 /sf	6,703,958
<b>B30 Roofing</b>			
B3010 Roof Coverings	136,600 sf	16.12 /sf	2,201,527
B30 Roofing	136,600 sf	16.12 /sf	2,201,527
B Shell	136,600 sf	103.02 /sf	14,072,809
<b>C Interiors</b>			
<b>C10 Interior Construction</b>			
C1010 Partitions	136,600 sf	32.15 /sf	4,391,687
C1020 Interior Doors	136,600 sf	7.09 /sf	968,371
C1030 Specialties/Millwork	136,600 sf	10.07 /sf	1,375,799
C10 Interior Construction	136,600 sf	49.31 /sf	6,735,857
<b>C20 Stairs</b>			
C2010 Stair Construction	136,600 sf	3.33 /sf	455,000
C2020 Stair Finishes	136,600 sf	0.11 /sf	15,120



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C20 Stairs</b>	<b>136,600 sf</b>	<b>3.44 /sf</b>	<b>470,120</b>
<b>C30 Interior Finishes</b>			
<b>C3010 Wall Finishes</b>	<b>136,600 sf</b>	<b>11.65 /sf</b>	<b>1,591,276</b>
<b>C3020 Floor Finishes</b>	<b>136,600 sf</b>	<b>11.05 /sf</b>	<b>1,509,375</b>
<b>C3030 Ceiling Finishes</b>	<b>136,600 sf</b>	<b>14.64 /sf</b>	<b>1,999,738</b>
<b>C30 Interior Finishes</b>	<b>136,600 sf</b>	<b>37.34 /sf</b>	<b>5,100,389</b>
<b>C Interiors</b>	<b>136,600 sf</b>	<b>90.09 /sf</b>	<b>12,306,366</b>
<b>D Services</b>			
<b>D10 Conveying Systems</b>			
<b>D1010 Elevators &amp; Lifts</b>	<b>136,600 sf</b>	<b>1.61 /sf</b>	<b>220,450</b>
<b>D10 Conveying Systems</b>	<b>136,600 sf</b>	<b>1.61 /sf</b>	<b>220,450</b>
<b>D20 Plumbing</b>			
<b>D2010 Plumbing</b>	<b>136,600 sf</b>	<b>4.05 /sf</b>	<b>552,558</b>
<b>D2020 Domestic Water Distribution</b>	<b>136,600 sf</b>	<b>3.24 /sf</b>	<b>441,859</b>
<b>D2030 Sanitary Waste</b>	<b>136,600 sf</b>	<b>2.82 /sf</b>	<b>385,755</b>
<b>D2040 Rain Water Drainage</b>	<b>136,600 sf</b>	<b>2.04 /sf</b>	<b>278,952</b>
<b>D2090 Other Plumbing Systems</b>	<b>136,600 sf</b>	<b>3.74 /sf</b>	<b>510,209</b>
<b>D20 Plumbing</b>	<b>136,600 sf</b>	<b>15.88 /sf</b>	<b>2,169,333</b>
<b>D30 Heating, Ventilating, and Air Conditioning (HVAC)</b>			
<b>D3010 Energy Supply</b>	<b>136,600 sf</b>	<b>12.58 /sf</b>	<b>1,717,944</b>
<b>D3020 HVAC</b>	<b>136,600 sf</b>	<b>1.20 /sf</b>	<b>163,945</b>
<b>D3030 Cooling Generating Systems</b>	<b>136,600 sf</b>	<b>2.85 /sf</b>	<b>389,905</b>
<b>D3040 HVAC Distribution</b>	<b>136,600 sf</b>	<b>22.49 /sf</b>	<b>3,071,474</b>
<b>D3050 Terminal &amp; Package Units</b>	<b>136,600 sf</b>	<b>17.29 /sf</b>	<b>2,361,924</b>
<b>D3060 HVAC Instrumentation &amp; Controls</b>	<b>136,600 sf</b>	<b>5.13 /sf</b>	<b>701,110</b>
<b>D3070 Testing, Adjusting &amp; Balancing</b>	<b>136,600 sf</b>	<b>0.65 /sf</b>	<b>88,790</b>
<b>D3090 Other HVAC Systems &amp; Equipment</b>	<b>136,600 sf</b>	<b>3.68 /sf</b>	<b>502,019</b>
<b>D30 Heating, Ventilating, and Air Conditioning (HVAC)</b>	<b>136,600 sf</b>	<b>65.87 /sf</b>	<b>8,997,111</b>
<b>D40 Fire Protection Systems</b>			



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D4010 Sprinklers</b>	<b>136,600 sf</b>	<b>5.33 /sf</b>	<b>728,025</b>
<b>D4020 Standpipes</b>	<b>136,600 sf</b>	<b>0.14 /sf</b>	<b>19,152</b>
<b>D4030 Fire Protection Specialties</b>	<b>136,600 sf</b>	<b>0.18 /sf</b>	<b>25,195</b>
<b>D4090 Other Fire Protection Systems</b>	<b>136,600 sf</b>	<b>0.22 /sf</b>	<b>29,696</b>
<b>D40 Fire Protection Systems</b>	<b>136,600 sf</b>	<b>5.87 /sf</b>	<b>802,068</b>
<b>D50 Electrical Systems</b>			
<b>D5010 Gear &amp; Distribution</b>	<b>136,600 sf</b>	<b>8.58 /sf</b>	<b>1,171,739</b>
<b>D5020 Lighting &amp; Branch Wiring</b>	<b>136,600 sf</b>	<b>13.91 /sf</b>	<b>1,900,704</b>
<b>D5030 Communications &amp; Security</b>	<b>136,600 sf</b>	<b>13.92 /sf</b>	<b>1,900,774</b>
<b>D5090 Other Electrical Systems</b>	<b>136,600 sf</b>	<b>3.84 /sf</b>	<b>524,242</b>
<b>D50 Electrical Systems</b>	<b>136,600 sf</b>	<b>40.25 /sf</b>	<b>5,497,459</b>
<b>D Services</b>	<b>136,600 sf</b>	<b>129.48 /sf</b>	<b>17,686,421</b>
<b>E Equipment &amp; Furnishings</b>			
<b>E10 Equipment</b>			
<b>E1020 Institutional Equipment</b>	<b>136,600 sf</b>	<b>11.72 /sf</b>	<b>1,600,389</b>
<b>E1090 Other Equipment</b>	<b>136,600 sf</b>	<b>0.17 /sf</b>	<b>23,400</b>
<b>E10 Equipment</b>	<b>136,600 sf</b>	<b>11.89 /sf</b>	<b>1,623,789</b>
<b>E20 Furnishings</b>			
<b>E2010 Fixed Furnishings</b>	<b>136,600 sf</b>	<b>12.80 /sf</b>	<b>1,748,335</b>
<b>E20 Furnishings</b>	<b>136,600 sf</b>	<b>12.80 /sf</b>	<b>1,748,335</b>
<b>E Equipment &amp; Furnishings</b>	<b>136,600 sf</b>	<b>24.69 /sf</b>	<b>3,372,124</b>
<b>F Special Construction &amp; Demolition</b>			
<b>F20 Demolition</b>			
<b>F2010 Building Elements Demolition</b>	<b>136,600 sf</b>	<b>9.30 /sf</b>	<b>1,270,100</b>
<b>F2020 Hazardous Component Abatement</b>	<b>136,600 sf</b>	<b>11.73 /sf</b>	<b>1,602,280</b>
<b>F20 Demolition</b>	<b>136,600 sf</b>	<b>21.03 /sf</b>	<b>2,872,380</b>
<b>F Special Construction &amp; Demolition</b>	<b>136,600 sf</b>	<b>21.03 /sf</b>	<b>2,872,380</b>
<b>G Sitework</b>			
<b>G10 Site Preparation</b>			



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G1010 Site Clearing</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G1020 Site Demolition &amp; Relocations</b>	<b>136,600 sf</b>	<b>0.07 /sf</b>	<b>9,000</b>
<b>G1030 Site Earthwork</b>	<b>136,600 sf</b>	<b>3.01 /sf</b>	<b>411,700</b>
<b>G10 Site Preparation</b>	<b>136,600 sf</b>	<b>3.08 /sf</b>	<b>420,700</b>
<b>G20 Site Improvements</b>			
<b>G2010 Roadways</b>	<b>136,790 sf</b>	<b>/sf</b>	
<b>G2020 Parking Lots</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G2030 Pedestrian Paving</b>	<b>136,600 sf</b>	<b>1.54 /sf</b>	<b>210,305</b>
<b>G2040 Site Development</b>	<b>136,600 sf</b>	<b>7.22 /sf</b>	<b>986,467</b>
<b>G2050 Landscaping</b>	<b>136,600 sf</b>	<b>7.56 /sf</b>	<b>1,032,449</b>
<b>G20 Site Improvements</b>	<b>136,600 sf</b>	<b>16.32 /sf</b>	<b>2,229,221</b>
<b>G30 Site Civil/Mechanical Utilites</b>			
<b>G3010 Water Supply</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G3020 Sanitary Sewer</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G3030 Storm Drainage</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G3060 Fuel Distribution</b>	<b>136,600 sf</b>	<b>/sf</b>	
<b>G40 Site Electrical Utilities</b>			
<b>G4010 Electrical Distribution</b>	<b>136,600 sf</b>	<b>1.11 /sf</b>	<b>150,915</b>
<b>G4020 Site Lighting</b>	<b>136,600 sf</b>	<b>1.93 /sf</b>	<b>264,172</b>
<b>G4030 Site Communications &amp; Security</b>	<b>136,600 sf</b>	<b>0.45 /sf</b>	<b>61,447</b>
<b>G40 Site Electrical Utilities</b>	<b>136,600 sf</b>	<b>3.49 /sf</b>	<b>476,535</b>
<b>G Sitework</b>	<b>136,600 sf</b>	<b>22.89 /sf</b>	<b>3,126,456</b>



**Estimate Totals**

Description	Amount	Totals	Rate	Cost per Unit
<b>Subtotal</b>	<b>55,307,598</b>	<b>55,307,598</b>		<b>404.89 /sf</b>
Design/Estimate Contingency	2,765,380		5.000 %	20.24 /sf
Escalation	871,095		1.500 %	6.38 /sf
<b>Subtotal</b>	<b>3,636,475</b>	<b>58,944,073</b>		<b>431.51 /sf</b>
SDI (Non-Trade Contracts)	360,416		1.400 %	2.64 /sf
Sub Bonds (Trade Contracts)	413,891		1.400 %	3.03 /sf
Contractor's Contingency	1,492,960		2.500 %	10.93 /sf
General Conditions	3,401,447			24.90 /sf
General Requirements	2,652,483		4.500 %	19.42 /sf
<b>Subtotal</b>	<b>8,321,197</b>	<b>67,265,270</b>		<b>492.43 /sf</b>
Builder's Risk Insurance				
General Liability Insurance	668,571			4.89 /sf
Building Permit - NIC				
Performance & Payment Bond				
<b>Subtotal</b>	<b>668,571</b>	<b>67,933,841</b>		<b>497.32 /sf</b>
Fee	1,337,143			9.79 /sf
Amendment #1 - Sitework	10,957,843			80.22 /sf
<b>Total</b>		<b>80,228,827</b>		<b>587.33 /sf</b>



CONSIGLI  
*Est. 1905*



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>A Substructure</b>			
<b>A10 Foundations</b>			
<b>A1010 Standard Foundations</b>			
Lull, laborer for cleanup by Consigli (Concrete)	-1 ls	116,000.00 /ls	(116,000)
Trade support - lull, laborer for cleanup (Concrete)	1 ls	116,000.00 /ls	116,000
Elevator pit	1 ea	15,000.00 /ea	15,000
F3 spread footings	3 cy	1,565.14 /cy	4,695
F4 spread footings	2 cy	1,067.03 /cy	2,134
F5 spread footings	37 cy	868.30 /cy	32,127
F6 spread footings	43 cy	641.06 /cy	27,566
F7 spread footings	38 cy	517.77 /cy	19,675
F8 spread footings	50 cy	483.12 /cy	24,156
F9 spread footings	102 cy	419.45 /cy	42,784
F10 spread footings	33 cy	530.98 /cy	17,522
F11 spread footings	78 cy	463.04 /cy	36,117
F12 spread footings	59 cy	428.05 /cy	25,255
Continuous footings - 3'x12"	175 cy	813.35 /cy	142,336
Continuous footings - 4'x12"	18 cy	920.53 /cy	16,570
Continuous footings - 5'x12" @ Bandshell	8 cy	657.44 /cy	5,260
Foundation walls - 16"	239 cy	1,012.78 /cy	242,054
Foundation walls - 16" @ Bandshell	9 cy	1,012.78 /cy	9,115
Foundation walls - 21"	110 cy	884.47 /cy	97,292
Retaining walls - 16"	61 cy	1,197.62 /cy	73,055
Concrete walls @ Auditorium	185 lf	175.00 /lf	32,375
Piers - 24"x24"	36 cy	1,404.42 /cy	50,559
Grade beam 1	30 cy	1,285.48 /cy	38,564
Grade beam 2	24 cy	1,111.93 /cy	26,686
Foundation wall insulation	6,045 sf	3.00 /sf	18,135
Dampproofing at foundation wall	7,770 sf	3.00 /sf	23,310
Foundation wall waterproofing - membrane w/ drainage board	1,240 sf	9.00 /sf	11,160
Elevator pit waterproofing - cementitious	1 ea	4,500.00 /ea	4,500
Site cuts to site fills	BP#1	/BP#1	
Excavation @ foundations	BP#1	/BP#1	
Fill to subgrade @ building footprint - import (structural fill)	BP#1	/BP#1	
Crushed stone base beneath column & wall footings	BP#1	/BP#1	
Excavate for elevator pits	BP#1	/BP#1	
Dewatering	BP#1	/BP#1	
Additional dewatering - Allowance	BP#1	/BP#1	
Site surcharge/rigid inclusion	BP#1	/BP#1	
Rammed aggregate piers	BP#1	/BP#1	
Rigid inclusions Gym and Auditorium	BP#1	/BP#1	





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>A1010 Standard Foundations</b>	<b>136,600 sf</b>	<b>7.60 /sf</b>	<b>1,038,003</b>
<b>A1030 Lowest Floor Construction</b>			
Slab depressions	1,180 lf	65.00 /lf	76,701
Slab on grade - 5"	66,175 sf	8.12 /sf	537,341
Ramps on grade - premium	660 sf	15.00 /sf	9,900
Steps on grade - premium	130 sf	15.00 /sf	1,950
Power trowel/seal concrete @ Auditorium	2,875 sf	3.00 /sf	8,625
Underslab insulation	66,175 sf	3.00 /sf	198,525
Crushed stone base beneath S.O.G	BP#1	/BP#1	
Fine grade under building	BP#1	/BP#1	
Excavate/backfill utilities under SOG by machine	BP#1	/BP#1	
<b>A1030 Lowest Floor Construction</b>	<b>136,600 sf</b>	<b>6.10 /sf</b>	<b>833,042</b>
<b>A10 Foundations</b>	<b>136,600 sf</b>	<b>13.70 /sf</b>	<b>1,871,045</b>
<b>A Substructure</b>	<b>136,600 sf</b>	<b>13.70 /sf</b>	<b>1,871,045</b>

**B Shell**

**B10 Superstructure**

**B1010 Floor Construction**

Shoring @ Learning Commons	1 ls	50,000.00 /ls	50,000
Place & finish slabs - 3-1/4" on 3" deck @ floor	64,235 sf	8.05 /sf	517,092
Topping slab @ Breakout LGMF floors	1,310 sf	8.05 /sf	10,546
Moment connections @ floor	86 ea	650.00 /ea	55,900
Steel @ floors	439 ton	3,900.00 /ton	1,711,710
Steel hangers - AESS	3 ton	5,800.00 /ton	16,240
Metal floor decking - galvanized (3" 18g)	64,740 sf	4.00 /sf	258,960
Metal floor decking @ Breakout room LGMF floors	1,310 sf	4.00 /sf	5,240
Light gage metal framing @ Breakout floors	1,310 sf	25.00 /sf	32,750
Sprayed fireproofing - steel beams and columns @ floor structure	64,740 sf	2.30 /sf	148,902
Patch Sprayed fireproofing - floor structure	5 days	3,500.00 /days	17,500
Intumescent fireproofing @ Learning Commons - Allowance	1 ls	25,000.00 /ls	25,000

<b>B1010 Floor Construction</b>	<b>136,600 sf</b>	<b>20.86 /sf</b>	<b>2,849,839</b>
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**B1020 Roof Construction**

Place & finish slabs - 2-1/2" on 3" deck @ roof	29,675 sf	7.00 /sf	207,725
Place & finish slabs - 3-1/4" on 3" deck @ roof	7,585 sf	8.05 /sf	61,059
Moment connections @ roof	55 ea	650.00 /ea	35,750
Steel @ screen wall - galvanized	7 ton	4,300.00 /ton	30,530
Steel @ roof	340 ton	3,900.00 /ton	1,325,610



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>B1020 Roof Construction</b>			
Open web joists, bridging	55 ton	3,200.00 /ton	176,000
Metal roof decking - acoustical (3" 18/16g)	7,610 sf	8.00 /sf	60,880
Metal roof decking - galvanized (1-1/2" 20g)	740 sf	3.00 /sf	2,220
Metal roof decking - acoustical (1-1/2" 20g)	8,855 sf	7.00 /sf	61,985
Metal roof decking - galvanized (3" 18g)	45,945 sf	4.00 /sf	183,780
Sprayed fireproofing - steel beams and columns @ roof structure	67,150 sf	2.30 /sf	154,445
Patch Sprayed fireproofing - roof structure	5 days	3,500.00 /days	17,500
<b>B1020 Roof Construction</b>	<b>136,600 sf</b>	<b>16.97 /sf</b>	<b>2,317,484</b>
<b>B10 Superstructure</b>	<b>136,600 sf</b>	<b>37.83 /sf</b>	<b>5,167,324</b>
<b>B20 Exterior Enclosure</b>			
<b>B2010 Exterior Walls</b>			
Exterior staging	39,645 sf	2.50 /sf	99,113
Lull, laborer for cleanup by Consigli (Masonry)	-1 ls	77,000.00 /ls	(77,000)
Lull, laborer for cleanup by Consigli (Waterproofing)	-1 ls	29,000.00 /ls	(29,000)
Lull, laborer for cleanup by Consigli (Siding)	-1 ls	48,000.00 /ls	(48,000)
Trade support - lull, laborer for cleanup (Masonry)	1 ls	77,000.00 /ls	77,000
Trade support - lull, laborer for cleanup (Waterproofing)	1 ls	29,000.00 /ls	29,000
Trade support - lull, laborer for cleanup (Siding)	1 ls	48,000.00 /ls	48,000
Install loose lintels (< 8")	21 ea	150.00 /ea	3,150
4x4x12 iron spot brick veneer, scored	6,255 sf	36.00 /sf	225,180
4x8x8 iron spot brick veneer, scored	6,950 sf	36.00 /sf	250,200
Brick veneer, precast cap @ entry wall per A102A	25 lf	285.00 /lf	7,125
4x4x12 scored ground faced CMU veneer	3,515 sf	27.00 /sf	94,905
4x8x16 scored ground faced CMU veneer	21,345 sf	29.00 /sf	619,005
CMU - 12" exterior wall	15,790 sf	25.00 /sf	394,750
Relieving angles @ brick veneer	1,125 lf	90.00 /lf	101,250
4x4x1/8" galvanized sill angle expansion	285 lf	15.00 /lf	4,275
Loose lintels - Furnish	130 lf	15.00 /lf	1,950
Guardrails - 42" galvanized perforated @ exterior	60 lf	500.00 /lf	30,000
Guardrails - 42" galvanized perforated @ terrace	30 lf	500.00 /lf	15,000
Caulking @ storefront/curtainwall	8,005 lf	4.00 /lf	32,020
Misc. caulking & sealants @ exterior	73,825 sf	0.75 /sf	55,369
Mineral wool insulation at brick veneer	38,060 sf	3.50 /sf	133,210
Air and vapor barrier @ exterior walls	54,960 sf	7.50 /sf	412,200
Air and vapor barrier @ soffits	1,245 sf	7.50 /sf	9,338
Air and vapor barrier @ phenolic fins per A102A, A315	675 sf	7.50 /sf	5,063
Corrugated, perforated metal siding @ screen walls	1,650 sf	45.00 /sf	74,250
Metal panel siding	5,520 sf	45.00 /sf	248,400



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>B2010 Exterior Walls</b>			
Composite metal panel siding	2,665 sf	85.00 /sf	226,525
Phenolic panel siding	8,720 sf	80.00 /sf	697,600
Metal louver	660 sf	85.00 /sf	56,100
Exterior walls - 10" studs, 1/2" sheathing, 5/8" GWB, insulation	42,835 sf	18.50 /sf	792,448
Framing @ phenolic fins per A102A, A315	675 sf	6.00 /sf	4,050
Exterior soffit framing, sheathing, insulation	1,245 sf	18.00 /sf	22,410
Misc. exterior painting	73,825 sf	0.50 /sf	36,913
<b>B2010 Exterior Walls</b>	<b>136,600 sf</b>	<b>34.05 /sf</b>	<b>4,651,796</b>
<b>B2020 Exterior Windows</b>			
Lull, laborer for cleanup by Consigli (Windows)	-1 ls	73,000.00 /ls	(73,000)
Trade support - lull, laborer for cleanup (Windows)	1 ls	73,000.00 /ls	73,000
Window blocking	8,005 lf	10.00 /lf	80,050
Door blocking - exterior	265 lf	10.90 /lf	2,888
Aluminum storefront/windows	13,280 sf	100.00 /sf	1,328,000
Aluminum storefront - School Guard	545 sf	140.00 /sf	76,300
Extruded aluminum perimeter angles	8,005 sf	30.00 /sf	240,150
Graduated glass film	3,675 sf	5.00 /sf	18,375
3M Safety and Security Window Film @ glass walls	3,775 sf	15.00 /sf	56,625
3M Safety and Security Window Film @ doors	67 lvs	450.00 /lvs	30,150
<b>B2020 Exterior Windows</b>	<b>136,600 sf</b>	<b>13.42 /sf</b>	<b>1,832,538</b>
<b>B2030 Exterior Doors</b>			
Install exterior door, HW	14 ea	300.00 /ea	4,200
HM doors - exterior flush	23 lvs	565.00 /lvs	12,995
HM frames - exterior single	5 ea	230.00 /ea	1,150
HM frames - exterior double	9 ea	395.00 /ea	3,555
Overhead coiling door	1 ea	7,500.00 /ea	7,500
Aluminum entrance doors, HW - exterior	7 lvs	6,000.00 /lvs	42,000
Aluminum entrance doors, HW - exterior, School Guard	10 lvs	12,000.00 /lvs	120,000
Hardware sets - exterior door/panic	14 set	1,732.00 /set	24,248
Install HM door frames - exterior single	5 ea	57.50 /ea	288
Install HM door frames - exterior double	9 ea	92.00 /ea	828
Paint HM doors - exterior	23 lvs	90.00 /lvs	2,070
Paint HM frames - exterior, single	5 ea	50.00 /ea	250
Paint HM frames - exterior, double	9 ea	60.00 /ea	540
<b>B2030 Exterior Doors</b>	<b>136,600 sf</b>	<b>1.61 /sf</b>	<b>219,623</b>
<b>B20 Exterior Enclosure</b>	<b>136,600 sf</b>	<b>49.08 /sf</b>	<b>6,703,958</b>



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>B30 Roofing</b>			
<b>B3010 Roof Coverings</b>			
Roof blocking	10,520 lf	25.00 /lf	263,000
Window transitions	8,005 lf	10.00 /lf	80,050
PVC membrane roof w/insulation, underlayment, cover board, vapor barrier	62,685 sf	16.75 /sf	1,049,974
PVC membrane @ walls	2,740 sf	16.75 /sf	45,895
Reinforced walkway pads	714 sf	7.50 /sf	5,355
Terrace pavers	450 sf	35.00 /sf	15,750
Roof accessories	62,685 sf	0.35 /sf	21,940
Metal roof fascia	2,630 lf	35.00 /lf	92,050
Additional flashing, scuppers	62,685 sf	0.75 /sf	47,014
Polycarbonate canopy	435 sf	150.00 /sf	65,250
Metal-framed skylights - gable	3,435 sf	150.00 /sf	515,250
<b>B3010 Roof Coverings</b>	<b>136,600 sf</b>	<b>16.12 /sf</b>	<b>2,201,527</b>
<b>B30 Roofing</b>	<b>136,600 sf</b>	<b>16.12 /sf</b>	<b>2,201,527</b>
<b>B Shell</b>	<b>136,600 sf</b>	<b>103.02 /sf</b>	<b>14,072,809</b>

**C Interiors**

**C10 Interior Construction**

**C1010 Partitions**

Lull, laborer for cleanup by Consigli (Drywall)	-1 ls	188,000.00 /ls	(188,000)
Trade support - lull, laborer for cleanup (Drywall)	1 ls	188,000.00 /ls	188,000
CMU - 12" interior wall	7,515 sf	25.00 /sf	187,875
Light gage metal framing @ Breakout walls	16,820 sf	10.00 /sf	168,200
Misc. metal fabrications	136,600 sf	1.00 /sf	136,600
Seismic clips - 4' OC, each side	270 ea	60.00 /ea	16,200
Steel angles/stantions @ locker guardrail	1,005 lf	150.00 /lf	150,750
Handrail @ steps/ramps	90 lf	295.00 /lf	26,550
Cane rails	120 lf	200.00 /lf	24,000
In-wall blocking	12,265 lf	10.00 /lf	122,650
Miscellaneous rough carpentry - Allowance	136,600 sf	0.50 /sf	68,300
Wood framing/blocking @ locker guardrail per 7/A650	1,005 lf	75.00 /lf	75,375
Caulking & sealants @ interior	136,600 sf	0.90 /sf	122,940
Firestopping @ rated walls	5,115 lf	16.20 /lf	82,863
Miscellaneous firestopping	136,600 sf	0.10 /sf	13,660
Aluminum storefront - interior, School Guard	340 sf	140.00 /sf	47,600
Aluminum windows - interior, School Guard	2 ea	12,000.00 /ea	24,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C1010 Partitions</b>			
Misc. interior glass & glazing	136,600 sf	0.25 /sf	34,150
Glazed partition	5,575 sf	60.00 /sf	334,500
Glazed partition - double acoustic	835 sf	110.00 /sf	91,850
Glazed partition @ sidelights	335 sf	75.00 /sf	25,125
Glass walls @ Breakout	2,745 sf	120.00 /sf	329,400
Glass roof @ Breakout	70 sf	150.00 /sf	10,500
Glazed partition - translucent/etched @ bathrooms	290 sf	135.00 /sf	39,150
Level 5 finish - Allowance	25,000 sf	2.00 /sf	50,000
Interior wall framing - 3-5/8"/4"	100,900 sf	4.50 /sf	454,050
Interior wall framing - 6"	4,415 sf	6.00 /sf	26,490
Interior wall framing - 8"	21,965 sf	8.00 /sf	175,720
Interior wall framing - 10"	555 sf	9.50 /sf	5,273
GWB - 5/8", level 4	214,870 sf	3.25 /sf	698,328
GWB - 5/8", additional layer	94,155 sf	2.75 /sf	258,926
Shaft liner - 1"	2,045 sf	3.25 /sf	6,646
Sound batt insulation	133,845 sf	1.25 /sf	167,306
Half height walls @ Auditorium	400 sf	18.00 /sf	7,200
LGMF framing @ locker guardrail	4,020 sf	4.00 /sf	16,080
GWB - 5/8", level 5 @ locker guardrail	4,020 sf	5.25 /sf	21,105
Curved walls - premium	6,030 sf	5.00 /sf	30,150
Patch GWB	136,600 sf	0.50 /sf	68,300
Operable partitions	955 sf	60.00 /sf	57,300
Operable partitions w/writeable surface on one side	325 sf	80.00 /sf	26,000
Operable partitions w/writeable surface on both sides	1,815 sf	105.00 /sf	190,575
<b>C1010 Partitions</b>	<b>136,600 sf</b>	<b>32.15 /sf</b>	<b>4,391,687</b>
<b>C1020 Interior Doors</b>			
Door blocking - interior	4,960 lf	10.90 /lf	54,060
Install interior door, HW	287 ea	300.00 /ea	86,100
HM doors - interior - flush	55 lvs	280.00 /lvs	15,400
HM frames - interior single	260 ea	280.00 /ea	72,800
HM frames - interior double	27 ea	345.00 /ea	9,315
Wood door - interior flush	259 lvs	350.00 /lvs	90,650
Fire rated wood doors - premium	40 lvs	350.00 /lvs	14,000
Acoustical doors (STC 45) - premium	1 ls	15,000.00 /ls	15,000
Access panels	1 ls	15,000.00 /ls	15,000
Coiling security screen - 4' high, manual	85 sf	70.00 /sf	5,950
Coiling security screen - 8' high, manual	690 sf	70.00 /sf	48,300
Custom security gate @ Learning Commons	2 lvs	6,000.00 /lvs	12,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C1020 Interior Doors</b>			
Aluminum entrance doors, HW - interior	1 lvs	4,500.00 /lvs	4,500
Aluminum entrance doors, HW - interior, School Guard	8 lvs	12,000.00 /lvs	96,000
Hardware sets - standard interior	287 set	916.00 /set	262,892
Automatic operators	2 pair	4,400.00 /pair	8,800
Translucent glass floor @ Breakout	200 sf	300.00 /sf	60,000
Door glazing - full	151 ea	400.00 /ea	60,400
Door glazing - narrow	2 ea	100.00 /ea	200
Install HM door frames - interior single	260 ea	57.50 /ea	14,950
Install HM door frames - interior double	27 ea	92.00 /ea	2,484
Paint HM doors - interior	55 lvs	90.00 /lvs	4,950
Paint HM frames - interior, single	260 ea	50.00 /ea	13,000
Paint HM frames - interior, double	27 ea	60.00 /ea	1,620
<b>C1020 Interior Doors</b>	<b>136,600 sf</b>	<b>7.09 /sf</b>	<b>968,371</b>
<b>C1030 Specialties/Millwork</b>			
Guardrails @ Atrium	485 lf	500.00 /lf	242,500
Pipe @ bathroom partitions per 13/A600	12 ea	1,200.00 /ea	14,400
Wood louvered shades - Rulon panel grille	450 lf	150.00 /lf	67,500
Mirrors - unframed restroom	1,375 sf	35.00 /sf	48,125
Magnetic writeable wall covering	7,400 sf	22.00 /sf	162,800
Interior signage	136,600 sf	0.35 /sf	47,810
Toilet partition	23 ea	1,020.00 /ea	23,460
Toilet partition - handicap	16 ea	1,650.00 /ea	26,400
Urinal screens - wall-hung	15 ea	433.00 /ea	6,495
Cubicle curtains	45 lf	40.00 /lf	1,800
Cubicle curtain track	45 lf	11.50 /lf	518
Corner guards	1 ls	20,000.00 /ls	20,000
Toilet paper dispenser	53 ea	105.17 /ea	5,574
Grab bar	60 ea	141.38 /ea	8,483
Soap dispenser - surface mounted	58 ea	87.64 /ea	5,083
Paper towel dispenser - recessed	30 ea	136.79 /ea	4,104
Framed mirrors	14 ea	171.00 /ea	2,394
Sanitary napkin disposal	45 ea	274.00 /ea	12,330
Shower curtains, hooks & rod	3 ea	125.00 /ea	375
Shower seat	2 ea	668.00 /ea	1,336
Mop rack	3 ea	230.67 /ea	692
Fire extinguisher cabinet - fully recessed	27 ea	350.00 /ea	9,450
Student lockers - phenolic	660 ea	600.00 /ea	396,000
Athletic lockers	80 ea	350.00 /ea	28,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C1030 Specialties/Millwork</b>			
Staff lockers	12 ea	400.00 /ea	4,800
Misc. specialties - Allowance	136,600 sf	0.25 /sf	34,150
SM - Displ. Diffuser/Floor Mnt.	156 ea	1,289.88 /ea	201,221
<b>C1030 Specialties/Millwork</b>	<b>136,600 sf</b>	<b>10.07 /sf</b>	<b>1,375,799</b>
<b>C10 Interior Construction</b>	<b>136,600 sf</b>	<b>49.31 /sf</b>	<b>6,735,857</b>
<b>C20 Stairs</b>			
<b>C2010 Stair Construction</b>			
<i>Ornamental stairs - In Structural Steel</i>	-	-	
Egress stair	5 ft	20,000.00 /ft	100,000
Ornamental stairs - excluding rails	4 ft	60,000.00 /ft	240,000
Guardrails @ Atrium stairs	230 lf	500.00 /lf	115,000
<b>C2010 Stair Construction</b>	<b>136,600 sf</b>	<b>3.33 /sf</b>	<b>455,000</b>
<b>C2020 Stair Finishes</b>			
Place & finish stair treads/landings	5 fts	1,800.00 /fts	9,000
Rubber flooring @ ornamental stairs	765 sf	8.00 /sf	6,120
<b>C2020 Stair Finishes</b>	<b>136,600 sf</b>	<b>0.11 /sf</b>	<b>15,120</b>
<b>C20 Stairs</b>	<b>136,600 sf</b>	<b>3.44 /sf</b>	<b>470,120</b>
<b>C30 Interior Finishes</b>			
<b>C3010 Wall Finishes</b>			
Exterior wall mockup - Masonry, Allowance	1 allw	7,500.00 /allw	7,500
Exterior wall mockup - Steel, Allowance	1 allw	20,000.00 /allw	20,000
Exterior wall mockup - Siding, Allowance	1 allw	10,000.00 /allw	10,000
Exterior wall mockup - Waterproofing, Allowance	1 allw	5,000.00 /allw	5,000
Exterior wall mockup - Roofing, Allowance	1 allw	2,500.00 /allw	2,500
Exterior wall mockup - Windows, Allowance	1 allw	20,000.00 /allw	20,000
Exterior wall mockup - Drywall, Allowance	1 allw	10,000.00 /allw	10,000
Lull, laborer for cleanup by Consigli (Tile)	-1 ls	7,000.00 /ls	(7,000)
Trade support - lull, laborer for cleanup (Tile)	1 ls	7,000.00 /ls	7,000
<i>Brick veneer - interior - N/A</i>	-	-	
Miscellaneous wood base/trim	136,600 sf	0.50 /sf	68,300
P-lam panel	1,440 sf	35.00 /sf	50,400
P-lam panel backsplash	35 sf	35.00 /sf	1,225
MDO bumper rail	3,480 lf	50.00 /lf	174,000
Maple top @ MDO bumper rail	1,660 lf	10.00 /lf	16,600
Wordworkers wall panels - sound reflecting	2,925 sf	80.00 /sf	234,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C3010 Wall Finishes</b>			
P-lam projector enclosure	1 ls	2,500.00 /ls	2,500
Ceramic wall tile	3,725 sf	18.00 /sf	67,050
Quarry tile base	280 lf	20.00 /lf	5,600
Linoleum tile base w/trim	19,465 lf	9.00 /lf	175,185
Rubber base	1,830 lf	3.50 /lf	6,405
Vented base @ Gym	380 lf	8.00 /lf	3,040
Fiberglass reinforced panels (FRP) - wall panels	2,240 sf	8.00 /sf	17,920
Fabric wrapped acoustical panels	15,270 sf	20.00 /sf	305,400
Tectum wall panels	5,225 sf	18.00 /sf	94,050
Mural panorama wall covering	1,485 sf	1.50 /sf	2,228
Paint GWB partitions	227,385 sf	0.80 /sf	181,908
Paint CMU - interior, N/A	-	-	
Epoxy wall paint	13,985 sf	2.30 /sf	32,166
Paint stairs	5 flt	2,000.00 /flt	10,000
Touchup	136,600 sf	0.50 /sf	68,300
<b>C3010 Wall Finishes</b>	<b>136,600 sf</b>	<b>11.65 /sf</b>	<b>1,591,276</b>
<b>C3020 Floor Finishes</b>			
Lull, laborer for cleanup by Consigli (Resilient)	-1 ls	48,000.00 /ls	(48,000)
Trade support - lull, laborer for cleanup (Resilient)	1 ls	48,000.00 /ls	48,000
Wood base	100 lf	25.00 /lf	2,500
Porcelain floor tile	3,420 sf	20.00 /sf	68,400
Quarry floor tile	1,770 sf	20.00 /sf	35,400
Underlayment at 2nd and 3rd floor linoleum	61,265 sf	4.00 /sf	245,060
Moisture mitigation - Excluded	-	-	
Hardwood stage assembly	1,610 sf	25.00 /sf	40,250
Wood athletic flooring	8,570 sf	20.00 /sf	171,400
Linoleum tile	102,050 sf	8.00 /sf	816,400
Epoxy flooring/base	6,325 sf	14.00 /sf	88,550
Carpet @ Auditorium	235 sy	45.00 /sy	10,575
Seal concrete floor	6,720 sf	2.00 /sf	13,440
Entry mats - recessed	435 sf	40.00 /sf	17,400
<b>C3020 Floor Finishes</b>	<b>136,600 sf</b>	<b>11.05 /sf</b>	<b>1,509,375</b>
<b>C3030 Ceiling Finishes</b>			
Dance floor at auditorium - multi-trade	1 ls	75,000.00 /ls	75,000
Lull, laborer for cleanup by Consigli (Finish Carpentry)	-1 ls	72,000.00 /ls	(72,000)
Lull, laborer for cleanup by Consigli (Ceilings)	-1 ls	49,000.00 /ls	(49,000)
Trade support - lull, laborer for cleanup (Finish Carpentry)	1 ls	72,000.00 /ls	72,000





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>C3030 Ceiling Finishes</b>			
Trade support - lull, laborer for cleanup (Ceilings)	1 ls	49,000.00 /ls	49,000
P-lam panel on Z-clips @ Breakout	325 sf	45.00 /sf	14,625
P-lam panel ceiling	850 sf	40.00 /sf	34,000
Suspended P-lam clouds @ Auditorium	121 ea	2,000.00 /ea	242,000
Gypsum board ceilings	27,620 sf	12.00 /sf	331,440
Gypsum board ceilings - 1 hr	655 sf	15.00 /sf	9,825
Stucco soffit	1,245 sf	8.95 /sf	11,143
Gypsum board soffits	30,490 sf	20.00 /sf	609,800
Gypsum board soffits @ Learning Commons	6,225 sf	20.00 /sf	124,500
Gypsum board soffits @ Skylights	1,570 sf	20.00 /sf	31,400
A1 - Armstrong Ultima #1911, random running bond pattern	20,155 sf	6.00 /sf	120,930
A1 - Armstrong Ultima #1911 @ Learning Commons	10,925 sf	8.00 /sf	87,400
A2 - Armstrong Calla #2824	18,115 sf	8.00 /sf	144,920
A3 - USG Geometrix 3 Dimensional	810 sf	35.00 /sf	28,350
A4 - Armstrong Healthzone Ultima	1,735 sf	7.00 /sf	12,145
Paint GWB ceilings	27,620 sf	1.00 /sf	27,620
Paint GWB soffits	38,285 sf	1.00 /sf	38,285
Paint exposed ceilings	37,570 sf	1.50 /sf	56,355
<b>C3030 Ceiling Finishes</b>	<b>136,600 sf</b>	<b>14.64 /sf</b>	<b>1,999,738</b>
<b>C30 Interior Finishes</b>	<b>136,600 sf</b>	<b>37.34 /sf</b>	<b>5,100,389</b>
<b>C Interiors</b>	<b>136,600 sf</b>	<b>90.09 /sf</b>	<b>12,306,366</b>

**D Services**

**D10 Conveying Systems**

**D1010 Elevators & Lifts**

Elevator pit ladders	1 ea	450.00 /ea	450
Passenger elevators - cab, equipment	1 ls	40,000.00 /ls	40,000
Passenger elevators - stops	4 stop	45,000.00 /stop	180,000

**D1010 Elevators & Lifts** **136,600 sf** **1.61 /sf** **220,450**

**D10 Conveying Systems** **136,600 sf** **1.61 /sf** **220,450**

**D20 Plumbing**

**D2010 Plumbing**

Lull, laborer for cleanup by Consigli (Plumbing)	-1 ls	83,000.00 /ls	(83,000)
Trade support - lull, laborer for cleanup (Plumbing)	1 ls	83,000.00 /ls	83,000
Water closet/wall mnt./carrier/flush valve P-1	23 ea	1,265.42 /ea	29,105
Water closet/wall mnt./carrier/flush valve/ADA P-1A	31 ea	1,299.42 /ea	40,282
Urinal/wall mnt./carrier/flush valve P-2	15 ea	1,140.35 /ea	17,105



60% Construction Document Estimate

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D2010 Plumbing</b>			
Urinal/wall mnt./carrier/flush valve/ADA P-2A	7 ea	1,175.35 /ea	8,227
Lavatory/lay-in/std 1-lever faucet/ADA P3-A	14 ea	517.44 /ea	7,244
Lavatory/undermount/std 1-lever faucet P-3	50 ea	501.44 /ea	25,072
Lavatory/wall hung/std 1-lever faucet/carrier/ADA P-3A	17 ea	1,083.05 /ea	18,412
Mixing valve/single lav. (Leonard #170)	93 ea	328.84 /ea	30,582
Sink/lay-in/1-bowl 22"x19"/std faucet/ADA P-8,P-8A	7 ea	1,065.75 /ea	7,460
Sink/lay-in/1-bowl 20"x22"/sensor faucet/ADA Art P-9, P-9A	4 ea	1,303.82 /ea	5,215
Sink/lay-in/1-bowl 20"x22"/sensor faucet/ADA	1 ea	1,303.82 /ea	1,304
Sink/acid waste/std 2-lever wrist blade faucet/st. steel P-7	42 ea	2,545.42 /ea	106,908
- Solids interceptors (Art Room sinks)	4 ea	521.14 /ea	2,085
Mop sink/floor mnt - 24"x24" P-5	5 ea	1,261.51 /ea	6,308
Shower stall/std valve & access./6'x3' gelcoat/ADA P-6	4 ea	3,854.17 /ea	15,417
Emergency eye wash station/mixing valve/sink mount with drench P-10A	42 ea	1,034.21 /ea	43,437
Emergency shower/eye wash sta./mixing valve/cabinet mount P-10	3 ea	3,265.35 /ea	9,796
Water cooler/remote condenser/bi-level/ADA	11 ea	10,436.84 /ea	114,805
- Plumbing fixtures offload & distribution	276 ea	103.07 /ea	28,447
- Plumbing fixtures rough-in	276 ea	128.07 /ea	35,347
<b>D2010 Plumbing</b>	<b>136,600 sf</b>	<b>4.05 /sf</b>	<b>552,558</b>
<b>D2020 Domestic Water Distribution</b>			
Insulation/copper pipe/fiberglass	9,635 lf	7.67 /lf	73,925
Water meter w/remote readout - 4"	1 ea	2,285.75 /ea	2,286
Water sub-meter - 1"	1 ea	275.84 /ea	276
Water sub-meter - 2"	1 ea	492.30 /ea	492
Backflow preventer/RPZ-BFP - 4"	1 ea	1,960.75 /ea	1,961
Backflow preventer/boiler make-up - 1"	1 ea	201.54 /ea	202
Backflow preventer/irrigation - 1"	1 ea	201.54 /ea	202
Backflow preventer/Tempered - 1"	1 ea	201.54 /ea	202
Backflow preventer/Non Potable - 1" Sci Class 2214, 1110	3 ea	201.54 /ea	605
Recirculation pump/bronze - avg. size Tempered	1 ea	684.14 /ea	684
Recirculation pump/bronze - avg. size Non Potable	1 ea	684.14 /ea	684
Recirculation pump/bronze/20 gpm - 1/6 hp (Grundfos Magna)	1 ea	1,406.14 /ea	1,406
Expansion tank/ASME/ non-potable - 3.2 gal (B&G #PTA-12)	1 ea	1,062.61 /ea	1,063
Expansion tank/ASME/potable - 34.5 gal (B&G #PTA-80V)	1 ea	1,940.14 /ea	1,940
TMV - 1/2"x3/4" - 10 gpm (Leonard #TM-15-E)	2 ea	677.14 /ea	1,354
TMV - 3/4"x3/4" - 37 gpm (Leonard #TM-30-E) Non Potable	1 ea	785.14 /ea	785
TMV/Digital Mixing Valve	1 ea	20,824.56 /ea	20,825
TMV/master/hi-lo temp. Kitchen	1 ea	2,759.21 /ea	2,759



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D2020 Domestic Water Distribution</b>			
Hose bibbs w/vac. breaker - interior	17 ea	202.30 /ea	3,439
Trap primers/electronic - 6 outlet (PPP #PT-6)	6 ea	1,294.14 /ea	7,765
Shock absorbers/12 - 33 fixture units (Shoktrol #200)	10 ea	269.77 /ea	2,698
Domestic water entrance UG/ductile iron - 6"	25 lf	408.13 /lf	10,203
Domestic water AG/type "L" copper/press fit ftgs. - avg. size	1,620 lf	21.19 /lf	34,322
Domestic water AG/type "L" copper/press fit ftgs. - avg. size Non Potable	1,650 lf	21.19 /lf	34,957
Domestic water AG/type "L" copper/press fit ftgs. - avg. size Non Potable	520 lf	21.19 /lf	11,017
Domestic water AG/type "L" copper/press fit - 1/2" TP	1,400 lf	11.83 /lf	16,565
Domestic water AG/type "L" copper/press fit - 1/2"	1,460 lf	11.83 /lf	17,274
Domestic water AG/type "L" copper/press fit - 3/4"	450 lf	14.33 /lf	6,446
Tempered water AG/type "L" copper/press fit - 1"	210 lf	18.70 /lf	3,926
Domestic water AG/type "L" copper/press fit - 1"	660 lf	18.70 /lf	12,339
Tempered water AG/type "L" copper/press fit - 1-1/4"	40 lf	22.94 /lf	918
Domestic water AG/type "L" copper/press fit - 1-1/4"	800 lf	22.94 /lf	18,352
Domestic water AG/type "L" copper/press fit - 1-1/2"	260 lf	27.56 /lf	7,165
Domestic water AG/type "L" copper/press fit - 2"	260 lf	37.42 /lf	9,729
Domestic water AG/type "L" copper/press fit - 2-1/2"	320 lf	60.35 /lf	19,311
Domestic water AG/type "L" copper/press fit - 3"	85 lf	77.19 /lf	6,562
Domestic water AG/type "L" copper/press fit - 4"	150 lf	105.45 /lf	15,818
- Domestic water piping accessories	9,885 lf	2.52 /lf	24,942
- Domestic water clean & test piping system	1 ls	3,324.56 /ls	3,325
- Domestic water valve tags & charts	250 ea	8.18 /ea	2,046
- Domestic water pipe & equipment I.D.	9,885 lf	1.38 /lf	13,625
DWH/gas fired/500 mbh - (Lochinvar #AWN-501PM)	2 ea	18,618.42 /ea	37,237
HWH/electric - 40 gals (Brad. Wht. #M-2-40S10DS) Non Potable	2 ea	1,229.28 /ea	2,459
HWH/electric - 40 gals (Brad. Wht. #M-2-40S10DS) Tempered	1 ea	754.21 /ea	754
DHW Storage Tank 318 Gallon	1 ea	7,018.42 /ea	7,018
<b>D2020 Domestic Water Distribution</b>	<b>136,600 sf</b>	<b>3.24 /sf</b>	<b>441,859</b>
<b>D2030 Sanitary Waste</b>			
Floor drain - 3" (#ZN415-6B)	12 ea	294.07 /ea	3,529
Floor drain - 4" (#ZN415-8B)	14 ea	353.07 /ea	4,943
Floor drain/heavy duty - 3" (#ZN415-6B-HD)	6 ea	394.07 /ea	2,364
- Funnel add - 3" (#Z326)	6 ea	119.77 /ea	719
Floor sink/12x12 - 3" (#Z1900)	8 ea	2,555.37 /ea	20,443
Floor cleanouts - 4" (#ZN1400)	50 ea	291.07 /ea	14,554
Grease interceptor Labor to Connect to Exterior Site Structure	1 ea	824.56 /ea	825



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D2030 Sanitary Waste</b>			
Grease interceptor/interior Kitchen	1 ea	4,291.56 /ea	4,292
Oil interceptor - Labor to Connect to site structure	1 ea	1,236.84 /ea	1,237
Elevator sump pump/oil minder	1 ea	3,812.28 /ea	3,812
Backwater valve - 4" (#Z1095)	1 ea	738.14 /ea	738
Backwater valve - 6" (#Z1095)	2 ea	973.14 /ea	1,946
Sanitary UG/cast iron single hub pipe & ftgs. - 2"	200 lf	31.98 /lf	6,396
Sanitary UG/cast iron single hub pipe & ftgs. - 3"	531 lf	36.45 /lf	19,354
Sanitary UG/cast iron single hub pipe & ftgs. - 4"	550 lf	44.78 /lf	24,628
Sanitary UG/cast iron single hub pipe & ftgs. - 5"	330 lf	64.12 /lf	21,159
Sanitary UG/cast iron single hub pipe & ftgs. - 6"	50 lf	74.82 /lf	3,741
Sanitary AG/cast iron no hub pipe & ftgs. - avg. size Fixture runouts	2,500 lf	47.33 /lf	118,315
Sanitary AG/cast iron no hub pipe & ftgs. - avg. size FD runouts	280 lf	47.33 /lf	13,251
Sanitary AG/cast iron no hub pipe & ftgs. - 1-1/2"	40 lf	33.82 /lf	1,353
Sanitary AG/cast iron no hub pipe & ftgs. - 2"	1,220 lf	34.83 /lf	42,487
Sanitary AG/cast iron no hub pipe & ftgs. - 3"	605 lf	44.36 /lf	26,835
Sanitary AG/cast iron no hub pipe & ftgs. - 4"	270 lf	52.52 /lf	14,181
Sanitary AG/cast iron no hub pipe & ftgs. - 5"	10 lf	68.67 /lf	687
Grease waste UG/cast iron single hub pipe & ftgs. - 2"	40 lf	31.98 /lf	1,279
Grease waste UG/cast iron single hub pipe & ftgs. - 3"	152 lf	36.45 /lf	5,540
Grease waste UG/cast iron single hub pipe & ftgs. - 4"	325 lf	44.78 /lf	14,553
- Sanitary waste & vent piping accessories	7,103 lf	1.77 /lf	12,595
<b>D2030 Sanitary Waste</b>	<b>136,600 sf</b>	<b>2.82 /sf</b>	<b>385,755</b>
<b>D2040 Rain Water Drainage</b>			
Insulation/rainleader pipe/fiberglass/PVC jacketed/horiz. & vert.	1,868 lf	12.93 /lf	24,153
Roof drain/#ZC100 - 4"	7 ea	298.07 /ea	2,086
Roof drain/#ZC100 - 5"	3 ea	387.84 /ea	1,164
Roof drain/#ZC100 - 6"	9 ea	387.84 /ea	3,491
Roof drain/#ZC100 - 8"	2 ea	477.61 /ea	955
Rainleader UG/cast iron single hub pipe & ftgs. - 4"	60 lf	44.77 /lf	2,686
Rainleader UG/cast iron single hub pipe & ftgs. - 6"	140 lf	74.82 /lf	10,475
Rainleader UG/cast iron single hub pipe & ftgs. - 8"	150 lf	103.25 /lf	15,488
Rainleader UG/cast iron single hub pipe & ftgs. - 10"	203 lf	141.04 /lf	28,631
Rainleader UG/cast iron single hub pipe & ftgs. - 12"	20 lf	186.99 /lf	3,740
Rainleader AG/cast iron no hub pipe & ftgs. - 4"	275 lf	52.53 /lf	14,445
Rainleader AG/cast iron no hub pipe & ftgs. - 6"	700 lf	81.16 /lf	56,810
Perimeter PVC foundation drain piping below grade	1,600 lf	45.00 /lf	72,000
<i>Perforated PVC piping below slab - assume 25' oc</i>	0 lf	/lf	
Rainleader AG/cast iron no hub pipe & ftgs. - 8"	320 lf	133.84 /lf	42,828



## 60% Construction Document Estimate

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D2040 Rain Water Drainage</b>	<b>136,600 sf</b>	<b>2.04 /sf</b>	<b>278,952</b>
<b>D2090 Other Plumbing Systems</b>			
General requirements (management, permits, as-builts, coring, fire stopping)	136,600 sf	1.50 /sf	204,900
3D/BIM coordination	1 ls	4,000.00 /ls	4,000
Commissioning support/day	5 day	824.56 /day	4,123
Emergency gas shut off/cabinet w/1-1/2" solenoid & UL ball valve Kitchen	1 ea	6,293.42 /ea	6,293
- Remote panic buttons	2 ea	328.07 /ea	656
Gas piping/sch 40 black steel CW t&c - 1-1/4"	240 lf	34.14 /lf	8,194
Gas piping/sch 40 black steel CW t&c - 2"	20 lf	42.28 /lf	846
Gas piping/sch 40 blk stl ERW weld - 2-1/2"	165 lf	45.73 /lf	7,546
Gas piping/sch 40 blk stl ERW weld - 4"	40 lf	75.73 /lf	3,029
Gas piping/sch 40 blk stl ERW weld - 6"	100 lf	124.72 /lf	12,472
- Gas piping accessories	565 lf	2.52 /lf	1,426
Gas piping to (1) lab	1 ls	30,003.26 /ls	30,003
Acid neut. system w/monitor/200 gal. tank	1 ea	42,442.98 /ea	42,443
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 2"	77 lf	45.56 /lf	3,508
Acid waste UG/sch 40 polypropylene fuseal & ftgs. - 4"	423 lf	68.91 /lf	29,149
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 2"	944 lf	51.44 /lf	48,562
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 3"	275 lf	65.67 /lf	18,060
Acid waste AG/sch 40 polypropylene fuseal & ftgs. - 4"	616 lf	77.44 /lf	47,701
- Acid waste & vent piping accessories	2,335 lf	2.02 /lf	4,724
Wiring for Acid Waste Systems	1 ls	12,000.00 /ls	12,000
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 lf	122.47 /lf	980
<b>D2090 Other Plumbing Systems</b>	<b>136,600 sf</b>	<b>3.74 /sf</b>	<b>510,209</b>
<b>D20 Plumbing</b>	<b>136,600 sf</b>	<b>15.88 /sf</b>	<b>2,169,333</b>
<b>D30 Heating, Ventilating, and Air Conditioning (HVAC)</b>			
<b>D3010 Energy Supply</b>			
Insulation/pipe/copper	11,020 lf	7.09 /lf	78,155
Insulation/pipe/weld	9,500 lf	10.10 /lf	95,956
Hot water s&r/type "L" copper solder - avg. size (take-off)	8,770 lf	24.48 /lf	214,723
Hot water s&r/type "L" copper solder - avg. size (misc.)	1,000 lf	24.48 /lf	24,484
Hot water s&r/sch 40 blk stl ERW weld - avg. size (shown)	7,450 lf	94.20 /lf	701,762
Glycol Chilled water s&r/type "L" copper solder - avg. size (misc.)	1,250 lf	24.48 /lf	30,605
Glycol Chilled water s&r/sch 40 blk stl ERW weld - avg. size	2,050 lf	94.20 /lf	193,102



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D3010 Energy Supply</b>			
- Hydronic piping accessories	20,520 lf	2.53 /lf	51,955
Pump/base mount/790 gpm (HW)	2 ea	8,167.68 /ea	16,335
Chilled water pump house (pumps & accesories, enclosure, piping, unit heater	1 ls	226,667.68 /ls	226,668
- Suction diffusers	2 ea	1,460.58 /ea	2,921
- Flex connector/HVAC pumps	4 ea	556.35 /ea	2,225
- Triple duty valves	2 ea	2,312.69 /ea	4,625
Air separators	1 ea	4,333.84 /ea	4,334
Expansion tanks/ASME	2 ea	7,167.68 /ea	14,335
Chemical treatment (lump sum)	1 ls	20,000.00 /ls	20,000
Glycol feed/50 gal. tank w/pump (Neptune #G-50-1)	2 ea	5,272.92 /ea	10,546
- Glycol solution/40% propylene	1,000 gal	25.21 /gal	25,212
<b>D3010 Energy Supply</b>	<b>136,600 sf</b>	<b>12.58 /sf</b>	<b>1,717,944</b>
<b>D3020 HVAC</b>			
Boiler/HW/gas/high eff. cond. - 4,000 mbh Riello AR 4000	2 ea	57,501.52 /ea	115,003
Boiler circulator pump	2 ea	1,708.46 /ea	3,417
Boiler combustion air/galvanized steel 10"	200 lf	38.00 /lf	7,600
Flue piping/double wall/stainless steel 10"	205 lf	185.00 /lf	37,925
<b>D3020 HVAC</b>	<b>136,600 sf</b>	<b>1.20 /sf</b>	<b>163,945</b>
<b>D3030 Cooling Generating Systems</b>			
Chiller/air cooled - 370 tons	1 ea	381,153.80 /ea	381,154
Buffer tanks/Lochinvar - 300 gals.	1 ea	8,750.76 /ea	8,751
<b>D3030 Cooling Generating Systems</b>	<b>136,600 sf</b>	<b>2.85 /sf</b>	<b>389,905</b>
<b>D3040 HVAC Distribution</b>			
Lull, laborer for cleanup by Consigli (HVAC)	-1 ls	343,000.00 /ls	(343,000)
Trade support - lull, laborer for cleanup (HVAC)	1 ls	343,000.00 /ls	343,000
Insulation/ductwork/blanket wrap	86,800 sf	3.55 /sf	307,790
Insulation/ductwork/weatherproof exposed	4,500 sf	12.89 /sf	57,986
Sheetmetal & accessories/galvanized	105,500 lb	11.62 /lb	1,226,174
Sheetmetal & accessories/galvanized (perforated)	1,500 lb	15.25 /lb	22,875
Sheetmetal & accessories/galvanized (smoke exhasut)	6,500 lb	11.62 /lb	75,546
Sheetmetal & accessories/galv./rectangular double wall w/ liner	29,250 lb	19.65 /lb	574,763
Sheetmetal & accessories/galv./flat oval/double wall w/ liner	5,850 lb	25.86 /lb	151,283
Sheetmetal & accessories/stainless steel (dishwasher)	500 lb	23.46 /lb	11,729
Sheetmetal & accessories/welded stainless steel (kitchen exhaust)	500 lb	31.35 /lb	15,676
Sheetmetal & accessories/welded stainless steel (kiln exhaust)	500 lb	31.35 /lb	15,676


**60% Construction Document Estimate**

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D3040 HVAC Distribution</b>			
Sheetmetal & accessories/welded stainless steel (3 - fume hoods)	4,500 lb	31.35 /lb	141,085
Sheetmetal & accessories/fabric/1-row cable (DuctSox) - 24"	305 lf	81.29 /lf	24,792
Duct enclosure (roof)	1 ea	5,424.10 /ea	5,424
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" pipe - linear foot DWH	200 lf	97.98 /lf	19,595
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 ea	122.47 /ea	980
SM - Flue piping/double wall/stainless steel/6" fittings - each DWH	8 ea	122.47 /ea	980
SM - Diffusers, registers & grilles	136,600 sf	0.20 /sf	27,320
SM - Linear slot diffusers (supply)	6 ea	465.39 /ea	2,792
SM - Linear slot diffusers (exhaust)	925 lf	73.74 /lf	68,205
SM - Combination fire/smoke dampers/louver type/UL	20 ea	776.53 /ea	15,530
SM - Motorized damper	14 ea	1,107.92 /ea	15,511
SM - Smoke detectors/duct mount	40 ea	747.47 /ea	29,899
SM - Sound attenuators/in-line/std. gauge	239,000 cfm	0.55 /cfm	131,341
SM - Kitchen exhaust hood/st. steel/install only (by KES)	1 ea	2,339.28 /ea	2,339
SM - Dishwasher exhaust hood/st. steel/install only (by KES)	1 ea	1,559.52 /ea	1,560
SEF-1-4	4 ea	17,339.28 /ea	69,357
EF-3&4 /centrifugal downblast/roof/direct drive - 500 cfm	2 ea	1,069.31 /ea	2,139
EF-1&2 /centrifugal downblast/roof/direct drive - 2,500 cfm	2 ea	1,771.24 /ea	3,542
KEF-1/centrifugal upblast/roof - 4,170 cfm	1 ea	2,734.82 /ea	2,735
FEF-1,2,3 Lab exhaust fan/roof - 1,200 cfm	3 ea	9,084.82 /ea	27,254
<b>D3040 HVAC Distribution</b>	<b>136,600 sf</b>	<b>22.49 /sf</b>	<b>3,071,474</b>
<b>D3050 Terminal &amp; Package Units</b>			
Variable air volume box - small	12 ea	533.15 /ea	6,398
Variable air volume box - medium	143 ea	668.62 /ea	95,612
RTU-1-4 Classrooms (service enclosure, HW&CHW coils, energy recovery)	88,000 cfm	14.90 /cfm	1,311,200
RTU-5 Gymnasium (service enclosure, HW&CHW coils, energy recovery)	15,000 cfm	14.90 /cfm	223,500
RTU-6 Auditorium (service enclosure, HW&CHW coils, energy recovery)	12,000 cfm	14.90 /cfm	178,800
RTU-7 Lockers (service enclosure, HW&CHW coils, energy recovery)	2,000 cfm	14.90 /cfm	29,800
MAU-1 Make-up air unit/HW&CHW coil/	5,000 cfm	7.00 /cfm	35,000
Mini-split AC system/1-zone/wall mnt./cool only - 12 mbh	1 ea	2,072.92 /ea	2,073
Mini-split AC system/1-zone/wall mnt./cool only - 18 mbh	5 ea	2,681.66 /ea	13,408
Mini-split AC system/1-zone/wall mnt./cool only - 24 mbh	2 ea	2,956.03 /ea	5,912



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D3050 Terminal &amp; Package Units</b>			
Mini-split refrigeration line set/6-12 mbh - 50'	2 ea	584.88 /ea	1,170
Mini-split refrigeration line set/15-18 mbh - 50'	10 ea	599.88 /ea	5,999
Mini-split refrigeration line set/24-30 mbh - 50'	4 ea	614.88 /ea	2,460
Mini-split condensate drains/type"L" copper	450 lf	19.43 /lf	8,744
A/C cond. pump	8 ea	253.74 /ea	2,030
INS - Mini-split Insulation/copper pipe	450 lf	6.87 /lf	3,090
ATC - Mini-split condensing units (w/factory controls)	8 ea	879.76 /ea	7,038
ATC - Mini-split indoor units (w/factory controls)	8 ea	587.35 /ea	4,699
Terminal equipment	136,600 sf	0.10 /sf	13,660
Radiant ceiling panels/24" wide - ft.	2,400 lf	115.00 /lf	276,000
Finned-tube radiation pedestal mount (gym)	295 lf	194.24 /lf	57,301
Finned-tube radiation pedestal mount	20 lf	250.00 /lf	5,000
Cabinet unit heater/hot water/wall mount/recessed - avg. size	4 ea	1,573.62 /ea	6,294
Cabinet unit heater/hot water/ceiling mount - avg. size	10 ea	1,749.51 /ea	17,495
Unit heater/hot water/horiz./propeller - avg. size	2 ea	1,092.41 /ea	2,185
Misc. VFD's	1 ls	35,000.00 /ls	35,000
VFD w/keypad/disconnect/bypass/NEMA 1 - HW pumps	2 ea	6,028.47 /ea	12,057
VFD w/keypad/disconnect/bypass/NEMA 1 - CHW pumps w/ pump house	ea	/ea	
<b>D3050 Terminal &amp; Package Units</b>	<b>136,600 sf</b>	<b>17.29 /sf</b>	<b>2,361,924</b>
<b>D3060 HVAC Instrumentation &amp; Controls</b>			
Automatic temperature controls/cost per sq. ft.	136,790 sf	0.25 /sf	34,198
ATC - Air valve/hood exhaust/HEX	3 ea	3,971.15 /ea	11,913
ATC - Air valves/no coil control wiring - 3 pts./fume hood	9 pnt	413.75 /pnt	3,724
ATC - RTU's/custom - 30 pts.	240 pnt	1,233.84 /pnt	296,122
ATC - MUA units - 10 pts.	10 pnt	719.04 /pnt	7,190
ATC - Exhaust fans - 3 pts.	15 pnt	673.27 /pnt	10,099
ATC - Life safty fans - 8 pts.	32 pnt	725.38 /pnt	23,212
ATC - Lab exhaust fans - 5 pts./fan	15 pnt	725.38 /pnt	10,881
ATC - Boilers/modular - 10 pts.	20 pnt	777.50 /pnt	15,550
ATC - Pumps - 4 pts.	16 pnt	725.38 /pnt	11,606
ATC - VFD wiring for pumps (remote mount) - 4 pts.	16 pnt	723.27 /pnt	11,572
ATC - Circulators - 2 pts.	4 pnt	462.69 /pnt	1,851
ATC - Chillers - 15 pts.	15 pnt	1,233.84 /pnt	18,508
ATC - VAV box/no coil (ATC furn./factory install controls) 2 pts.	310 pnt	386.63 /pnt	119,856
ATC - Fintube radiation zones - 2 pts.	20 pnt	361.63 /pnt	7,233
ATC - Cabinet unit heaters - 3 pts.	42 pnt	361.63 /pnt	15,189
ATC - Unit heaters - 3 pts.	6 pnt	361.63 /pnt	2,170
ATC - Radiant ceiling panel zones - 2 pts.	246 pnt	361.63 /pnt	88,962





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D3060 HVAC Instrumentation &amp; Controls</b>			
ATC - Plumbing points - 10 pts.	10 pnt	563.82 /pnt	5,638
ATC - Elctrical points - 10 pts.	10 pnt	563.82 /pnt	5,638
<b>D3060 HVAC Instrumentation &amp; Controls</b>	<b>136,600 sf</b>	<b>5.13 /sf</b>	<b>701,110</b>
<b>D3070 Testing, Adjusting &amp; Balancing</b>			
Testing & balancing/cost per sq. ft.	136,600 sf	0.65 /sf	88,790
<b>D3070 Testing, Adjusting &amp; Balancing</b>	<b>136,600 sf</b>	<b>0.65 /sf</b>	<b>88,790</b>
<b>D3090 Other HVAC Systems &amp; Equipment</b>			
General requirements (sq. ft.)	136,600 sf	1.15 /sf	157,090
3D/BIM coordination	1 ls	150,000.00 /ls	150,000
Commissioning support/lump sum	1 ls	15,000.00 /ls	15,000
Dust collection system	1 ea	17,339.28 /ea	17,339
Kiln exhaust	1 ls	5,500.00 /ls	5,500
Equipment hoisting/rigging/setting/start-up	136,600 sf	1.15 /sf	157,090
<b>D3090 Other HVAC Systems &amp; Equipment</b>	<b>136,600 sf</b>	<b>3.68 /sf</b>	<b>502,019</b>
<b>D30 Heating, Ventilating, and Air Conditioning (HVAC)</b>	<b>136,600 sf</b>	<b>65.87 /sf</b>	<b>8,997,111</b>
<b>D40 Fire Protection Systems</b>			
<b>D4010 Sprinklers</b>			
Lull, laborer for cleanup by Consigli (Fire Protection)	-1 ls	31,000.00 /ls	(31,000)
Trade support - lull, laborer for cleanup (Fire Protection)	1 ls	31,000.00 /ls	31,000
General requirements (management/design, permits, as-builts, coring, fire stopping)	136,600 sf	0.50 /sf	68,300
Fire dept. inlet connection - 2-1/2" polished brass - 3-way	1 ea	1,863.93 /ea	1,864
Fire main - sch 40 black steel piping w/ fittings - 6"	40 lf	99.13 /lf	3,965
Sprinkler head - wet - recessed pendant	1,000 ea	125.42 /ea	125,415
Sprinkler head - wet - pendant or upright	150 ea	77.23 /ea	11,584
Sprinkler head - wet - sidewall	100 ea	87.51 /ea	8,751
Sprinkler head - wet - sidewall Window Sprinklers	40 ea	87.51 /ea	3,500
Sprinkler head - quick response pendant or upright	60 ea	87.23 /ea	5,234
Sprinkler branch piping black steel sch. 40 w/ fittings (avg. size)	8,000 lf	27.77 /lf	222,136
Sprinkler main piping black steel sch. 40 w/ fittings 3" Drain	150 lf	49.66 /lf	7,449
Sprinkler main piping black steel sch. 10 w/ fittings (avg. size)	4,570 lf	43.18 /lf	197,352
Sprinkler main piping black steel sch. 10 w/ fittings 4"	500 lf	39.66 /lf	19,831
Sprinkler main piping black steel sch. 10 w/ fittings 6"	110 lf	69.39 /lf	7,633
Wet alarm valve - 6"	1 ea	3,656.71 /ea	3,657
Double check valve (BFP) assembly - 6"	1 ea	8,244.56 /ea	8,245
Pressure reducing valve - 4"	1 ea	2,416.71 /ea	2,417



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Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D4010 Sprinklers</b>			
Butterfly valve - 4"	1 ea	1,301.71 /ea	1,302
Butterfly valve - 4"	2 ea	1,301.71 /ea	2,603
Butterfly valve - 6"	2 ea	1,566.71 /ea	3,133
Zone flow control valve- 2-1/2"	7 ea	1,868.93 /ea	13,082
Waterflow switch	9 ea	421.96 /ea	3,798
Tamper switch	12 ea	356.96 /ea	4,284
Test port/test header	1 ea	381.96 /ea	382
Water motor gong bell	1 ea	628.36 /ea	628
Sprinkler head - dry - sidewall	16 ea	92.51 /ea	1,480
<b>D4010 Sprinklers</b>	<b>136,600 sf</b>	<b>5.33 /sf</b>	<b>728,025</b>
<b>D4020 Standpipes</b>			
Standpipe - sch 40 black steel piping w/ fittings - 4"	30 lf	59.68 /lf	1,790
Standpipe - sch 40 black steel piping w/ fittings - 6"	105 lf	99.13 /lf	10,409
Drain riser - sch 40 black steel piping w/ fittings - 3"	140 lf	49.66 /lf	6,953
<b>D4020 Standpipes</b>	<b>136,600 sf</b>	<b>0.14 /sf</b>	<b>19,152</b>
<b>D4030 Fire Protection Specialties</b>			
Fire hose cabinet - stainless steel - surface	10 ea	2,519.50 /ea	25,195
<b>D4030 Fire Protection Specialties</b>	<b>136,600 sf</b>	<b>0.18 /sf</b>	<b>25,195</b>
<b>D4090 Other Fire Protection Systems</b>			
Hydraulic calculation & shop drawings	1 ls	4,000.00 /ls	4,000
Coordination & management	1 ls	16,000.00 /ls	16,000
Seismic restraints	1 sf	0.08 /sf	0
Permits & fees	1 ls	1,500.00 /ls	1,500
Off-load & distribution	136,600 sf	0.06 /sf	8,196
<b>D4090 Other Fire Protection Systems</b>	<b>136,600 sf</b>	<b>0.22 /sf</b>	<b>29,696</b>
<b>D40 Fire Protection Systems</b>	<b>136,600 sf</b>	<b>5.87 /sf</b>	<b>802,068</b>
<b>D50 Electrical Systems</b>			
<b>D5010 Gear &amp; Distribution</b>			
M.I. Cable - 4-1/c #3/0 - 200A [generator]	135 lf	135.07 /lf	18,234
Quick term kit - #3/0 4-1/c	2 ea	781.53 /ea	1,563
Brass plate (per hole)	2 ea	97.98 /ea	196
Feeder (PVC/CU) - 600A [generator]	135 lf	87.23 /lf	11,776
Furnish & install Fairplay Electronic scoreboards & shot clocks - allowance (l.s.)	1 allw	40,000.00 /allw	40,000
Gas solenoid shutdown wiring	1 allw	12,500.00 /allw	12,500



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Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5010 Gear &amp; Distribution</b>			
Kitchen shutdown EPO wiring	1 allw	10,000.00 /allw	10,000
Feeder (MC) - 20A (kitchen equipment - x39)	1,950 lf	6.12 /lf	11,927
Feeder (MC) - 40A (kitchen equipment - x1)	125 lf	6.24 /lf	780
1" PVC - 30A (3#8 & #10G)	250 lf	10.95 /lf	2,738
Feeder (MC) - 50A (kitchen equipment - x1)	100 lf	8.71 /lf	871
Feeder (MC) - 60A (kitchen equipment - x1)	100 lf	11.22 /lf	1,122
Power (120V) for ATC panels	8 ea	490.33 /ea	3,923
Service switch: 20A, 120V, NEMA-1 [dish washer]	1 ea	114.29 /ea	114
Fused Disco: 20AF, 240V/3P, NEMA-1 [kitchen equipment]	5 ea	330.78 /ea	1,654
Fused Disco: 20AF, 240V/1P, NEMA-1 [kitchen equipment]	1 ea	330.78 /ea	331
Fused Disco's: 600V/3P, NEMA-1 [riser diagram]	10 ea	1,555.38 /ea	15,554
Non-Fused Disco: 20A, 240V/3P, NEMA-1 [kitchen equipment]	9 ea	311.32 /ea	2,802
Wire gymnasium equipment SMC control stations (furnsihed by others)	8 ea	1,125.78 /ea	9,006
Wire elevator controller and elevator motor (40HP)	2 ea	873.70 /ea	1,747
Wire misc. motors	13 ea	501.85 /ea	6,524
Acid neutralizer - circuit / service switch / connection	1 ea	671.80 /ea	672
Kitchen equipment final connections (includes flexible whip)	20 ea	76.98 /ea	1,540
Mount & wire VFD's (furnished by Div. 23)	10 ea	687.82 /ea	6,878
MAU (5000cfm) - circuit / disconnect (3R) / connection	1 ea	2,663.20 /ea	2,663
RTU's - circuit / disconnect (3R) / connection (small)	4 ea	5,038.50 /ea	20,154
RTU's - circuit / disconnect (3R) / connection (large)	4 ea	7,457.75 /ea	29,831
VAV's - circuit / disconnect / connection	76 ea	398.89 /ea	30,315
Mini-split systems (indoor/outdoor) - circuits / disconnects (3R) / connections	8 ea	3,431.10 /ea	27,449
Chiller (370T) - circuit / disconnect (3R) / connection	1 ea	27,474.00 /ea	27,474
Smoke exhaust fans - circuit / disconnect / connection (100A)	4 ea	2,553.20 /ea	10,213
Kitchen exhaust fan - circuit / disconnect / connection	1 ea	1,511.60 /ea	1,512
Kiln exhaust system - circuit / disconnect / connection	1 ea	3,579.00 /ea	3,579
Dust collectors - circuit / disconnect / connection (40A)	2 ea	2,893.20 /ea	5,786
Fume hood exhaust fans - circuit / disconnect / connection	3 ea	1,291.60 /ea	3,875
Exhaust fans - circuit / disconnect / connection	4 ea	1,291.60 /ea	5,166
Power to electronic trap primers - 120V	10 ea	106.58 /ea	1,066
Power to sensor faucets / flush valves - 120V	142 ea	45.79 /ea	6,502
Hot water pumps - circuit / disconnect / connection	2 ea	1,780.69 /ea	3,561
Boilers - circuit / disconnect / connection	2 ea	1,281.60 /ea	2,563
Chilled water pump - circuit / disconnect / connection	1 ea	1,780.69 /ea	1,781
Hot water heaters - circuit / service switch / connection	4 ea	629.29 /ea	2,517
Cabinet unit heaters - circuit / service switch / connection	14 ea	923.70 /ea	12,932
Unit heaters - circuit / service switch / connection	2 ea	923.70 /ea	1,847



**60% Construction Document Estimate**

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5010 Gear &amp; Distribution</b>			
Elevator sump pump - circuit / disconnect (3R) / connection	1 ea	1,326.92 /ea	1,327
Duplex gas booster pumps - circuit / disconnect (3R) / connection	2 ea	1,326.92 /ea	2,654
Recirculation pumps - circuit / disconnect / connection	2 ea	1,061.58 /ea	2,123
Glycol feed pumps - circuit / disconnect / connection	2 ea	1,061.58 /ea	2,123
Boiler circulation pumps - circuit / disconnect / connection	2 ea	1,061.58 /ea	2,123
VAV's - circuit / disconnect / connection	155 ea	317.90 /ea	49,275
Circuit breaker - 20A, 277/480V (panel)	BP#1	/BP#1	
Switchboard: 3000A bus, 2500A rated MCB (100%), 480/277V, 3PH, 65kAIC	1 ea	48,316.00 /ea	48,316
Panelboard - 100A, 42-circuit	15 ea	2,713.20 /ea	40,698
Panelboard - 225A, 42-circuit	10 ea	3,639.00 /ea	36,390
Panelboard - 225A, 84-circuit	9 ea	4,615.60 /ea	41,540
Panelboard - 400A, 42-circuit	3 ea	5,782.70 /ea	17,348
Panelboard - 400A, 84-circuit	1 ea	11,409.00 /ea	11,409
Distribution panel - 600A	2 ea	10,518.00 /ea	21,036
Distribution panel - 800A	2 ea	13,237.50 /ea	26,475
Transformer: floor/wall - 45kVA, 480V:208V	2 ea	2,895.30 /ea	5,791
K-13 Transformer: floor/wall - 150kVA, 480V:208V	1 ea	9,717.70 /ea	9,718
K-13 Transformer: floor - 225kVA, 480V:208V	1 ea	12,168.50 /ea	12,169
Engineered Services - Training (Manufacturer)	1 ea	4,431.60 /ea	4,432
Engineered Services - Start-Up Assistance (Manufacturer)	1 ea	3,743.70 /ea	3,744
Empty conduit (PVC) - (2) 2.5" [future P.V.]	880 lf	37.28 /lf	32,806
Feeder (EMT/CU) - 20A [BMS to utility meter]	200 lf	7.90 /lf	1,581
Feeder (EMT/CU) - 20A [EP1A to Elevator Controller]	125 lf	7.90 /lf	988
Feeder (EMT/CU) - 60A [MSB to SPD]	50 lf	15.63 /lf	781
Feeder (EMT/CU) - 60A [2DP1A to SPD]	50 lf	15.63 /lf	781
Feeder (EMT/CU) - 60A [2DP1B to SPD]	50 lf	15.63 /lf	781
Feeder (EMT/CU) - 60A [2DP1C to SPD]	50 lf	15.63 /lf	781
Feeder (EMT/CU) - 60A [4DP1B to SPD]	50 lf	15.63 /lf	781
Feeder (EMT/CU) - 90A [MSB to KPP1A via T-5]	50 lf	16.98 /lf	849
Feeder (EMT/CU) - 100A [MSB to LP1A]	40 lf	22.06 /lf	883
Feeder (EMT/CU) - 100A [4DP1B to LP1B]	50 lf	22.06 /lf	1,103
Feeder (EMT/CU) - 100A [MSB to LP1C]	200 lf	22.06 /lf	4,413
Feeder (EMT/CU) - 100A [4DP1B to LP2B]	50 lf	22.06 /lf	1,103
Feeder (EMT/CU) - 100A [MSB to LP2C]	200 lf	22.06 /lf	4,413
Feeder (EMT/CU) - 100A [4DP1B to LP3B]	150 lf	22.06 /lf	3,309
Feeder (EMT/CU) - 100A [MSB to LP3C]	200 lf	22.06 /lf	4,413
Feeder (EMT/CU) - 100A [MSB to LP1D]	150 lf	22.06 /lf	3,309
Feeder (EMT/CU) - 100A [EHP1A to Elevator Controller]	125 lf	22.06 /lf	2,758
Feeder (EMT/CU) - 100A [TEP1A to TEP2B]	200 lf	22.06 /lf	4,413



## 60% Construction Document Estimate

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5010 Gear &amp; Distribution</b>			
Feeder (EMT/CU) - 100A [TEP1A to TEP2C]	200 lf	22.06 /lf	4,413
Feeder (EMT/CU) - 100A [TEP1A to TEP1D]	200 lf	22.06 /lf	4,413
Feeder (EMT/CU) - 100A [TEP1A to UPS]	50 lf	22.06 /lf	1,103
Feeder (EMT/CU) - 100A [2DP1A to MP1A]	50 lf	22.06 /lf	1,103
Feeder (EMT/CU) - 125A [UPS to EP1A]	150 lf	22.33 /lf	3,349
Feeder (EMT/CU) - 150A [2DP1B to MP1B]	50 lf	28.54 /lf	1,427
Feeder (EMT/CU) - 150A [2DP1C to MSB]	200 lf	28.54 /lf	5,707
Feeder (EMT/CU) - 150A [2DP1C to MP3C]	250 lf	28.54 /lf	7,134
Feeder (EMT/CU) - 150A [2DP1B to PP2B]	60 lf	28.54 /lf	1,712
Feeder (EMT/CU) - 150A [2DP1C to PP2C]	100 lf	28.54 /lf	2,854
Feeder (EMT/CU) - 150A [2DP1B to PP1B]	50 lf	28.54 /lf	1,427
Feeder (EMT/CU) - 150A [2DP1C to MP1C]	40 lf	28.54 /lf	1,141
Feeder (EMT/CU) - 150A [2DP1C to PP2C]	125 lf	28.54 /lf	3,567
Feeder (EMT/CU) - 150A [2DP1C to PP3C]	150 lf	28.54 /lf	4,280
Feeder (EMT/CU) - 150A [4DP1C to PP3B]	165 lf	28.54 /lf	4,709
Feeder (EMT/CU) - 150A [2DP1C to PP1C]	50 lf	28.54 /lf	1,427
Feeder (EMT/CU) - 150A [2DP1A to PP1D]	100 lf	28.54 /lf	2,854
Feeder (EMT/CU) - 200A [MSB to ATS-LS]	100 lf	34.18 /lf	3,418
Feeder (EMT/CU) - 200A [ATS-LS to ELP1A]	40 lf	34.18 /lf	1,367
Feeder (EMT/CU) - 200A [2DP1A to PP1A]	50 lf	34.18 /lf	1,709
Feeder (EMT/CU) - 225A [MSB to Dimming Rack HDP]	250 lf	49.70 /lf	12,425
Feeder (EMT/CU) - 225A [2DP1A to Dimming Rack SDP]	200 lf	49.70 /lf	9,940
Feeder (EMT/CU) - 225A [ATS-OS to EHP3C]	250 lf	49.70 /lf	12,425
Feeder (EMT/CU) - 225A [MP3C to PP3C]	45 lf	49.70 /lf	2,236
Feeder (EMT/CU) - 225A [2DP1B to MP3B]	100 lf	49.70 /lf	4,970
Feeder (EMT/CU) - 400A [MSB to MHP1A]	50 lf	78.46 /lf	3,923
Feeder (EMT/CU) - 400A [MSB to MHP3C]	200 lf	78.46 /lf	15,692
Feeder (EMT/CU) - 400A [EHP1C to EHP1A]	100 lf	78.46 /lf	7,846
Feeder (EMT/CU) - 600A [ATS-OS to EHP1A]	200 lf	115.86 /lf	23,172
Feeder (EMT/CU) - 600A [MSB to ATS-OS]	75 lf	115.86 /lf	8,690
Feeder (EMT/CU) - 600A [MSB to 4DP1B]	200 lf	115.86 /lf	23,172
Feeder (EMT/CU) - 600A [MSB to 2DP1A]	70 lf	115.86 /lf	8,110
Feeder (EMT/CU) - 800A [MSB to 2DP1C]	125 lf	147.64 /lf	18,455
Feeder (EMT/CU) - 800A [MSB to 4DP1C]	200 lf	147.64 /lf	29,528
Empty conduit (EMT) - 3/4" [utility meter to switchboard]	75 lf	6.68 /lf	501
Feeder (MC) - 80A [45kVA]	60 lf	8.45 /lf	507
Feeder (MC) - 150A [45kVA]	120 lf	19.68 /lf	2,361
Feeder (MC) - 300A [150kVA]	30 lf	56.27 /lf	1,688
Feeder (MC) - 400A [225kVA]	30 lf	63.11 /lf	1,893



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5010 Gear &amp; Distribution</b>			
Feeder (MC) - 500A [150kVA]	30 lf	89.19 /lf	2,676
Feeder (MC) - 800A [225kVA]	30 lf	118.77 /lf	3,563
M.I. Cable - 4-1/c #6 [ELP1B to ELP3A]	150 lf	38.45 /lf	5,768
M.I. Cable - 4-1/c #3 [EP1A to EP3C]	150 lf	69.60 /lf	10,439
M.I. Cable - 4-1/c #3 [ELP1A to EDP]	125 lf	69.60 /lf	8,700
M.I. Cable - 4-1/c #3 [ELP1A to EP1C]	125 lf	69.60 /lf	8,700
M.I. Cable - 4-1/c #2 [EPL1A to ELP1B]	150 lf	77.24 /lf	11,585
Quick term kit - #6 4-1/c	2 ea	382.94 /ea	766
Quick term kit - #3 4-1/c	6 ea	755.54 /ea	4,533
Quick term kit - #2 4-1/c	2 ea	781.53 /ea	1,563
Brass plate (per hole)	10 ea	97.98 /ea	980
Provisions for future P.V. (conduits, breakers, disconnects, grounding & bonding)	136,600 sf	0.50 /sf	68,300
ATS-LS: 200A, 277/480V, no iso by-pass - open trans	1 ea	6,752.90 /ea	6,753
ATS-OS: 600A, 277/480V, no iso by-pass - open trans w/ (4) N.O. & (4) N.C. contacts	1 ea	12,969.00 /ea	12,969
Power junction w/feed (EMT) - 20A	1 ea	179.74 /ea	180
Empty conduit (EMT) - 3/4"	2,000 lf	2.72 /lf	5,440
<b>D5010 Gear &amp; Distribution</b>	<b>136,600 sf</b>	<b>8.58 /sf</b>	<b>1,171,739</b>
<b>D5020 Lighting &amp; Branch Wiring</b>			
Lull, laborer for cleanup by Consigli (Electrical)	-1 ls	230,000.00 /ls	(230,000)
Trade support - lull, laborer for cleanup (Electrical)	1 ls	230,000.00 /ls	230,000
On-site programming & startup (manufacturer)	1 ls	4,163.20 /ls	4,163
Single pole switch (120/277V)	9 ea	69.19 /ea	623
Key op switch (120/277V)	2 ea	77.06 /ea	154
Ceiling PIR occupancy sensor (24VDC)	314 ea	263.01 /ea	82,584
Occupancy sensor power pack (120V)	314 ea	82.04 /ea	25,760
Wall dimmer switch (0-10V)	220 ea	139.40 /ea	30,669
Photocells (daylight harvesting)	82 ea	281.98 /ea	23,122
Universal dimming room controller, 1-channel	50 ea	571.15 /ea	28,557
Plug load controllers (20A/120V)	50 ea	320.00 /ea	16,000
Emergency lighting transfer (bypass relay) - non-dimming	30 ea	251.93 /ea	7,558
Astronomical time clock	1 ea	978.69 /ea	979
<i>Time clock - 7 day digital w/ battery backup (Intermatic ET1100)</i>	<i>BP#1</i>	<i>/BP#1</i>	
<i>Dimming rack HDP - in Theater Equipment</i>	-	-	
<i>Dimming rack SDP - in Theater Equipment</i>	-	-	
Rough in for Theater Lighting - Allowance	1 allw	10,000.00 /allw	10,000
Power for Theater Lighting - Allowance	1 allw	30,000.00 /allw	30,000
Sub lighting control panels	3 ea	2,547.40 /ea	7,642



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5020 Lighting &amp; Branch Wiring</b>			
Master lighting control panel	1 ea	4,663.20 /ea	4,663
Energy control unit	1 ea	2,295.30 /ea	2,295
System server unit	1 ea	1,400.80 /ea	1,401
Network Ethernet switch	1 ea	2,415.80 /ea	2,416
MC Cable (12/2) - 20A	13,950 lf	3.67 /lf	51,200
MC Cable (12/3) - 20A	5,000 lf	4.12 /lf	20,578
PVC (12/2) - 20A	BP#1	/BP#1	
EMT (12/2) - 20A	2,500 lf	7.13 /lf	17,824
RJ45 Cable, 25LF (plenum-rated)	396 ea	76.70 /ea	30,373
RJ45 Cable, 50LF (plenum rated)	220 ea	118.13 /ea	25,989
MC Cable (12/2) - 20A	10,190 lf	3.67 /lf	37,400
MC Cable (10/2) - 30A	5,900 lf	4.64 /lf	27,390
MC Cable (10/3) - 30A	1,800 lf	5.17 /lf	9,309
EMT (12/2) - 20A	3,850 lf	7.13 /lf	27,449
PVC (10/2) - 20A	400 lf	7.11 /lf	2,843
EMT (10/2) - 30A	BP#1	/BP#1	
Duplex receptacle - 20A - tamper resistant	458 ea	83.62 /ea	38,298
Duplex receptacle - 20A - switched with IO module	9 ea	72.12 /ea	649
Simplex receptacle - 20A [scoreboard control]	2 ea	74.66 /ea	149
Duplex receptacle - 20A - GFCI	153 ea	98.34 /ea	15,046
Duplex receptacle - 20A - GFCI - W.P.	23 ea	137.51 /ea	3,163
Duplex receptacle - 20A [kitchen equipment] - circuitry in Equipment Wiring]	26 ea	72.12 /ea	1,875
Duplex receptacle - 20A [A/V]	5 ea	72.12 /ea	361
Exterior pedestal receptacle, GFI type, Wayne Tyler, Inc. #CB-BOX	5 ea	1,374.74 /ea	6,874
Quadruplex receptacle - 20A	283 ea	99.77 /ea	28,235
Quadruplex receptacle - 20A - switched with IO module	8 ea	99.77 /ea	798
Specialty receptacle - 20A - L5-20R	11 ea	107.45 /ea	1,182
Specialty receptacle - 20A - L14-20R	2 ea	111.52 /ea	223
Specialty receptacle - 30A - L5-30R	16 ea	118.83 /ea	1,901
Quadruplex receptacle - 20A - GFCI	2 ea	152.27 /ea	305
Power for motorized shades - allowance (ea.)	25 allw	424.28 /allw	10,607
Floor boxes and poke-thru's - allowance (ea.)	50 allw	1,229.00 /allw	61,450
Hardwired A/C junction (MC) - 20A [A/V]	2 ea	339.29 /ea	679
Power junction w/feed (MC) - 20A [water coolers/bottle fillers]	15 ea	235.33 /ea	3,530
Power junction w/feed (MC) - 20A	20 ea	235.33 /ea	4,707
Trash compactor feed & connection	2 ea	2,387.15 /ea	4,774
Overhead door power & connection	3 ea	1,301.60 /ea	3,905
Dock leveler feed & connection	1 ea	3,758.40 /ea	3,758
Emergency power offs (EPO)	5 ea	313.95 /ea	1,570



60% Construction Document Estimate

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5020 Lighting &amp; Branch Wiring</b>			
Wiremold receptacles - G4 - allowance (ea.)	600 allw	33.03 /allw	19,819
G4000 dual-channel wiremold - 24" spacing - allowance (l.f.)	1,000 allw	67.43 /allw	67,433
Exterior junction boxes: 8"x8"x4", NEMA-3R	BP#1	/BP#1	
LB fitting	BP#1	/BP#1	
LK24: 2'x2' Lay-In Fixture	24 ea	364.96 /ea	8,759
LR2 (emerg): 2' Linear 2" aperature recessed luminaire	153 ea	217.37 /ea	33,258
LR2: 2' Linear 2" aperature recessed luminaire	565 ea	217.37 /ea	122,814
G4: Cree 4' Linear rugged low profile 360 deg adj floor type luminaire	80 ea	288.16 /ea	23,053
LS4: 4' utility fixtre with frosted acrylic diffuser	18 ea	338.16 /ea	6,087
LS4 (emerg): 4' utility fixture with frosted acrylic diffuser	11 ea	338.16 /ea	3,720
LS8: 8' utility fixtre with frosted acrylic diffuser	8 ea	479.94 /ea	3,840
LS4A (emerg): 4' utility fixtre with frosted acrylic diffuser	12 ea	479.94 /ea	5,759
LS4A: 4' utility fixtre with frosted acrylic diffuser	12 ea	479.94 /ea	5,759
LP8 (emerg): Axis 8' LED Fixture	6 ea	639.94 /ea	3,840
LS8 (emerg): 8' utility fixtre with frosted acrylic diffuser	9 ea	479.94 /ea	4,319
LS4B: 4' utility fixtre with frosted acrylic diffuser	15 ea	295.86 /ea	4,438
PC3: 6" down light fixture with dead-front gasketed trim	189 ea	378.16 /ea	71,472
LRD5 (emerg): 60" dia recessed luminaire	12 ea	1,032.90 /ea	12,395
PC1: 4" down light fixture, 0-10V dimming capable	65 ea	373.16 /ea	24,255
RC1: 6" Downlight fixture	50 ea	439.54 /ea	21,977
RC1 (emerg): 6" Downlight fixture	18 ea	439.54 /ea	7,912
LS2 (emerg): 2' utility fixture	2 ea	655.14 /ea	1,310
LSV4: 4' Linear utility fixture with prismatic polcarbonate lens	4 ea	1,037.90 /ea	4,152
RC2: 4" down light fixture, 0-10V dimming	53 ea	348.56 /ea	18,473
LR4: 4' linear 2" aperature recessed luminaire w/ frosted lens	5 ea	376.45 /ea	1,882
LWS (emerg): 4" aperature LED wall wash fixture	705 lf	202.98 /lf	143,097
LC3 - Linear cove Xeleum lighting	1,992 lf	136.99 /lf	272,879
LR4 (emerg): 4' linear 2" aperature recessed luminaire w/ frosted lens	3 ea	376.45 /ea	1,129
RSH: 6" down light fixture with dead-front gasketed trim	1 ea	519.54 /ea	520
LC2: linear cove fixture with frosted diffuser	84 lf	178.23 /lf	14,971
PC2: 6" down light fixture with dead-front gasketed trim	20 ea	378.16 /ea	7,563
SP1: LED flood light, 0-10V dimming	82 ea	602.90 /ea	49,438
UC: Vode Task lighting	18 lf	176.98 /lf	3,186
Exit Sign, Ceiling Mounted, Double Sided	36 ea	313.16 /ea	11,274
Exit Sign, Ceiling Mounted, Single Sided	16 ea	313.16 /ea	5,011
Exit Sign, Wall Mounted	18 ea	313.16 /ea	5,637
Exit Sign, Ceiling Mounted, Single Sided - Handicap	2 ea	413.16 /ea	826
Emergency battery units, dual-head (supplemental)	20 ea	343.16 /ea	6,863





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5020 Lighting &amp; Branch Wiring</b>			
MC Cable (12/2) - 20A (concealed branch)	15,090 lf	3.67 /lf	55,384
MC Cable (10/2) - 20A (concealed homeruns)	9,500 lf	4.64 /lf	44,102
EMT (12/2) - 20A (exposed branch)	4,200 lf	7.13 /lf	29,944
EMT (10/2) - 20A (exposed homeruns)	4,150 lf	8.58 /lf	35,603
SL4: LED egress / perimeter lighting fixture	20 ea	458.36 /ea	9,167
MC Cable (12/2) - 20A	600 lf	3.67 /lf	2,202
MC Cable (12/2) - 20A	600 lf	3.67 /lf	2,202
<b>D5020 Lighting &amp; Branch Wiring</b>	<b>136,600 sf</b>	<b>13.91 /sf</b>	<b>1,900,704</b>
<b>D5030 Communications &amp; Security</b>			
Externally mounted SPD's	5 ea	3,331.60 /ea	16,658
Tel/data J-hook system (plenum)	136,600 sf	0.20 /sf	27,320
Backbox (2-gang) w/ 1" EMT above ceiling	344 ea	112.75 /ea	38,785
Cable tray - 18" wide extruded aluminum	500 lf	80.37 /lf	40,185
Empty conduit (EMT) - 2"	700 lf	11.90 /lf	8,330
Copper ground bar w/isolators - 2"x1/4"	4 ea	297.90 /ea	1,192
Conduit sleeve w/ fireproofing - 4"	20 ea	213.95 /ea	4,279
Data outlet - (1) CAT-6A cable	23 ea	281.74 /ea	6,480
Data outlet - (2) CAT-6A cables	112 ea	495.91 /ea	55,542
Tel/data outlet - (3) CAT-6A cables	89 ea	694.49 /ea	61,810
Floor box tel/data outlet - (3) CAT-6A cables	2 ea	694.50 /ea	1,389
Data outlet - (4) CAT-6A cables	1 ea	893.07 /ea	893
Voice outlet - (1) CAT-6A cable (WAP's by Owner)	59 ea	280.53 /ea	16,551
Wireless access point - (1) CAT-6A cable (WAP's by Owner)	150 ea	280.53 /ea	42,080
TVE - Video outlet	58 ea	892.29 /ea	51,753
TVC - Video outlet	2 ea	892.29 /ea	1,785
Double gang. two jbox, with (4) 1" C	55 ea	513.49 /ea	28,242
FO - 12 strand SM	<i>BP#1</i>	<i>/BP#1</i>	
FO - 12 strand SM	1,500 lf	5.61 /lf	8,412
FO - 12 strand SM	250 lf	5.61 /lf	1,402
FO - 12 strand MM	1,500 lf	7.55 /lf	11,321
4-Post Full Height Rack	10 ea	1,244.86 /ea	12,449
Vertical cable wire manager	20 ea	334.14 /ea	6,683
Horizontal cable wire manager	10 ea	85.37 /ea	854
Copper patch panel - 96 port	15 ea	1,323.70 /ea	19,856
Fiber optic patch panel - 24 port	6 ea	606.45 /ea	3,639
Fiber enclosure (rack mtd.)	6 ea	516.87 /ea	3,101
Network switch - 24 port	2 ea	5,734.30 /ea	11,469
S1: wall mounted loudspeaker - 1 gang metal box w/ cover	3 ea	242.90 /ea	729



## 60% Construction Document Estimate

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5030 Communications &amp; Security</b>			
S2: ceiling loud speaker - custom backbox	120 ea	327.90 /ea	39,348
S3: ceiling loud speaker - custom backbox	16 ea	327.90 /ea	5,246
S4: ceiling loud speaker - 4" SQ metal box w/ cover	2 ea	268.02 /ea	536
S5: Wall loud speaker - 1-gang deep metal box w/ cover	8 ea	260.93 /ea	2,087
D1: display back box, Chief PAC-526	54 ea	395.05 /ea	21,333
F1: floor box, FSR FL-500P-6 floor box w/ finished cover	1 ea	499.55 /ea	500
V1: wall mounted video projector - 1 gang metal box w/ cover	1 ea	190.93 /ea	191
VP: ceiling mounted video projector, FSR CB-22P	1 ea	1,223.70 /ea	1,224
R1: receptacle panel - 2 gang metal box w/ cover	44 ea	257.90 /ea	11,348
R2: receptacle panel - 2 gang metal box w/ cover	2 ea	257.90 /ea	516
R3: receptacle panel - 2 gang metal box w/ cover	4 ea	257.90 /ea	1,032
R4: receptacle panel - 08"x08"x4" NEMA-1 enclosure w/ oversized flush	1 ea	401.85 /ea	402
R5: receptacle panel - 2 gang metal box w/ cover	2 ea	257.90 /ea	516
R6: receptacle panel - 12"x12"x4" NEMA-1 enclosure w/ oversized flush	2 ea	431.85 /ea	864
BP: wall mounted button panel - 1 gang metal box w/ cover	44 ea	235.93 /ea	10,381
J1: junction box - type 1 - 12"x12"x4" NEMA-1 enclosure w/ oversized flush	2 ea	769.75 /ea	1,540
J2: junction box - type 2 - 18"x18"x4" NEMA-1 enclosure w/ oversized flush	1 ea	898.70 /ea	899
A1: Wall mounted antenna - 1 gang deep metal box w/ cover	4 ea	169.94 /ea	680
A2: Wall mounted antenna - 1 gang deep metal box w/ cover	2 ea	169.94 /ea	340
A3: Ceiling mounted antenna - 4" SQ metal box w/ cover	2 ea	147.15 /ea	294
A4: Ceiling mounted antenna - 4" SQ metal box w/ cover	1 ea	147.15 /ea	147
PS: Production communication speaker station - 4 gang deep metal box w/ cov	5 ea	409.88 /ea	2,049
PC: Production communication - 1 gang deep metal box w/ cover	1 ea	142.96 /ea	143
T1: Wall mounted touch panel - 3 gang metal box w/ cover	2 ea	264.94 /ea	530
VC: Wall mounted audio volume control - 1 gang deep metal box	2 ea	142.97 /ea	286
MC: Motor controller - 4" SQ metal box w/ cover	2 ea	91.98 /ea	184
C1: Wall mounted camera - 2 gang deep metal box w/ cover	1 ea	205.93 /ea	206
A/V Equipment Rack	2 ea	1,065.80 /ea	2,132
M1: Ceiling mounted microphone - 1 gang deep metal box w/ cover	1 ea	142.96 /ea	143
Mass notification - allowance (l.s.)	1 allw	19,000.00 /allw	19,000
Intercom sub-stations	4 ea	1,073.70 /ea	4,295
Intercom master-stations	2 ea	3,539.50 /ea	7,079
Speaker - ceiling mouted	268 ea	461.12 /ea	123,581
Speaker - wall mounted	20 ea	1,015.80 /ea	20,316
Volume control	27 ea	152.57 /ea	4,119



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5030 Communications &amp; Security</b>			
Power supply (80) units - speakers 24V DC	4 ea	2,831.60 /ea	11,326
PA console	1 ea	15,161.60 /ea	15,162
PA equipment power connection - 120V	1 ea	272.90 /ea	273
AM/FM/CD/DVD tuner	1 ea	738.73 /ea	739
Speaker system testing	1 ea	2,113.51 /ea	2,114
Two way communication call box (recessed)	20 ea	425.40 /ea	8,508
Power supply w/battery back up	1 ea	911.85 /ea	912
Two way communication base station (28 zone)	1 ea	3,181.20 /ea	3,181
Tel/data outlet - (1) CAT-6A cable	20 ea	140.87 /ea	2,817
Tel/data outlet - (2) CAT-6A cables	1 ea	247.96 /ea	248
System testing	1 ea	540.80 /ea	541
Clock, wall mounted - 12" round	85 ea	373.36 /ea	31,735
Master clock w/ roof mounted antenna	1 ea	4,019.75 /ea	4,020
Wireless clock repeater	1 ea	688.36 /ea	688
Wireless clock transceiver	1 ea	688.36 /ea	688
Program unit	1 ea	1,055.30 /ea	1,055
Speaker baffle, clock back box	74 ea	215.73 /ea	15,964
Wire guard	20 ea	61.38 /ea	1,228
Clock wiring (EMT)	700 lf	7.48 /lf	5,237
Clock wiring (RS-485 plenum)	500 lf	3.28 /lf	1,639
System testing	1 ls	35.99 /ls	36
Card readers	17 ea	1,794.62 /ea	30,508
Card readers - W.P.	2 ea	2,519.75 /ea	5,040
Electro-magnetic lock	4 ea	699.90 /ea	2,800
Request to exit motion sensor	22 ea	342.90 /ea	7,544
Electric strike	36 ea	426.06 /ea	15,338
Thermal disconnecting means	18 ea	454.88 /ea	8,188
24V power supply	18 ea	313.95 /ea	5,651
Junction box - 6"x6"x4"	18 ea	138.95 /ea	2,501
Power transfer hinge	18 ea	401.79 /ea	7,232
Intrusion digital keypads	3 ea	1,047.84 /ea	3,144
Dual tech motion detectors	77 ea	633.83 /ea	48,805
Door contacts	57 ea	495.47 /ea	28,242
Access control panel	1 ea	8,747.40 /ea	8,747
Tie in to lighting control system	1 ea	427.90 /ea	428
Security wiring - cable	6,750 lf	4.05 /lf	27,313
Security wiring (EMT)	1,800 lf	9.07 /lf	16,324
Power junctions - 120V/20A	2 ea	205.53 /ea	411
Connect to CCTV system	1 ea	707.90 /ea	708



**60% Construction Document Estimate**

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5030 Communications &amp; Security</b>			
Proximity cards	250 ea	2.50 /ea	625
Software / licenses, programming, testing, startup (manufacturer)	1 ea	14,158.00 /ea	14,158
CCTV color monitors	2 ea	867.57 /ea	1,735
360-degree multi-sensor interior cameras	29 ea	1,765.80 /ea	51,208
Dome I.P. camera - exterior - fixed	16 ea	2,123.70 /ea	33,979
Dome I.P. camera - interior - fixed	29 ea	1,565.80 /ea	45,408
Camera monitoring station	1 ea	1,415.80 /ea	1,416
Video recorders	2 ea	3,331.60 /ea	6,663
Video switchers	2 ea	1,731.60 /ea	3,463
Camera wiring (EMT)	1,920 lf	9.32 /lf	17,892
Camera wiring - cable	6,960 lf	4.30 /lf	29,903
Power junction - 120V/20A	2 ea	205.53 /ea	411
Software / licenses, programming, testing, startup (manufacturer)	1 ea	14,158.00 /ea	14,158
<i>Temporary fire alarm heat detection coverage / stairwell pull stations / temp notification - N/A</i>	-	-	
Fire alarm impairment plan (NFPA-101)	1 ls	10,000.00 /ls	10,000
Elevator fire alarm interfacing	1 ls	5,000.00 /ls	5,000
Manual pull stations	21 ea	215.03 /ea	4,516
Smoke detectors	64 ea	234.46 /ea	15,005
Smoke detector w/ elevator recall	3 ea	397.10 /ea	1,191
Smoke detectors (for Atrium)	89 ea	234.46 /ea	20,867
Smoke detectors w/ elevator recall (for Atrium)	3 ea	397.09 /ea	1,191
Carbon monoxide detector (w/ monitor module)	5 ea	390.59 /ea	1,953
Heat detector	10 ea	229.03 /ea	2,290
Beam detector (receiver & transmitter)	5 ea	443.48 /ea	2,217
Duct smoke detector (furnish & wire)	40 ea	892.46 /ea	35,698
Remote test switch w/ indicating light	40 ea	207.32 /ea	8,293
Control modules	20 ea	282.72 /ea	5,654
Addressable monitor modules	30 ea	171.10 /ea	5,133
Tamper switch connection (via monitor module)	10 ea	595.81 /ea	5,958
Flow switch connection (via monitor module)	10 ea	429.43 /ea	4,294
Flow switch connection (via monitor module) - for eye wash stations	7 ea	429.43 /ea	3,006
Door hold device (magnetic)	5 ea	413.69 /ea	2,068
Wire motorized dampers (120V)	14 ea	433.49 /ea	6,069
Wire combination fire/smoke damper (120V & SLC)	20 ea	647.34 /ea	12,947
Strobe only	41 ea	186.55 /ea	7,648
Speaker/strobes	203 ea	262.29 /ea	53,245
Speaker/strobe - W.P.	1 ea	329.54 /ea	330
Exterior beacon (weatherproof)	1 ea	413.66 /ea	414



60% Construction Document Estimate

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5030 Communications &amp; Security</b>			
Wire 120V sprinkler bell	1 ea	220.93 /ea	221
Fire alarm transponder panels	6 ea	987.78 /ea	5,927
Fire alarm annunciators w/ microphones	3 ea	2,241.90 /ea	6,726
FACP w/ 60-minute battery backup (Notifier NFS640)	1 ea	7,446.45 /ea	7,446
Masterbox (local energy)	1 ea	4,481.60 /ea	4,482
Key (Knox) box	1 ea	857.90 /ea	858
Smoke control panel	1 ea	20,747.40 /ea	20,747
Generator monitoring control panel	1 ea	608.30 /ea	608
Fire pump/jockey pump connection	1 ea	427.90 /ea	428
Fire alarm graphic maps	3 ea	1,547.40 /ea	4,642
Fire alarm comissioning	1 ea	5,808.00 /ea	5,808
Fire alarm testing (manufacturer)	6 ea	1,423.70 /ea	8,542
Fire alarm system programming	1 ls	11,237.00 /ls	11,237
MC Cable (FA) - #14-4/c (concealed)	9,900 lf	4.17 /lf	41,255
MC Cable (FA) - #16-2/c (concealed)	15,350 lf	3.09 /lf	47,451
EMT (red) - 3/4"C w/ #16-2/c (exposed)	3,500 lf	7.65 /lf	26,780
EMT (red) - 3/4"C w/ #14-4/c (exposed)	1,500 lf	8.45 /lf	12,679
Circuit integrity cabling (CIC)	1,500 lf	19.48 /lf	29,218
BDA system - parts & smarts (dual-frequency)	136,600 sf	0.50 /sf	68,300
BDA system - installation & minor material (dual-frequency)	136,600 sf	0.20 /sf	27,320
Directional couplers	20 ea	1,223.77 /ea	24,475
In-Line connectors	20 ea	264.90 /ea	5,298
Lightning protection units	5 ea	2,122.90 /ea	10,615
<b>D5030 Communications &amp; Security</b>	<b>136,600 sf</b>	<b>13.92 /sf</b>	<b>1,900,774</b>
<b>D5090 Other Electrical Systems</b>			
<i>General requirements</i>	<i>BP#1</i>	<i>/BP#1</i>	
LEED Silver - premium (T.B.D.)	1 ls	10,000.00 /ls	10,000
Temp light stringers & GFCI power	136,600 sf	0.40 /sf	54,640
Temp 480Y/277V electrical service (400A)	3 ea	19,389.60 /ea	58,169
Material handling / project mgmt.	250 mh	103.95 /mh	25,988
3D/BIM coordination	500 mh	103.95 /mh	51,975
<i>Permit fee - N.I.C.</i>	<i>ls</i>	<i>/ls</i>	
Record drawings / as-builts	1 ea	5,658.00 /ea	5,658
Seismic & testing (panels, generator, lighting control, fire alarm)	1 ls	20,000.00 /ls	20,000
Coring - patching - firestopping	136,600 sf	0.10 /sf	13,660
Project phasing (re-mobilization)	1 ls	10,000.00 /ls	10,000
Hoisting & rigging (generator & switchboard)	2 ls	7,500.00 /ls	15,000
Building grounding & bonding	136,600 sf	0.12 /sf	16,392



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>D5090 Other Electrical Systems</b>			
Dry-type transformer grounding	4 ea	226.83 /ea	907
SPD grounding	43 ea	127.96 /ea	5,502
Copper ground bar - 2"x1/4" (ea.)	5 ea	297.90 /ea	1,490
Natural gas generator: 300kW / 312.5kVA	1 ea	115,266.09 /ea	115,266
Generator testing & start-up	1 ea	1,863.20 /ea	1,863
Generator setting & rigging	1 ea	7,286.90 /ea	7,287
Generator annunciator panel	1 ea	1,447.40 /ea	1,447
Battery charger circuit (4#10 & 1#10G in 1"C)	140 lf	20.94 /lf	2,932
Jacket heater circuit	140 lf	34.49 /lf	4,828
Oil heater circuit	140 lf	53.66 /lf	7,512
Exterior W.P. sound attenuating enclosure	1 ea	16,598.75 /ea	16,599
Remote status panel circuit	140 lf	9.64 /lf	1,349
Starting circuits - 2#14 MI cable	140 lf	12.76 /lf	1,787
Remote annunciator panel - 16#14 (EMT)	100 lf	15.81 /lf	1,581
Quick connect switch, ESL Storm Switch 3020	1 ea	3,668.10 /ea	3,668
UPS: 480-208/120V, 24kW (static ts,manual by-pass, 8min batt.BU)	1 ea	38,742.20 /ea	38,742
Lightning prevention system subcontractor	1 ls	30,000.00 /ls	30,000
	<b>136,600 sf</b>	<b>3.84 /sf</b>	<b>524,242</b>
<b>D5090 Other Electrical Systems</b>	<b>136,600 sf</b>	<b>40.25 /sf</b>	<b>5,497,459</b>
<b>D Services</b>	<b>136,600 sf</b>	<b>129.48 /sf</b>	<b>17,686,421</b>

**E Equipment & Furnishings**

**E10 Equipment**

**E1020 Institutional Equipment**

Loading dock equipment	1 ea	1,000.00 /ea	1,000
Misc. appliances	1 ls	10,000.00 /ls	10,000
Food service equipment - Allowance	1 ls	415,270.00 /ls	415,270
Vocational shop equipment - Allowance	1 ls	25,000.00 /ls	25,000
- Welding booths - In Above	-	-	
- Portable welding fumes extractor - In Above	-	-	
- Paint spray hoods - In Above	-	-	
- Portable wood working equipment dust collector - In HVAC	-	-	
Kiln	1 ls	12,000.00 /ls	12,000
Sound systems @ Auditorium - Allowance	1 allw	200,000.00 /allw	200,000
Sound systems @ Gym - Allowance	1 allw	120,000.00 /allw	120,000
Sound systems @ Cafeteria - Allowance	1 allw	50,000.00 /allw	50,000
Sound systems @ Band/Chorus - Allowance	1 allw	30,000.00 /allw	30,000
Projection screen @ Gym, Cafeteria	2 ea	10,000.00 /ea	20,000
Projection screen	1 ea	5,000.00 /ea	5,000



## 60% Construction Document Estimate

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>E1020 Institutional Equipment</b>			
<i>Orchestra enclosures - FFE</i>	-	/-	
Theatrical rigging - Allowance	1 ls	158,300.00 /ls	158,300
Theatrical draperies - Allowance	1 ls	33,854.00 /ls	33,854
Theatrical lighting instruments & accessories - Allowance	1 ls	129,018.00 /ls	129,018
Theatrical lighting controls - Allowance	1 ls	95,749.00 /ls	95,749
Basketball backstop - ceiling-hung	6 ea	6,500.00 /ea	39,000
Gym divider curtain - electric roll up	1,215 sf	20.00 /sf	24,300
Gym wall mats	835 sf	12.50 /sf	10,438
Volleyball system	1 ls	5,000.00 /ls	5,000
Fixed audience seating	406 ea	285.00 /ea	115,710
Retractable Bleachers at Gym	650 seat	155.00 /seat	100,750
<b>E1020 Institutional Equipment</b>	<b>136,600 sf</b>	<b>11.72 /sf</b>	<b>1,600,389</b>
<b>E1090 Other Equipment</b>			
Refrigerator	6 ea	1,200.00 /ea	7,200
<i>Ice maker - None shown</i>	-	/-	
<i>Undercounter refrigerator - None shown</i>	-	/-	
Microwave oven	1 ea	450.00 /ea	450
Range hood	1 ea	650.00 /ea	650
Range	1 ea	900.00 /ea	900
Dishwasher	4 ea	925.00 /ea	3,700
Washer/dryer - stackable	2 ea	1,500.00 /ea	3,000
Scoreboards - basketball	1 ea	7,500.00 /ea	7,500
<b>E1090 Other Equipment</b>	<b>136,600 sf</b>	<b>0.17 /sf</b>	<b>23,400</b>
<b>E10 Equipment</b>	<b>136,600 sf</b>	<b>11.89 /sf</b>	<b>1,623,789</b>
<b>E20 Furnishings</b>			
<b>E2010 Fixed Furnishings</b>			
Window sills - P-lam	1,180 lf	25.00 /lf	29,500
Hardwood trim @ locker guardrail per A650	3,300 lf	15.00 /lf	49,500
P-lam top panels @ locker guardrail per A650	1,005 lf	50.00 /lf	50,250
P-lam side panels @ locker guardrail per A650	450 lf	50.00 /lf	22,500
P-lam base cabinet w/top	40 lf	450.00 /lf	18,000
P-lam workstation w/top	1,095 lf	250.00 /lf	273,750
Mobile storage	183 ea	550.00 /ea	100,650
P-lam wall cabinet	45 lf	325.00 /lf	14,625
P-lam full height cabinet	50 lf	700.00 /lf	35,000
Bathroom vanity w/top	265 lf	250.00 /lf	66,250
Reception cabinet	20 lf	1,000.00 /lf	20,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>E2010 Fixed Furnishings</b>			
P-lam circulation desk	10 lf	750.00 /lf	7,500
P-lam work counter @ Admin	10 lf	1,500.00 /lf	15,000
P-lam counter @ Servery	32 lf	200.00 /lf	6,400
P-lam end/filler panels @ Admin	10 lf	135.00 /lf	1,350
Mailboxes	18 lf	415.00 /lf	7,470
Storage shelving	400 lf	150.00 /lf	60,000
Storage shelving w/custom 3d GFRG relief	495 lf	300.00 /lf	148,500
P-lam bookcases	50 lf	500.00 /lf	25,000
Built-in benches	205 lf	600.00 /lf	123,000
Display cases	5 ea	4,500.00 /ea	22,500
Misc. casework - Allowance	136,600 sf	1.00 /sf	136,600
Folding screen	43 ea	1,500.00 /ea	64,500
Misc. lab equipment - Allowance	1 ls	25,000.00 /ls	25,000
Fume hoods	3 ea	11,000.00 /ea	33,000
Roller shades	12,655 sf	13.00 /sf	164,515
Base cabinet w/epoxy top	30 lf	600.00 /lf	18,000
Epoxy countertop - open below	325 lf	375.00 /lf	121,875
Epoxy backsplash	635 lf	60.00 /lf	38,100
Wall cabinets	125 lf	400.00 /lf	50,000
<b>E2010 Fixed Furnishings</b>	<b>136,600 sf</b>	<b>12.80 /sf</b>	<b>1,748,335</b>
<b>E20 Furnishings</b>	<b>136,600 sf</b>	<b>12.80 /sf</b>	<b>1,748,335</b>
<b>E Equipment &amp; Furnishings</b>	<b>136,600 sf</b>	<b>24.69 /sf</b>	<b>3,372,124</b>
<b>F Special Construction &amp; Demolition</b>			
<b>F20 Demolition</b>			
<b>F2010 Building Elements Demolition</b>			
Building demolition	195,400 sf	6.50 /sf	1,270,100
<b>F2010 Building Elements Demolition</b>	<b>136,600 sf</b>	<b>9.30 /sf</b>	<b>1,270,100</b>
<b>F2020 Hazardous Component Abatement</b>			
Asbestos abatement	195,400 sf	8.20 /sf	1,602,280
<b>F2020 Hazardous Component Abatement</b>	<b>136,600 sf</b>	<b>11.73 /sf</b>	<b>1,602,280</b>
<b>F20 Demolition</b>	<b>136,600 sf</b>	<b>21.03 /sf</b>	<b>2,872,380</b>
<b>F Special Construction &amp; Demolition</b>	<b>136,600 sf</b>	<b>21.03 /sf</b>	<b>2,872,380</b>

**G Sitework**

**G10 Site Preparation**





Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G1010 Site Clearing</b>			
Mobilizations	BP#1	/BP#1	
Survey/layout	BP#1	/BP#1	
Police details	BP#1	/BP#1	
Precast Concrete Jersey Barriers for Temp. Parking Lot	BP#1	/BP#1	
Temporary site signage	BP#1	/BP#1	
As-built plan preparation	BP#1	/BP#1	
Localized dewatering	BP#1	/BP#1	
Clear & grub, vegetation removal	BP#1	/BP#1	
Strip & stockpile topsoil/loam	BP#1	/BP#1	
Construct Phase 2 Temp. Sediment Basins	BP#1	/BP#1	
SWPPP (Prep of SWPPP by civil engineer) - Allowance	BP#1	/BP#1	
12"diameter Straw Wattles	BP#1	/BP#1	
Silt sacks at catch basin	BP#1	/BP#1	
Construction entrance	BP#1	/BP#1	
Street sweeping	BP#1	/BP#1	
Inspect / repair silt barrier weekly	BP#1	/BP#1	
Remove erosion control measure at project completion	BP#1	/BP#1	
Asphalt paving - Temp. Parking Layout	BP#1	/BP#1	
Temporary roads and maintenance required during construction	BP#1	/BP#1	
<b>G1020 Site Demolition &amp; Relocations</b>			
Demo hydrants	BP#1	/BP#1	
Demo bituminous concrete paving	BP#1	/BP#1	
Demo bituminous walk	BP#1	/BP#1	
Demo Temporary Bituminous Parking & Access Pavement	BP#1	/BP#1	
Demo concrete sidewalks/pads/ramps	BP#1	/BP#1	
Demo curbing	BP#1	/BP#1	
Cut & cap site utilities - water	BP#1	/BP#1	
Cut & cap site utilities - sewer	BP#1	/BP#1	
Demo utility piping - water	BP#1	/BP#1	
Demo utility piping - sewer	BP#1	/BP#1	
Demo utility piping - electrical	BP#1	/BP#1	
Demo utility piping - drain	BP#1	/BP#1	
Demo utility piping - gas	BP#1	/BP#1	
Demo drain structures	BP#1	/BP#1	
Demo grease trap	BP#1	/BP#1	
Demo fencing/guardrail	BP#1	/BP#1	
Misc. site demolition	BP#1	/BP#1	
Demo utility poles	BP#1	/BP#1	
Flag pole	1 ea	9,000.00 /ea	9,000



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G1020 Site Demolition &amp; Relocations</b>	<b>136,600 sf</b>	<b>0.07 /sf</b>	<b>9,000</b>
<b>G1030 Site Earthwork</b>			
Preconstruction survey and vibration monitoring & compliance - Allowance	BP#1	/BP#1	
Rough grading	BP#1	/BP#1	
Fine grading - building SOG	BP#1	/BP#1	
Fine grading - paving	BP#1	/BP#1	
Fine grading - conc walks & site pads	BP#1	/BP#1	
Fine grading - bituminous walks	BP#1	/BP#1	
Cut to subgrade @ site	BP#1	/BP#1	
Fill to subgrade from cut @ site	BP#1	/BP#1	
Grind foundations for fill - In Demolition	-	/-	
Fill to subgrade @ site - import	BP#1	/BP#1	
Site cuts to stockpile for temporary parking & access layout	BP#1	/BP#1	
Site surcharge	BP#1	/BP#1	
Contaminated soil removal - unlined landfill	BP#1	/BP#1	
Rock removal - NIC	-	/-	
Import loam & spread (6") at Lawns, Athletic Fields & Native Meadows	5,594 cy	40.00 /cy	223,760
Ammend & spread (6") at Lawns, Athletic Fields & Native Meadows	6,000 cy	12.00 /cy	72,000
Import loam & spread (6") at Detention Basins	943 cy	40.00 /cy	37,720
Import loam & spread (12") at Plant Beds	404 cy	40.00 /cy	16,160
Landscape Metal Edging at Building Mow Strip	2,300 lf	15.00 /lf	34,500
Building Mowing Strip- (Peastone)	100 tn	50.00 /tn	5,000
Import loam & spread (6") at Sodded Amphitheater Lawns	564 cy	40.00 /cy	22,560
<b>G1030 Site Earthwork</b>	<b>136,600 sf</b>	<b>3.01 /sf</b>	<b>411,700</b>
<b>G10 Site Preparation</b>	<b>136,600 sf</b>	<b>3.08 /sf</b>	<b>420,700</b>
<b>G20 Site Improvements</b>			
<b>G2010 Roadways</b>			
Street plates for protection	BP#1	/BP#1	
<b>G2020 Parking Lots</b>			
Gravel base course @ asphalt pavements	BP#1	/BP#1	
Gravel base course @ Raised Stamped asphalt pavement at Flagg Drive	BP#1	/BP#1	
1 1/2" crushed stone base course - concrete walks & site pads	BP#1	/BP#1	
Asphalt paving - (Parking Lots & Site Drives)	BP#1	/BP#1	
Asphalt paving - top course @ temporary to permanent	BP#1	/BP#1	
Precast concrete curbs	BP#1	/BP#1	
Vertical granite curbs	BP#1	/BP#1	
Handicapped ramps at curbing	BP#1	/BP#1	



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G2020 Parking Lots</b>			
<i>Detectable Warning Plates at Handicapped Ramps</i>	BP#1	/BP#1	
<i>Speed bumps - bituminous</i>	BP#1	/BP#1	
<i>Pavement markings</i>	BP#1	/BP#1	
<i>Parking signage</i>	BP#1	/BP#1	
<b>G2030 Pedestrian Paving</b>			
<i>Processed Aggregate base course - bituminous walks</i>	BP#1	/BP#1	
Concrete pavement	21,595 sf	9.00 /sf	194,355
Steps - premium	530 sf	10.00 /sf	5,300
Dumpster pad	355 sf	30.00 /sf	10,650
<i>Stamped pavement at Flagg Drive</i>	BP#1	/BP#1	
<i>Bituminous sidewalks</i>	BP#1	/BP#1	
<b>G2030 Pedestrian Paving</b>	<b>136,600 sf</b>	<b>1.54 /sf</b>	<b>210,305</b>
<b>G2040 Site Development</b>			
Retaining footing	22 cy	920.53 /cy	20,252
Retaining wall	42 cy	1,100.00 /cy	46,200
Concrete bench/seat wall	6 cy	600.00 /cy	3,600
Steel @ Bandshell - AESS	6 ton	5,800.00 /ton	37,120
Steel @ Canopy - AESS	6 ton	5,800.00 /ton	31,900
Guardrails - exterior, colorgalv	260 lf	325.00 /lf	84,500
Phenolic bench per A102A	1 ea	4,200.00 /ea	4,200
Wood @ site benches	40 lf	60.00 /lf	2,400
Glass @ Bandshell - 9/16" tempered, laminated	535 sf	125.00 /sf	66,875
Paint Bandshell	1 ls	10,000.00 /ls	10,000
Exterior signage	1 ls	25,000.00 /ls	25,000
Bicycle Racks	20 ea	785.00 /ea	15,700
Basketball Poles & Hoops	2 ea	3,000.00 /ea	6,000
Miscellaneous site furnishings - Allowance	1 ls	30,000.00 /ls	30,000
<i>Gravel base course - misc site amenities- (i.e.- curbing, swales,etc.)</i>	BP#1	/BP#1	
Basketball Court Pavement- (3 1/2" Total Paving w/ Gravel Base)	1,752 sf	35.00 /sf	61,320
Basketball Court Pavement Markings	1 ls	2,000.00 /ls	2,000
Fencing - Allowance	1 ls	75,000.00 /ls	75,000
24' wide Single Arm Gate	1 ea	3,500.00 /ea	3,500
Wooden Guardrailing	1,010 lf	70.00 /lf	70,700
Bollards - 6" steel w/concrete	13 ea	1,000.00 /ea	13,000
Bollards - architectural	103 ea	2,400.00 /ea	247,200
Segmental retaining wall	2,600 sf	50.00 /sf	130,000
<b>G2040 Site Development</b>	<b>136,600 sf</b>	<b>7.22 /sf</b>	<b>986,467</b>



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G2050 Landscaping</b>			
Landscaping maintenance	1 yr	8,000.00 /yr	8,000
Irrigation system @ sports field	81,000 sf	2.00 /sf	162,000
Irrigation @ amphitheater	23,435 sf	2.00 /sf	46,870
Mulch at trees and planting beds (3")	250 cy	105.00 /cy	26,250
Fine grade & hydroseed lawn areas	124,152 sf	0.30 /sf	37,246
Fine grade & seed (Native Wildflower Meadow)	98,182 sf	0.25 /sf	24,546
Fine grade & seed (Detention Basin Mix- Hydroseed)	39,153 sf	0.25 /sf	9,788
Sod (Natural Turf Fields)	259,269 sf	1.50 /sf	388,904
Sod (Amphiltheather Lawns)	23,434 sf	1.50 /sf	35,151
Trees	123 ea	750.00 /ea	92,250
Shrubs (518 Total)	8,383 sf	8.50 /sf	71,256
Groundcover/perennials	2,372 ea	20.00 /ea	47,440
Rain garden	8,275 sf	10.00 /sf	82,750
<b>G2050 Landscaping</b>	<b>136,600 sf</b>	<b>7.56 /sf</b>	<b>1,032,449</b>
<b>G20 Site Improvements</b>	<b>136,600 sf</b>	<b>16.32 /sf</b>	<b>2,229,221</b>
<b>G30 Site Civil/Mechanical Utilites</b>			
<b>G3010 Water Supply</b>			
Fire hydrants	BP#1	/BP#1	
Fire hydrant - relocate existing	BP#1	/BP#1	
Gate valves, tees, bends, thrust blocks, restraints	BP#1	/BP#1	
Water distribution connections to existing	BP#1	/BP#1	
Water line - domestic	BP#1	/BP#1	
Water line - hydrant & fire services	BP#1	/BP#1	
Pressure test & chlorinate	BP#1	/BP#1	
<b>G3020 Sanitary Sewer</b>			
Sanitary sewer piping	BP#1	/BP#1	
Sanitary sewer manholes	BP#1	/BP#1	
Connect to existing structures	BP#1	/BP#1	
Utility and sewer tie-in at trailer	BP#1	/BP#1	
Sanitary sewer testing - piping	BP#1	/BP#1	
Video inspect incoming sewer, etc. - Allowance	BP#1	/BP#1	
Sanitary sewer testing - structures	BP#1	/BP#1	
Grease interceptor - In Plumbing	-	/-	
Acid Neutralization - In Plumbing	-	/-	
<b>G3030 Storm Drainage</b>			
Catch basins	BP#1	/BP#1	



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G3030 Storm Drainage</b>			
Granite Curb Inlets	BP#1	/BP#1	
Storm drainage manholes	BP#1	/BP#1	
Outlet control structures	BP#1	/BP#1	
Storm headwalls	BP#1	/BP#1	
Stormceptors	BP#1	/BP#1	
Storm drainage piping	BP#1	/BP#1	
Rip Rap Splash Pads	BP#1	/BP#1	
Weir Overflows	BP#1	/BP#1	
Check dams	BP#1	/BP#1	
Foundation drainage piping	BP#1	/BP#1	
Infiltration system	BP#1	/BP#1	
<b>G3060 Fuel Distribution</b>			
Excavation / backfill for gas line	BP#1	/BP#1	
<b>G40 Site Electrical Utilities</b>			
<b>G4010 Electrical Distribution</b>			
Temp power for welders	2 ea	2,551.35 /ea	5,103
Temp power for trailers	4 ea	1,385.55 /ea	5,542
Temp internet connection for trailers	4 ea	1,972.53 /ea	7,890
Feeder (PVC/CU) - 2500A [secondary]	105 lf	440.42 /lf	46,244
Empty conduit - sch 40 PVC - 4" - 1 way [generator]	135 lf	9.86 /lf	1,331
Empty conduit - sch 40 PVC - 4" - 1 way [secondary / spare]	105 lf	9.86 /lf	1,035
Empty conduit - sch 40 PVC - 4" - 2 way [primary]	250 lf	17.66 /lf	4,415
Magnetic warning tape - 1/8"	875 lf	4.65 /lf	4,071
Pole riser (GRC - 4"C)	2 ea	2,493.45 /ea	4,987
Electric manhole - 6'x12x7'	1 ea	7,205.92 /ea	7,206
Cast iron manhole frame/cover, 32"D x 6'H grade rings	1 ea	1,213.75 /ea	1,214
17"x30"x12"D ground pullbox (Quazite #PC1730BA12 w/ cover)	BP#1	/BP#1	
17"x30"x12"D ground pullbox (Quazite #PC1730BA12 w/ cover)	11 ea	1,147.45 /ea	12,622
Hand hole & cover - 4'x4'x4'	3 ea	2,060.75 /ea	6,182
Manhole / racking grounding & bonding	1 ea	745.80 /ea	746
Exterior (utility) transformer grounding & bonding	1 ea	1,134.10 /ea	1,134
Generator grounding & bonding	1 ea	1,134.10 /ea	1,134
Bare copper wire - #4/0 [duct bank]	875 lf	5.31 /lf	4,647
Elec Vehicle Charging Station / dual pedestal / cable mgmt.	3 ea	11,183.40 /ea	33,550
Utility meter socket (meter by Util. Co.)	1 ea	308.15 /ea	308
CT meter enclosure for switchboard	1 ea	1,555.60 /ea	1,556
Concrete pads F&I by G.C.	ea	/ea	
Excavation/backfill for Emergency Generator ductbank	BP#1	/BP#1	



**60% Construction Document Estimate**

Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G4010 Electrical Distribution</b>			
Excavation/backfill for Primary Electric ductbank	BP#1	/BP#1	
Excavation/backfill for Fire Alarm ductbank	BP#1	/BP#1	
Excavation/backfill for Telcom ductbank	BP#1	/BP#1	
Excavation/backfill for U.G. ductbank	BP#1	/BP#1	
Excavation/backfill for 2"C Power Data ductbank (Amphitheater)	BP#1	/BP#1	
Excavation/backfill for 2"C to IDF ductbank	BP#1	/BP#1	
Concrete and rebar for electrical/telcom ductbanks	BP#1	/BP#1	
6" Concrete Filled Steel Pipe Bollards at Generator & Transformer Pads	BP#1	/BP#1	
<b>G4010 Electrical Distribution</b>	<b>136,600 sf</b>	<b>1.11 /sf</b>	<b>150,915</b>
<b>G4020 Site Lighting</b>			
Bucket truck rental (per mo.)	BP#1	/BP#1	
Remove existing exterior site light fixture	BP#1	/BP#1	
Remove existing exterior site light fixture	6 ea	715.80 /ea	4,295
Lighting contactor - 12 pole (exterior lighting)	1 ea	2,021.25 /ea	2,021
SL1: LED pole mounted luminaires mounted on a 20' pole	23 ea	5,411.20 /ea	124,458
SL2A: exterior bollard	13 ea	1,893.70 /ea	24,618
SL1A: LED pole mounted luminaires mounted on a 20' pole	BP#1	/BP#1	
SL3: wall mounted LED area light with integral photosensor	BP#1	/BP#1	
SL3: exterior bollard 43.3 cast illuminum	9 ea	1,893.70 /ea	17,043
SL5: exterior in-grade luminaire with asymmetrical light distribution	8 ea	776.00 /ea	6,208
SL10: LED mini in-ground flood fixture capable of 0-10V dimming	12 ea	712.60 /ea	8,551
EMT (10/2) - 20A	BP#1	/BP#1	
3/4" PVC - 20A (2#12 & #12G)	BP#1	/BP#1	
1" PVC - 30A (3#8 & #10G)	BP#1	/BP#1	
1" PVC - 30A (3#8 & #10G)	5,600 lf	10.95 /lf	61,298
3/4" GRC - 90 Deg Sweep	BP#1	/BP#1	
1" GRC - 90 Deg Sweep	BP#1	/BP#1	
1" GRC - 90 Deg Sweep	90 ea	174.22 /ea	15,680
Concrete light pole bases F&I by G.C.	ea	/ea	
Emergency Call Box base	BP#1	/BP#1	
EV Parking Station bases	BP#1	/BP#1	
Light pole bases	BP#1	/BP#1	
<b>G4020 Site Lighting</b>	<b>136,600 sf</b>	<b>1.93 /sf</b>	<b>264,172</b>
<b>G4030 Site Communications &amp; Security</b>			
Relocate existing emergency call box (provide new concrete base)	BP#1	/BP#1	
Empty conduit (PVC) - 1"	BP#1	/BP#1	
Empty conduit (PVC) - 1"	250 lf	8.58 /lf	2,145
Empty conduit (PVC) - 2"	700 lf	6.42 /lf	4,493



Description	Takeoff Qty	Total Cost/Unit	Total Amount
<b>G4030 Site Communications &amp; Security</b>			
Empty conduit (sch 40 PVC) (4) 4"C (CATV, Telephone, Fiber, Spare)	240 lf	34.38 /lf	8,251
Three (3) 1.25" inner ducts for fiber	240 lf	16.49 /lf	3,959
Communications utility pole conduit riser (GRC - 4"C)	4 ea	2,493.45 /ea	9,974
Telecom manhole & cover - 4'x6'x7'	1 ea	4,170.60 /ea	4,171
360-degree multi-sensor exterior cameras mounted on poles	3 ea	4,797.40 /ea	14,392
Camera wiring (PVC)	600 lf	14.19 /lf	8,514
Ductbank w/ IMSA cable - 2" PVC	320 lf	17.34 /lf	5,550
<i>Excavation/backfill for site lighting - Allowance</i>	<i>BP#1</i>	<i>/BP#1</i>	
<b>G4030 Site Communications &amp; Security</b>	<b>136,600 sf</b>	<b>0.45 /sf</b>	<b>61,447</b>
<b>G40 Site Electrical Utilities</b>	<b>136,600 sf</b>	<b>3.49 /sf</b>	<b>476,535</b>
<b>G Sitework</b>	<b>136,600 sf</b>	<b>22.89 /sf</b>	<b>3,126,456</b>



**Estimate Totals**

Description	Amount	Totals	Rate	Cost per Unit
<b>Subtotal</b>	<b>55,307,598</b>	<b>55,307,598</b>		<b>404.89 /sf</b>
Design/Estimate Contingency	2,765,380		5.000 %	20.24 /sf
Escalation	871,095		1.500 %	6.38 /sf
<b>Subtotal</b>	<b>3,636,475</b>	<b>58,944,073</b>		<b>431.51 /sf</b>
SDI (Non-Trade Contracts)	360,416		1.400 %	2.64 /sf
Sub Bonds (Trade Contracts)	413,891		1.400 %	3.03 /sf
Contractor's Contingency	1,492,960		2.500 %	10.93 /sf
General Conditions	3,401,447			24.90 /sf
General Requirements	2,652,483		4.500 %	19.42 /sf
<b>Subtotal</b>	<b>8,321,197</b>	<b>67,265,270</b>		<b>492.43 /sf</b>
Builder's Risk Insurance				
General Liability Insurance	668,571			4.89 /sf
Building Permit - NIC				
Performance & Payment Bond				
<b>Subtotal</b>	<b>668,571</b>	<b>67,933,841</b>		<b>497.32 /sf</b>
Fee	1,337,143			9.79 /sf
Amendment #1 - Sitework	10,957,843			80.22 /sf
<b>Total</b>		<b>80,228,827</b>		<b>587.33 /sf</b>





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**60% Construction Document Estimate**

Description	Takeoff Qty	Total Cost/Unit	Total Amount
01-54 SCAFFOLDING	136,600 sf	0.55 /sf	75,000
02-20 SELECTIVE DEMOLITION & ABATEMENT	136,600 sf	9.30 /sf	1,270,100
02-82 HAZARDOUS MATERIAL ABATEMENT	136,600 sf	11.73 /sf	1,602,280
03-30 CONCRETE	136,600 sf	21.73 /sf	2,967,853
04-20 MASONRY (TS)	136,600 sf	14.80 /sf	2,022,013
05-12 STRUCTURAL STEEL	136,600 sf	31.88 /sf	4,355,075
05-50 MISCELLANEOUS METALS (TS)	136,600 sf	7.04 /sf	962,175
06-25 FINISH CARPENTRY	136,600 sf	15.72 /sf	2,147,595
07-10 WATERPROOFING & JOINT SEALANTS (TS)	136,600 sf	5.57 /sf	760,949
07-42 METAL/COMPOSITE PANELS & SIDING	136,600 sf	9.20 /sf	1,256,775
07-50 MEMBRANE ROOFING (TS)	136,600 sf	9.37 /sf	1,280,477
07-81 FIREPROOFING	136,600 sf	2.66 /sf	363,347
08-10 DOORS, FRAMES & HARDWARE	136,600 sf	4.48 /sf	612,305
08-34 OVERHEAD DOORS & GRILLES	136,600 sf	0.55 /sf	74,750
08-41 ALUMINUM STOREFRONT & WINDOWS (TS)	136,600 sf	13.93 /sf	1,902,125
08-45 TRANSLUCENT PANEL SYSTEMS	136,600 sf	0.48 /sf	65,250
08-62 SKYLIGHTS	136,600 sf	3.77 /sf	515,250
08-80 GLASS & GLAZING (TS)	136,600 sf	9.60 /sf	1,310,650
08-90 LOUVERS	136,600 sf	0.41 /sf	56,100
09-21 DRYWALL	136,600 sf	36.22 /sf	4,947,855
09-30 TILE (TS)	136,600 sf	1.29 /sf	176,450
09-51 ACOUSTICAL CEILINGS (TS)	136,600 sf	5.82 /sf	795,423
09-64 WOOD FLOORING	136,600 sf	1.55 /sf	211,650
09-65 RESILIENT FLOORING (TS)	136,600 sf	9.17 /sf	1,252,210
09-67 RESINOUS FLOORING	136,600 sf	0.65 /sf	88,550
09-68 CARPET	136,600 sf	0.21 /sf	27,975
09-90 PAINTING (TS)	136,600 sf	3.64 /sf	497,416
10-14 SIGNAGE	136,600 sf	0.53 /sf	72,810
10-24 OPERABLE PARTITIONS	136,600 sf	2.01 /sf	273,875
10-51 LOCKERS	136,600 sf	3.14 /sf	428,800
10-95 MISCELLANEOUS SPECIALTIES	136,600 sf	3.04 /sf	414,943



Description	Takeoff Qty	Total Cost/Unit	Total Amount
11-31 RESIDENTIAL APPLIANCES	136,600 sf	0.19 /sf	25,900
11-40 FOOD SERVICE EQUIPMENT	136,600 sf	3.04 /sf	415,270
11-51 AUDIO-VISUAL EQUIPMENT	136,600 sf	2.93 /sf	400,000
11-61 THEATER & STAGE EQUIPMENT	136,600 sf	3.05 /sf	416,921
11-65 ATHLETIC/RECREATIONAL EQUIPMENT	136,600 sf	0.63 /sf	86,238
11-95 VOCATIONAL SHOP EQUIPMENT	136,600 sf	0.27 /sf	37,000
12-20 WINDOW TREATMENTS	136,600 sf	1.20 /sf	164,515
12-35 LAB CASEWORK	136,600 sf	2.09 /sf	285,975
12-60 FIXED AUDITORIUM SEATING	136,600 sf	0.85 /sf	115,710
12-62 BLEACHERS	136,600 sf	0.74 /sf	100,750
14-20 ELEVATORS (TS)	136,600 sf	1.61 /sf	220,000
21-01 FIRE PROTECTION (TS)	136,600 sf	5.87 /sf	802,068
22-01 PLUMBING (TS)	136,600 sf	15.73 /sf	2,148,758
23-01 HVAC (TS)	136,600 sf	67.49 /sf	9,218,907
26-01 ELECTRICAL (TS)	136,600 sf	43.73 /sf	5,973,994
31-23 SITEWORK	136,600 sf	/sf	
32-10 LANDSCAPING & SITE IMPROVEMENTS	136,600 sf	13.87 /sf	1,895,049
32-18 ATHLETIC/SYNTHETIC SURFACING	136,600 sf	0.46 /sf	63,320
32-31 FENCING	136,600 sf	1.09 /sf	149,200



**Estimate Totals**

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<b>Total</b>		<b>80,228,827</b>		<b>587.33 /sf</b>



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## ASSUMPTIONS & QUALIFICATIONS

### FULLER MIDDLE SCHOOL

60% CONSTRUCTION DOCUMENT ESTIMATE

JULY 26, 2019

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#### GENERAL

1. Pricing is based on the following:
  - 60% Construction Document Pricing Drawings by Jonathan Levi Architects, dated April 8, 2019.
  - 60% Construction Document Pricing Drawings by Jonathan Levi Architects, dated April 12, 2019.
  - Soil Management Plan by McPhail Associates, dated December 18, 2018.
  - RFI responses issued by Jonathan Levi Architects on July 19, 2019.
2. Pricing is based on current market costs. Escalation is excluded.
3. Cost premiums related to potential steel and aluminum tariffs are excluded.
4. Any tariffs associated with products imposed after 7/26/19 are excluded.
5. Testing and/or inspections are not included.
6. Builders Risk Insurance is included in the Bid Package #1 GMP value.
7. Building permit cost is not included.
8. A Payment and Performance Bond is included in the Bid Package #1 GMP value.
9. Sales tax is not included as this project is assumed to be tax exempt.
10. Subcontractor insurances are included per Consigli standard subcontract.
11. Utility company back charges, user fees, etc. (temporary electric, water, gas, etc.) are excluded.
12. Work hours are assumed to be normal business hours (7:00AM to 3:00PM) Monday to Friday. Overtime, phasing, or off-hours work costs are not included.
13. Breakouts provided are for informational/accounting purposes only. We reserve the right to reprice our estimate if changes are made to the scope of the project.
14. Site Security costs or provisions are not included.
15. Uniform Fire watch is not included.
16. An exterior mockup is included as an allowance.
17. All design is by the owner's Designer. Delegated design is excluded.

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#### TRADE SPECIFIC

18. Hazardous material testing is not included.
19. Removal and/or relocation of furniture is not included.
20. Barrier-1 or similar concrete additives are not included.
21. The concrete floor at the Auditorium is included as power troweled and sealed.
22. Exterior masonry work includes staging.
23. Steel hangers at the Learning Commons is included as AESS.
24. P-lam window sills are included.
25. Fluid applied moisture mitigation is not included.
26. Linoleum base is included as surface applied.
27. The Learning Commons stairs are included with rubber treads, risers, and landings.
28. CMU walls are not painted.



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## ASSUMPTIONS & QUALIFICATIONS

### FULLER MIDDLE SCHOOL

60% CONSTRUCTION DOCUMENT ESTIMATE

JULY 26, 2019

29. (3) fume hoods are included.
30. We have not included any costs or provisions for FF & E items and assume this will be by the Owner.
31. The orchestra enclosures are not included. These will be FF & E by the Owner.
32. Elevator operator costs are included.
33. Hydrant flow tests are not included and are assumed to have been previously completed to inform the fire protection design.
34. A Fire pump is not included.
35. A Domestic Booster pump is not included.
36. A Compressed Air System is not included.
37. Gas piping is included to (1) science labs.
38. An interior kitchen grease trap is included.
39. Radon venting is not included.
40. Interior under-slab drainage is not included.
41. A rainwater reclaim system is not included.
42. Rectangular, double-walled, internally lined ductwork is included for supply air medium distribution.
43. VAV's do not include hot water re-heat coils.
44. Electrical and fire alarm permit fee costs are excluded (assumed waived by City of Framingham).
45. Primary cable, primary terminations, and exterior pad mount transformer by Utility Co.
46. Concealed lighting, power, and fire alarm branch circuitry is routed in MC Cable (per NEC Article 330).
47. Distribution feeders are routed in EMT and copper wire (where not required to be MI Cable).
48. Incoming generator 200A life-safety feed is routed underground in 2-hour rated MI Cable, per one-line diagram.
49. Power, switch stations, and LV cable for twenty-five (25) motorized window treatment locations are included.
50. VFD's, motor starters, and motor controllers furnished by Division 23, installed and wired by Division 26.
51. Provisions for a future roof mounted photovoltaic (PV) system are included.
52. One (1) central uninterruptible power supply (UPS) - 480V: 208/120V, 24kW (8 min. backup) - is included.
53. Automatic transfer switches are included as open transition.
54. Cable tray / ladder rack is included for MDF and IDF's; all other horizontal cabling routed across j-hooks.
55. Audio-visual devices, jacks, cabling, head end equipment, monitors, terminations and labor by Owner's Vendor.
56. Assistive classroom listening systems are not included.
57. Emergency pull-cord or call-for-aid systems are not included.
58. Theatrical light fixtures, theatrical rigging, and theatrical lighting controls are included with theater equipment.
59. Electrical heat trace cabling system or power connections are not included.
60. Exterior site and building mounted lighting is included as shown on drawings E003-1 and E003-2.
61. Play field equipment is not included.
62. Irrigation is included as an allowance.

### ALLOWANCES

- 
- |                          |          |
|--------------------------|----------|
| 63. Exterior wall mockup | \$75,000 |
|--------------------------|----------|



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## ASSUMPTIONS & QUALIFICATIONS

### **FULLER MIDDLE SCHOOL**

60% CONSTRUCTION DOCUMENT ESTIMATE

JULY 26, 2019

64.	Miscellaneous casework.	\$136,600
65.	Intumescent fireproofing.	\$25,000
66.	Miscellaneous rough carpentry.	\$68,300
67.	Level 5 finish.	\$50,000
68.	Miscellaneous specialties.	\$34,150
69.	Food service equipment.	\$415,270
70.	Sound systems.	\$400,000
71.	Theater and stage equipment.	\$416,921
72.	Vocational shop equipment.	\$25,000
73.	Miscellaneous lab equipment.	\$25,000
74.	FairPlay Electronic scoreboards / shot clocks	\$40,000
75.	Theater lighting power and rough in.	\$40,000
76.	Power for motorized shades.	\$10,607
77.	Floor boxes and poke throughs	\$61,450
78.	Wiremold receptacles	\$87,252
79.	Mass notification	\$19,000
80.	Miscellaneous site furnishings.	\$30,000
81.	Fencing.	\$75,000



***Fuller Middle School***

Framingham, MA

**July 29, 2019**

**60% Construction Documents Estimate**

**Owner's Project Manager**

SMMA

1000 Massachusetts Ave.

Cambridge, MA

**Architect:**

Jonathan Levi Architects

266 Beacon Street

Boston, MA 02116

**Estimator:**

Miyakoda Consulting

PO Box 47

Raynham, MA 02767

(617) 799-5832

## ***Fuller Middle School***

Fuller Middle School

### **INTRODUCTION**

#### **Description:**

- 1** Construction of the Framingham Middle School
- 2** The scope of the work includes all related sitework, hardscape/landscape, and underground utilities

#### **Particulars:**

- 1** 60% CD Drawings and Specifications dated July 8, 2019, received from Jonathan Levi Architects
- 2** Detailed quantity takeoff from these documents where possible
- 3** Experience with similar projects of this nature with JLA

#### **Assumptions:**

- 1** The project will be constructed by a Construction Manager
- 2** Our costs assume that there will be at least three subcontractors submitting unrestricted bids in each sub-trade
- 3** Unit rates are based on current dollars
- 4** General Conditions and Requirements value covers Sub-Contractor's bond, site office overheads, and building permit applications
- 5** Fee markup is calculated on a percentage basis of direct construction costs. The value covers Contractor's bond, insurance and profit
- 6** Design and Pricing Contingency markup is an allowance for unforeseen design issues, design detail development and specification clarifications
- 7** Escalation has been included to midpoint of construction. The construction start date is June 2020.

#### **Exclusions:**

- 1** Design fees and other soft costs
- 2** Owner's project administration
- 3** Construction of temporary facilities
- 4** Relocation expenses
- 5** Printing and advertising
- 6** Existing condition surveys and investigations
- 7** Work beyond the boundary of the site
- 8** Testing
- 9** Specialties, loose furnishings, fixtures and equipment beyond those noted
- 10** Preconstruction Fee
- 12** Traffic Improvements

**Fuller Middle School**

Fuller Middle School

137,385 GSF

**MAIN SUMMARY - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>			<b><u>TOTAL</u></b>	<b><u>COST/SF</u></b>
<b>Direct Trade Costs With Site</b>				
New Construction	137,385	GSF	\$48,160,899	\$350.55
Site Development			\$3,331,831	\$24.25
<b>Direct Trade Cost SubTotal</b>			<b>\$51,492,730</b>	<b>\$374.81</b>
Demolish Existing Building	195,400	GSF	\$1,465,500	\$10.67
Hazardous Waste Abatement (Budget provided)			\$1,602,280	\$11.66
Design and Pricing Contingency	5.00%	\$54,560,510	\$2,728,026	\$19.86
<b>Building Cost</b>			<b>\$57,288,536</b>	<b>\$416.99</b>
Escal. to Midpoint of Construction	1.50%	\$57,288,536	\$859,328	\$6.25
<b>Trade Cost SubTotal</b>			<b>\$58,147,864</b>	<b>\$423.25</b>
General Conditions		\$58,147,864	\$3,994,976	\$29.08
General Requirements	4.50%	\$62,142,840	\$2,796,428	\$20.35
Builder's Risk			\$115,218	\$0.84
Traffic mitigation			NIC	
General Liability Insurance			\$668,571	\$4.87
Performance & Payment Bond				\$0.00
Construction Contingency	2.50%	\$58,147,864	\$1,453,697	\$10.58
CM Fee			\$1,337,143	\$9.73
Early Site BP#1			\$10,957,843	\$79.76
<b>Estimated Construction Cost Total</b>			<b>\$79,471,739</b>	<b>\$578.46</b>

**Fuller Middle School**

Framingham, MA

**DIRECT TRADE COSTS SUMMARY - CSI**

137,385 GSF

	<u>Filed Sub Bid</u>	<u>SITWORK</u>	<u>BUILDING</u>	<u>SITE &amp; BLDG</u>	<u>Cost/Bldg SF</u>
02 41 00 Demolition			\$0	\$0	
02 60 00 Hazardous Waste Remediation					\$0.00
<b>02-EXISTING CONDITIONS</b>		<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0.00</b>
03 30 00 Cast-In-Place Concrete			\$2,347,613	\$2,347,613	\$17.09
<b>03-CONCRETE</b>		<b>\$0</b>	<b>\$2,347,613</b>	<b>\$2,347,613</b>	<b>\$17.09</b>
04 20 00 Unit Masonry	\$2,626,759		\$2,626,759	\$2,626,759	\$19.12
<b>04-MASONRY</b>		<b>\$0</b>	<b>\$2,626,759</b>	<b>\$2,626,759</b>	<b>\$19.12</b>
05 12 00 Structural Steel Framing			\$3,766,375	\$3,766,375	\$27.41
05 31 00 Steel Decking			\$617,976	\$617,976	\$4.50
05 40 00 Cold-Formed Metal Framing			See 09		
05 50 00* Miscellaneous and Ornamental Iron	\$1,986,588		\$1,986,588	\$1,986,588	\$14.46
<b>05-METALS</b>		<b>\$0</b>	<b>\$6,370,939</b>	<b>\$6,370,939</b>	<b>\$46.37</b>
06 10 00 Rough Carpentry			\$344,363	\$344,363	\$2.51
06 20 00 Finish Carpentry			\$858,575	\$858,575	\$6.25
<b>06-WOOD, PLASTICS &amp; COMPOSITES</b>			<b>\$1,202,938</b>	<b>\$1,202,938</b>	<b>\$8.76</b>
07 00 01* Waterproofing, Dampproofing & Caulking	\$703,999		\$703,999	\$703,999	\$5.12
07 21 00 Thermal Insulation			\$256,433	\$256,433	\$1.87
07 00 02* Roofing & Flashing	\$1,781,701		\$1,781,701	\$1,781,701	\$12.97
07 42 00 Metal Wall Panels			\$910,023	\$910,023	\$6.62
07 81 00 Applied Fireproofing			\$193,050	\$193,050	\$1.41
07 84 10 Penetration Firestopping			\$61,823	\$61,823	\$0.45
07 95 00 Expansion Control					\$0.00
<b>07-THERMAL AND MOISTURE PROTECTION</b>			<b>\$3,907,029</b>	<b>\$3,907,029</b>	<b>\$28.44</b>
08 11 10 Hollow Metal Doors and Frames			\$132,375	\$132,375	\$0.72
08 14 00 Flush Wood Doors			\$98,975	\$98,975	\$0.18
08 31 10 Access Doors & Frames			\$25,000	\$25,000	\$0.18
08 34 00 Special Function Doors			\$60,433	\$60,433	\$0.44
08 41 13 Aluminum-Framed Entrances and Storefronts			\$177,000	\$177,000	\$1.29
08 00 01* Metal Windows	\$2,266,656		\$2,266,656	\$2,266,656	\$16.50
08 63 00 Metal-Framed Skylights			\$602,250	\$602,250	\$4.38
08 71 00 Door Hardware			\$306,900	\$306,900	\$2.23
08 00 02* Glass and Glazing	\$1,398,670		\$1,398,670	\$1,398,670	\$10.18
08 90 00 Louvers and Vents			\$43,750	\$43,750	\$0.32
<b>08-OPENINGS</b>			<b>\$5,112,008</b>	<b>\$5,112,008</b>	<b>\$37.21</b>
09 29 00 Gypsum Drywall			\$3,602,290	\$3,602,290	\$26.22
09 30 00* Tiling	\$96,280		\$96,280	\$96,280	\$0.70
09 50 01* Acoustical Ceilings	\$486,557		\$486,557	\$486,557	\$3.54
09 60 01* Resilient Flooring	\$1,035,869		\$1,035,869	\$1,035,869	\$7.54
09 64 00 Wood Athletic Flooring			\$210,125	\$210,125	\$1.53

**Fuller Middle School**

Framingham, MA

**DIRECT TRADE COSTS SUMMARY - CSI**

137,385 GSF

	<u>Filed Sub Bid</u>	<u>SITWORK</u>	<u>BUILDING</u>	<u>SITE &amp; BLDG</u>	<u>Cost/Bldg SF</u>
09 65 00 Stage Flooring			\$48,495	\$48,495	\$0.35
09 67 00 Epoxy Flooring			\$95,280	\$95,280	\$0.69
09 68 00 Carpeting			\$13,850	\$13,850	\$0.10
09 72 00 Wall Coverings			\$804,569	\$804,569	\$5.86
09 91 00* Painting	\$585,208		\$585,208	\$585,208	\$4.26
<b>09-FINISHES</b>			<b>\$6,978,523</b>	<b>\$6,978,523</b>	<b>\$50.80</b>
10 11 00 Visual Display Surfaces			\$547,724	\$547,724	\$3.99
10 14 23 Signage			\$65,765	\$65,765	\$0.48
10 21 13 Plastic Toilet Compartments			\$59,600	\$59,600	\$0.43
10 21 23 Cubicle Curtains, Tracks & Hardware			\$400	\$400	\$0.00
10 26 00 Wall Protection			\$10,000	\$10,000	\$0.07
10 28 13 Toilet Accessories			\$23,880	\$23,880	\$0.17
10 44 13 Fire Protection Specialties			\$7,982	\$7,982	\$0.06
10 51 24 Phenolic-Core Lockers			\$235,719	\$235,719	\$1.72
<b>10-SPECIALTIES</b>			<b>\$951,070</b>	<b>\$951,070</b>	<b>\$6.92</b>
11 31 00 Appliances			\$10,350	\$10,350	\$0.08
11 40 00 Food Service Equipment			\$415,270	\$415,270	\$3.02
11 52 13 Projection Screens			\$24,500	\$24,500	\$0.18
11 61 00 Theater and Stage Equipment			\$1,263,842	\$1,263,842	\$9.20
11 66 23 Gymnasium Equipment			\$226,180	\$226,180	\$1.65
11 67 00 Miscellaneous equipment			\$25,000	\$25,000	\$0.18
11 80 00 Loading Dock Equipment			\$15,000	\$15,000	\$0.11
<b>11-EQUIPMENT</b>			<b>\$1,980,142</b>	<b>\$1,980,142</b>	<b>\$14.41</b>
12 24 12 Roller Shades			\$148,940	\$148,940	\$1.08
12 32 00 Casework			\$687,265	\$687,265	\$5.00
12 48 13 Entrance Mats & Frames			\$13,860	\$13,860	\$0.10
<b>12-FURNISHING</b>			<b>\$850,065</b>	<b>\$850,065</b>	<b>\$6.19</b>
13 00 00 Special Construction			\$0	\$0	\$0.00
<b>13-SPECIAL CONSTRUCTION</b>			<b>\$0</b>	<b>\$0</b>	<b>\$0.00</b>
14 24 00* Hydraulic Elevators	\$213,400		\$213,400	\$213,400	\$1.55
<b>14-CONVEYING EQUIPMENT</b>			<b>\$213,400</b>	<b>\$213,400</b>	<b>\$1.55</b>
21 00 00* Fire Protection	\$861,604		\$861,604	\$861,604	\$6.27
22 00 00* Plumbing	\$2,057,763		\$2,057,763	\$2,057,763	\$14.98
23 00 00* HVAC	\$7,553,789		\$7,553,789	\$7,553,789	\$54.98
<b>21 - 23-MECHANICAL</b>			<b>\$10,473,155</b>	<b>\$10,473,155</b>	<b>\$76.23</b>
26 00 00* Electrical	\$5,495,123	\$497,865	\$4,997,258	\$5,495,123	\$36.37
<b>26,27,28-ELECTRICAL, COMMUNICATION, SECURITY</b>		<b>\$497,865</b>	<b>\$4,997,258</b>	<b>\$5,495,123</b>	<b>\$36.37</b>

**Fuller Middle School**

Framingham, MA

**DIRECT TRADE COSTS SUMMARY - CSI**

137,385 GSF

<u>Filed Sub Bid</u>	<u>SITWORK</u>	<u>BUILDING</u>	<u>SITE &amp; BLDG</u>	<u>Cost/Bldg SF</u>
31 00 00 Earthwork	\$456,249	\$150,000	\$606,249	\$1.09
31 10 00 Site Clearing	\$0			
31 15 00 Site Demolition	\$0			
31 25 00 Erosion and Sedimentation Controls	Included			
<b>31-EARTHWORK</b>	<b>\$456,249</b>	<b>\$150,000</b>	<b>\$606,249</b>	<b>\$1.09</b>
32 00 00 Asphalt Paving	\$0			
32 13 13 Concrete Paving	\$206,133		\$206,133	
32 30 00 Site Improvements	\$1,005,895		\$1,005,895	
32 80 00 Irrigation	\$149,838		\$149,838	
32 92 00 Turfs and Grasses	\$657,859		\$657,859	
32 93 00 Plants	\$343,907		\$343,907	
<b>32-EXTERIOR IMPROVEMENTS</b>	<b>\$2,363,632</b>	<b>\$0</b>	<b>\$2,363,632</b>	
33 10 00 Water Distribution	\$0		\$0	
33 31 00 Sanitary Sewerage	\$0		\$0	
33 41 00 Storm Utility Drainage	\$0		\$0	
33 50 00 Gas Service	\$14,085		\$14,085	
<b>33-UTILITIES</b>	<b>\$14,085</b>	<b>\$0</b>	<b>\$14,085</b>	
<b>Direct Trade Costs Subtotal</b>	<b>\$29,149,965</b>	<b>\$3,331,831</b>	<b>\$48,160,899</b>	<b>\$51,492,730</b>
Demolish Existing Building	195,400	GSF	\$1,465,500	\$10.67
Hazardous Waste Abatement (Budget provided)			\$1,602,280	\$11.66
Design and Pricing Contingency	5.00%	\$0	\$2,728,026	\$19.86
<b>Building Cost</b>			<b>\$57,288,536</b>	<b>\$416.99</b>
Escal. to Midpoint of Construction	1.50%	\$57,288,536	\$859,328	\$6.25
<b>Trade Cost SubTotal</b>			<b>\$58,147,864</b>	<b>\$423.25</b>

**Fuller Middle School**Fuller Middle School  
137,385 GSF**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV. ELEMENTS</u></b>	<b><u>SITWORK</u></b>	<b><u>BUILDING</u></b>	<b><u>TOTAL</u></b>	<b><u>\$/GSF</u></b>
<b><u>A SUBSTRUCTURES</u></b>				
A10 FOUNDATIONS				
Foundations		\$1,324,802	\$1,324,802	\$9.64 /GSF
Slab on Grade		\$984,489	\$984,489	\$7.17 /GSF
FOUNDATIONS TOTAL		<b>\$2,309,291</b>	<b>\$2,309,291</b>	<b>\$16.81 /GSF</b>
A20 BASEMENT CONSTRUCTION		\$0		
<b>A SUBSTRUCTURES TOTAL</b>		<b>\$2,309,291</b>	<b>\$2,309,291</b>	<b>\$16.81 /GSF</b>
<b><u>B SHELL</u></b>				
B10 STRUCTURE				
Upper Floor Construction		\$2,909,479	\$2,909,479	\$21.18 /GSF
Roof Construction		\$2,150,845	\$2,150,845	\$15.66 /GSF
STRUCTURE TOTAL		<b>\$5,060,324</b>	<b>\$5,060,324</b>	<b>\$36.83 /GSF</b>
B20 EXTERIOR CLOSURE				
Exterior walls		\$4,459,287	\$4,459,287	\$32.46 /GSF
Exterior windows		\$2,266,656	\$2,266,656	\$16.50 /GSF
Exterior Doors		\$213,200	\$213,200	\$1.55 /GSF
EXTERIOR CLOSURE TOTAL		<b>\$6,939,143</b>	<b>\$6,939,143</b>	<b>\$50.51 /GSF</b>
B30 ROOFING				
Roof Coverngs		\$2,461,021	\$2,461,021	\$17.91 /GSF
ROOFING TOTAL		<b>\$2,461,021</b>	<b>\$2,461,021</b>	<b>\$17.91 /GSF</b>
<b>B SHELL TOTAL</b>		<b>\$14,460,488</b>	<b>\$14,460,488</b>	<b>\$105.26 /GSF</b>
<b><u>C INTERIORS</u></b>				
C10 INTERIOR CONSTRUCTION				
Partitions		\$4,440,502	\$4,440,502	\$32.32 /GSF
Interior Doors, frames & Hardware		\$956,483	\$956,483	\$6.96 /GSF
Fittings		\$975,770	\$975,770	\$7.10 /GSF
INTERIOR CONSTRUCTION TOTAL		<b>\$6,372,754</b>	<b>\$6,372,754</b>	<b>\$46.39 /GSF</b>
C20 STAIRCASES				
Staircases		\$550,570	\$550,570	\$4.01 /GSF

**Fuller Middle School**

Fuller Middle School

137,385 GSF

**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV.</u></b>	<b><u>ELEMENTS</u></b>	<b><u>SITWORK</u></b>	<b><u>BUILDING</u></b>	<b><u>TOTAL</u></b>	<b><u>\$/GSF</u></b>
	STAIRCASES TOTAL		\$550,570	\$550,570	\$4.01 /GSF
C30	INTERIOR FINISHES				
	Wall finishes		\$1,593,739	\$1,593,739	\$11.60 /GSF
	Floor finishes		\$1,429,565	\$1,429,565	\$10.41 /GSF
	Ceiling finishes		\$1,934,233	\$1,934,233	\$14.08 /GSF
	INTERIOR FINISHES TOTAL		\$4,957,537	\$4,957,537	\$36.08 /GSF
<b>C</b>	<b>INTERIORS TOTAL</b>		<b>\$11,880,861</b>	<b>\$11,880,861</b>	<b>\$86.48 /GSF</b>
<b>D</b>	<b><u>SERVICES</u></b>				
D10	VERTICAL MOVEMENT				
	Conveying System		\$213,400	\$213,400	\$1.55 /GSF
	VERTICAL MOVEMENT TOTAL		\$213,400	\$213,400	\$1.55 /GSF
D20	PLUMBING				
	Plumbing		\$2,057,763	\$2,057,763	\$14.98 /GSF
	PLUMBING TOTAL		\$2,057,763	\$2,057,763	\$14.98 /GSF
D30	HVAC				
	HVAC		\$7,553,789	\$7,553,789	\$54.98 /GSF
	HVAC TOTAL		\$7,553,789	\$7,553,789	\$54.98 /GSF
D40	FIRE PROTECTION				
	Fire Protection		\$861,604	\$861,604	\$6.27 /GSF
	FIRE PROTECTION TOTAL		\$861,604	\$861,604	\$6.27 /GSF
D50	ELECTRICAL				
	Service and distribution		\$4,997,258	\$4,997,258	\$36.37 /GSF
	ELECTRICAL TOTAL		\$4,997,258	\$4,997,258	\$36.37 /GSF
<b>D</b>	<b>SERVICES TOTAL</b>		<b>\$15,683,813</b>	<b>\$15,683,813</b>	<b>\$114.16 /GSF</b>
<b>E</b>	<b><u>EQUIPMENT AND FURNISHINGS</u></b>				
E10	EQUIPMENT				
	Institutional Equipment		\$1,980,142	\$1,980,142	\$14.41 /GSF
	EQUIPMENT TOTAL		\$1,980,142	\$1,980,142	\$14.41 /GSF



**Fuller Middle School**Fuller Middle School  
137,385 GSF**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV. ELEMENTS</u></b>	<b><u>SITWORK</u></b>	<b><u>BUILDING</u></b>	<b><u>TOTAL</u></b>	<b><u>\$/GSF</u></b>
E20 FURNISHINGS				
Specialties / Millwork		\$1,846,304	\$1,846,304	\$13.44 /GSF
FURNISHINGS TOTAL		<b>\$1,846,304</b>	<b>\$1,846,304</b>	<b>\$13.44 /GSF</b>
<b>D EQUIPMENT AND FURNISHINGS TOTAL</b>		<b>\$3,826,446</b>	<b>\$3,826,446</b>	<b>\$27.85 /GSF</b>
<b><u>F SPECIAL CONSTRUCTION &amp; DEMOLITION</u></b>				
F10 SPECIAL CONSTRUCTION				
Special construction		\$0	\$0	\$0.00 /GSF
SPECIAL CONSTRUCTION TOTAL		<b>\$0</b>	<b>\$0</b>	<b>\$0.00 /GSF</b>
F20 SELECTIVE DEMOLITION				
Selectice Demolition		\$0	\$0	\$0.00 /GSF
SELECTIVE DEMOLITION TOTAL		<b>\$0</b>	<b>\$0</b>	<b>\$0.00 /GSF</b>
<b>D SPECIAL CONSTRUCTION &amp; DEMOLITION TOTAL</b>		<b>\$0</b>	<b>\$0</b>	<b>\$0.00 /GSF</b>
<b><u>G BUILDING SITEWORK</u></b>				
G10 G10 SITE PREPARATION				
G1010 Site Clearing	\$0		\$0	\$0.00 /GSF
G1020 Site Demolition and Relocation	\$0		\$0	\$0.00 /GSF
G1030 Site Earthwork	\$456,249		\$456,249	\$3.32 /GSF
G10 SITE PREPARATION TOTAL	<b>\$456,249</b>		<b>\$456,249</b>	<b>\$3.32 /GSF</b>
G20 G20 SITE IMPROVEMENTS				
G2020 Roadways	\$0		\$0	\$0.00 /GSF
G2030 Pedestrian Paving	\$206,133		\$206,133	\$1.50 /GSF
G2040 Site Development	\$1,005,895		\$1,005,895	\$7.32 /GSF
G2050 Landscaping	\$1,151,604		\$1,151,604	\$8.38 /GSF
G20 SITE IMPROVEMENTS TOTAL	<b>\$2,363,632</b>		<b>\$2,363,632</b>	<b>\$17.20 /GSF</b>
G30 G30 SITE CIVIL/MECHANICAL UTILITIES				
G3010 Water Supply	\$0		\$0	\$0.00 /GSF
G3020 Sanitary Sewer	\$0		\$0	\$0.00 /GSF
G3030 Storm Sewer	\$0		\$0	\$0.00 /GSF
G3040 Heating Distribution	\$14,085		\$14,085	\$0.10 /GSF
G30 SITE CIVIL/MECHANICAL UTILITIES TOTAL	<b>\$14,085</b>		<b>\$14,085</b>	<b>\$0.10 /GSF</b>

**Fuller Middle School**

Fuller Middle School

137,385 GSF

**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV.</u></b>	<b><u>ELEMENTS</u></b>	<b><u>SITWORK</u></b>	<b><u>BUILDING</u></b>	<b><u>TOTAL</u></b>	<b><u>\$/GSF</u></b>
G40	G40 SITE ELECTRICAL UTILITIES				
	G4010 Site Electrical Utilities	\$497,865		\$497,865	\$3.62 /GSF
	G40 SITE ELECTRICAL UTILITIES TOTAL	<u>\$497,865</u>		<u>\$497,865</u>	<u>\$3.62 /GSF</u>
<b>G</b>	<b>BUILDING SITEWORK TOTAL</b>	<u>\$3,331,831</u>	<b>\$0</b>	<u>\$3,331,831</u>	<u>\$24.25 /GSF</u>
	<b>CONSTRUCTION TRADE TOTAL</b>	<u>\$3,331,831</u>	<u>\$48,160,899</u>	<u>\$51,492,730</u>	<u>\$374.81 /GSF</u>

**Fuller Middle School**

Framingham, MA

137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>10 A10 FOUNDATIONS</b>				
<b>11</b>				
<b>12 A1010 FOUNDATIONS</b>				
<b>13 Earthwork</b>				
<b>14</b> Slab-on-Grade platform preparation in Sitework Tab	<b>66,213</b>	SF		
<b>15</b> Continuous footing w/foundation wall	<b>2,049</b>	LF		
<b>16</b> Excavation	<b>4,905</b>	CY	\$12.00	See below
<b>17</b> Backfill from import	<b>4,215</b>	CY	\$22.00	See below
<b>18</b> Spread footings	<b>133</b>	EA		
<b>19</b> Excavation	<b>977</b>	CY	\$12.00	See below
<b>20</b> Backfill from import		CY	\$22.00	See below
<b>21</b> Elevator pit	<b>1</b>	EA		
<b>22</b> Excavation	<b>47</b>	CY	\$12.00	See below
<b>23</b> Backfill from import	<b>18</b>	CY	\$22.00	See below
<b>24</b> Disposal				
<b>25</b> Cast to off-site waste	<b>1,696</b>	CY	\$22.00	See below
<b>26</b> Grade & compact	<b>66,213</b>	SF	\$1.00	See below
<b>27</b> 12" base course sand & gravel below slab on grade	<b>2,452</b>	CY	\$35.00	See below
<b>28</b>				
<b>29</b> Building overexcavation:				
<b>30</b> Over-excavation to remove topsoil	<b>12,262</b>	CY	\$9.00	
<b>31</b> Over-excavation	<b>11,649</b>	CY	\$8.50	
<b>32</b> Dispose materials	<b>6,131</b>	CY	\$18.00	
<b>33</b> Structural fill	<b>5,242</b>	CY	\$25.00	
<b>34</b>				
<b>35</b> Building Area				
<b>36</b> Cut and fill for building	<b>2,452.33</b>	CY	\$8.00	
<b>37</b> 1' Gravel base to building	<b>2,452</b>	CY	\$35.00	
<b>38</b>				
<b>39</b> Concrete				
<b>40</b> Continuous footings; 3' x 1' 0" typ.	<b>2,049</b>	LF		
<b>41</b> 4' x 1' 0"				
<b>42</b> 5' x 1' 0"				
<b>43</b> Concrete; material	<b>247</b>	CY	\$130.00	\$32,110
<b>44</b> Concrete; place (combination of pumping/trucking)	<b>247</b>	CY	\$85.00	\$20,995
<b>45</b> Reinforcement w/ftn wall dowels (10#/lf)	<b>20,490</b>	LB	\$1.10	\$22,539
<b>46</b> Formwork	<b>8,196</b>	SF	\$9.00	\$73,764
<b>47</b> Spread footings	<b>133</b>	EA		
<b>48</b> Concrete; material	<b>465</b>	CY	\$130.00	\$60,450
<b>49</b> Concrete; place	<b>465</b>	CY	\$85.00	\$39,525
<b>50</b> Reinforcement (100#/cy)	<b>46,500</b>	LB	\$1.10	\$51,150
<b>51</b> Formwork	<b>6,406</b>	SF	\$8.00	\$51,251
<b>52</b> Pilasters	<b>133</b>	EA	\$1,200.00	\$159,600
<b>53</b> Grade beam GB-1, GB-2	<b>288</b>	LF		



**Fuller Middle School**

Framingham, MA

137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>54</b> Concrete; material	57	CY	\$130.00	\$7,410
<b>55</b> Concrete; place (combination of pumping/trucking)	57	CY	\$85.00	\$4,845
<b>56</b> Reinforcement (125#/cy)	7,125	LB	\$1.10	\$7,838
<b>57</b> Formwork	1,940	SF	\$9.00	\$17,460
<b>58</b> <i>Foundation and frost walls; 16" thick x 4' 0" high typ.</i>	8,551	SF		
<b>59</b> Concrete; material	443	CY	\$130.00	\$57,590
<b>60</b> Concrete; place	443	CY	\$85.00	\$37,655
<b>61</b> Reinforcement (150#/cy)	66,450	LB	\$1.00	\$66,450
<b>62</b> Formwork	17,212	SF	\$8.00	\$137,696
<b>63</b> <i>Foundation walls; 21" thick x 4' 0" high typ.</i>	1,645	SF		
<b>64</b> Concrete; material	112	CY	\$130.00	\$14,560
<b>65</b> Concrete; place	112	CY	\$85.00	\$9,520
<b>66</b> Reinforcement (150#/cy)	16,800	LB	\$1.00	\$16,800
<b>67</b> Formwork	3,289	SF	\$8.00	\$26,312
<b>68</b> Brick shelf	2,049	LF	\$5.00	\$10,245
<b>69</b> Elevator pit; slab and walls	1	EA	\$10,000.00	\$10,000
<b>70</b> Anchor bolts	532	SET	\$35.00	\$18,620
<b>71</b> 6" Ø hole through wall, backfill w/crushed stone	4	EA	\$500.00	\$2,000
<b>72</b>				
<b>73</b> Miscellaneous concrete	1	LS	\$143,000.00	\$143,000
<b>74</b> Ground improvements	1	AL	\$50,000.00	\$50,000
<b>75</b>				
<b>76</b> <i>Special Foundation Conditions</i>				
<b>77</b> Dewatering during excavation	1	LS	\$100,000.00	\$100,000
<b>78</b>				
<b>79</b> <i>Thermal &amp; Moisture Protection</i>				
<b>80</b> 2" rigid insulation at foundation walls	10,195	SF	\$2.50	\$25,488
<b>81</b> Waterproofing elevator pit	225	SF	\$18.00	\$4,050
<b>82</b> Damp proofing to foundation walls	10,195	SF	\$4.50	\$45,879
<b>83</b> <b>A1010 FOUNDATIONS TOTAL</b>				<b>\$1,324,802</b>
<b>84</b>				
<b>85</b> <b>A1030 SLAB ON GRADE</b>				
<b>86</b> <i>Concrete</i>				
<b>87</b> <i>Slab on grade, 5" thick, WWF, top of slab 314' 0"</i>	66,213	SF		
<b>88</b> Concrete; material	1,030	CY	\$130.00	\$133,897
<b>89</b> Concrete; place & finish	66,213	SF	\$2.25	\$148,979
<b>90</b> Reinforcement (6x6 mesh)	76,145	SF	\$0.75	\$57,109
<b>91</b> Slab depressions	1,243	LF	\$75.00	\$93,225
<b>92</b> Slab thickening at stair 5'x2'x1' deep	10	LOC	\$2,500.00	\$25,000
<b>93</b> <i>Slab on grade at loading dock, 6" thick, #4 bars</i>	350	SF		
<b>94</b> Concrete; material	6	CY	\$125.00	\$810
<b>95</b> Concrete; place & finish	350	SF	\$2.50	\$875
<b>96</b> Reinforcement; #4@12"bew	469	LBS	\$1.10	\$516



**Fuller Middle School**

Framingham, MA

137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>97</b> <i>Miscellaneous</i>				
<b>98</b> Concrete ramp @ Auditorium	2,440	SF	\$15.00	\$36,600
<b>99</b> Sloped walkway @ Cohort/Learning Common/Stage	320	SF	\$15.00	\$4,800
<b>100</b> Allow for additional work for auditorium flooring	1	LS	\$100,000.00	\$100,000
<b>101</b> Housekeeping & mechanical equipment pads	1	LS	\$10,000.00	\$10,000
<b>102</b> Miscellaneous concrete	1	LS	\$31,000.00	\$31,000
<b>103</b> Surcharge	1	AL	\$100,000.00	\$100,000
<b>104</b>				
<b>105</b> <i>Thermal &amp; Moisture Protection</i>				
<b>106</b> 2" rigid insulation under slab	66,213	SF	\$2.50	\$165,533
<b>107</b> Vapor retarder under slab	76,145	SF	\$1.00	\$76,145
<b>108</b> <b>A1030 SLAB ON GRADE TOTAL</b>				<b>\$984,489</b>
<b>109</b>				
<b>110</b> <b>A10 FOUNDATIONS TOTAL</b>				<b>\$2,309,291</b>
<b>111</b>				
<b>112</b>				
<b>113</b> <b>A20 BASEMENT</b>				
<b>114</b>				
<b>115</b> No anticipated work				
<b>116</b>				
<b>117</b> <b>TOTAL SYSTEM A20 BASEMENT</b>				<b>\$0</b>
<b>118</b>				
<b>119</b>				
<b>120</b> <b>B10 STRUCTURE</b>				
<b>121</b>				
<b>122</b> <b>B1010 UPPER FLOOR CONSTRUCTION</b>				
<b>123</b> <i>Concrete</i>				
<b>124</b> <i>Slab on deck topping, 3 1/4" light weight, WWF</i>	71,172	SF		
<b>125</b> Concrete; material	989	CY	\$130.00	\$128,505
<b>126</b> Reinforcement (6x6 mesh)	78,289	SF	\$0.75	\$58,717
<b>127</b> Rebar at corners and openings	3,914	LBS	\$1.10	\$4,306
<b>128</b> Concrete; place & finish	71,172	SF	\$2.50	\$177,930
<b>129</b> Beam pocket	23	EA	\$750.00	\$17,250
<b>130</b>				
<b>131</b> <i>Structural Steel Framing</i>	793	TNS		
<b>132</b> <i>Steel floor framing</i>				
<b>133</b> Wide flange beams	233	TNS	\$3,650.00	\$850,450
<b>134</b> Wide flange beams > 100	34	TNS	\$3,900.00	\$132,600
<b>135</b> HSS-shapes	43	TNS	\$4,100.00	\$176,300
<b>136</b> W-shapes ; columns	14	TNS	\$3,900.00	\$54,600
<b>137</b> HSS-shapes; columns	101	TNS	\$4,100.00	\$414,100
<b>138</b> HSS brace frames	40	TNS	\$4,200.00	\$168,000
<b>139</b> Remainder of steel framing; beams, columns, bridging	42	TNS	\$4,100.00	\$172,200



**Fuller Middle School**

Framingham, MA

137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>140</b> Plates, bent plates and angles	<b>133</b>	EA	\$75.00	\$9,975
<b>141</b> Moment connections	<b>157</b>	EA	\$750.00 w/roof	
<b>142</b> Shear studs	<b>10,170</b>	EA	\$5.00	\$50,850
<b>143</b> 3" deep x 18ga galv composite floor deck	<b>71,172</b>	SF	\$4.25	\$302,481
<b>145</b> <i>Thermal &amp; Moisture Protection</i>				
<b>146</b> Firestopping	<b>137,385</b>	GSF	\$0.30	\$41,216
<b>147</b> Intumescent fireproofing	<b>1</b>	LS	\$75,000.00	\$75,000
<b>148</b> Fireproofing	<b>1</b>	LS	\$75,000.00	\$75,000
<b>149</b> <b>B1010 UPPER FLOOR CONSTRUCTION TOTAL</b>				<b>\$2,909,479</b>
<b>150</b>				
<b>151</b> <b>B1020 ROOF CONSTRUCTION</b>				
<b>152</b> <i>Structural steel roof framing</i>	<b>286</b>	TNS		
<b>153</b> Wide flange beams	<b>124</b>	TNS	\$3,650.00	\$452,600
<b>154</b> Wide flange beams > 100	<b>87</b>	TNS	\$3,900.00	\$339,300
<b>155</b> HSS-shape	<b>18</b>	TNS	\$4,100.00	\$73,800
<b>156</b> Support post HSS7.625x0.375; RTU screen	<b>2</b>	TNS	\$4,100.00	\$8,200
<b>157</b> L- ledger; L4x4x1/4 anchored to CMU, roof	<b>1</b>	TNS	\$3,550.00	\$3,550
<b>158</b> Roof steel framing incl's hanger support beam, 52DLH17, HSS trusses, 1"x10" 50KSI steel plate, etc.	<b>42</b>	TNS	\$4,100.00	\$172,200
<b>159</b> Add reinforcement 7#/sf hot dip galv steel @ RTU	<b>12</b>	TNS	\$4,100.00	\$49,200
<b>160</b> Moment connections	<b>241</b>	EA	\$750.00	\$180,750
<b>161</b> Roof hanger @ main roof	<b>47</b>	EA	\$1,500.00	\$70,500
<b>162</b> 3/4" rod hanger @ Gym and Auditorium roof	<b>11</b>	EA	\$1,500.00	\$16,500
<b>163</b> Other misc plates, connections	<b>65,560</b>	SF	\$2.50	\$163,900
<b>164</b> <i>Premium for galv steel framing</i>	<b>14</b>	TNS	\$500.00	\$7,000
<b>165</b> 3" deep x 18ga galv comp roof deck (w/conc topping)	<b>40,380</b>	SF	\$4.25	\$171,615
<b>166</b> R3; 3" 18 ga roof deck above Learning Commons	<b>8,610</b>	SF	\$4.25	\$36,593
<b>167</b> R3A; 3" Cellular acoustic 18/16 ga roof deck, galv at Auditorium	<b>7,615</b>	SF	\$6.50	\$49,498
<b>168</b> R1.5; 1.5" 20 ga roof deck, Gym equipment storage	<b>835</b>	SF	\$6.00	\$5,010
<b>169</b> R1.5A; 1.5" Cellular acoustic 20 ga roof deck, galv at Gym	<b>8,120</b>	SF	\$6.50	\$52,780
<b>170</b> 1 hr spray fireproofing @ raised roof area over Learning Commons	<b>8,610</b>	SF	\$5.00	\$43,050
<b>171</b> Rough blocking to roof				Div B3010
<b>172</b> Roof screen, galv; HSS shapes	<b>32</b>	TNS	\$3,900.00	\$124,800
<b>173</b> Galvanized bar grating	<b>1,000</b>	SF	\$55.00	\$55,000
<b>174</b> Roof soffit/fascia framing	<b>500</b>	LF	\$150.00	\$75,000
<b>175</b> <b>B1020 ROOF CONSTRUCTION TOTAL</b>				<b>\$2,150,845</b>
<b>176</b>				
<b>177</b> <b>TOTAL SYSTEM B10 SUPERSTRUCTURE</b>				<b>\$5,060,324</b>
<b>178</b>				
<b>179</b>				
<b>180</b> <b>B20 EXTERIOR CLOSURE</b>				

**Fuller Middle School**

Framingham, MA

137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>181</b>				
<b>182 B2010 EXTERIOR WALLS</b>	<b>70,150</b>	<b>SF</b>		
<b>183</b>				
<b>184</b> Exterior brick wall; scored brick veneer, "modular" 8x8x4 , and "utility" 4x12x4, iron spot finish	<b>17,333</b>	<b>SF</b>	<b>\$35.00</b>	<b>\$606,655</b>
<b>185</b> 3" Faced rigid cellular polyiso insulation	<b>17,333</b>	<b>SF</b>	<b>\$4.00</b>	<b>\$69,332</b>
<b>186</b> Fluid applied air vapor barrier	<b>17,333</b>	<b>SF</b>	<b>\$5.50</b>	<b>\$95,332</b>
<b>187</b> Exterior CMU wall; scored ground face CMU, 8x12x16 , 4x8x16, and "utility" 4x12x4	<b>24,140</b>	<b>SF</b>	<b>\$32.00</b>	<b>\$772,480</b>
<b>188</b> 3" Faced rigid cellular polyiso insulation	<b>24,140</b>	<b>SF</b>	<b>\$4.00</b>	<b>\$96,560</b>
<b>189</b> Fluid applied air vapor barrier	<b>24,140</b>	<b>SF</b>	<b>\$5.50</b>	<b>\$132,770</b>
<b>190</b> ½" Fiberglass faced gypsum sheathing	<b>26,668</b>	<b>SF</b>	<b>\$2.00</b>	<b>\$53,336</b>
<b>191</b> 10" Cold formed metal framing	<b>26,668</b>	<b>SF</b>	<b>\$10.50</b>	<b>\$280,014</b>
<b>192</b> ⅝" GWB interior of exterior wall	<b>26,668</b>	<b>SF</b>	<b>\$2.50</b>	<b>\$66,670</b>
<b>193</b> 12" Reinforced ground face CMU wall backup @ Auditorium & Gym	<b>14,805</b>	<b>SF</b>	<b>\$28.00</b>	<b>\$414,540</b>
<b>194</b> Caulking and sealants at brick & CMU	<b>41,473</b>	<b>SF</b>	<b>\$0.65</b>	<b>\$26,957</b>
<b>195</b> 4" Utility brick, both sides @ parapet wall, Main Entrance	<b>175</b>	<b>SF</b>	<b>\$32.00</b>	<b>\$5,600</b>
<b>196</b> Precast colored coping on top of parapet wall	<b>26</b>	<b>LF</b>	<b>\$150.00</b>	<b>\$3,900</b>
<b>197</b> Premium for custom brick and CMU @ lintels & shelves	<b>1,128</b>	<b>LF</b>	<b>\$50.00</b>	<b>\$56,400</b>
<b>198</b> Corrugated metal panel w/exposed fasteners	<b>4,578</b>	<b>SF</b>	<b>\$45.00</b>	<b>\$206,010</b>
<b>199</b> 5" Fiberglass thermal Z-furring	<b>4,578</b>	<b>SF</b>	<b>\$3.50</b>	<b>\$16,023</b>
<b>200</b> 4" Mineral fiber insulation	<b>4,578</b>	<b>SF</b>	<b>\$4.50</b>	<b>\$20,601</b>
<b>201</b> Fluid applied air vapor barrier	<b>4,578</b>	<b>SF</b>	<b>\$5.50</b>	<b>\$25,179</b>
<b>202</b> ½" Fiberglass faced gypsum sheathing	<b>4,578</b>	<b>SF</b>	<b>\$2.00</b>	<b>\$9,156</b>
<b>203</b> 10" Cold formed metal framing	<b>4,578</b>	<b>SF</b>	<b>\$10.50</b>	<b>\$48,069</b>
<b>204</b> ⅝" GWB interior of exterior wall	<b>4,578</b>	<b>SF</b>	<b>\$2.50</b>	<b>\$11,445</b>
<b>205</b> Caulking and sealants at corrugated metal panel	<b>4,578</b>	<b>SF</b>	<b>\$0.65</b>	<b>\$2,976</b>
<b>206</b> Composite metal panel w/exposed fasteners	<b>2,413</b>	<b>SF</b>	<b>\$50.00</b>	<b>\$120,650</b>
<b>207</b> 5" Fiberglass thermal Z-furring	<b>2,413</b>	<b>SF</b>	<b>\$3.50</b>	<b>\$8,446</b>
<b>208</b> 4" Mineral fiber insulation	<b>2,413</b>	<b>SF</b>	<b>\$4.50</b>	<b>\$10,859</b>
<b>209</b> Fluid applied air vapor barrier	<b>2,413</b>	<b>SF</b>	<b>\$5.50</b>	<b>\$13,272</b>
<b>210</b> ½" Fiberglass faced gypsum sheathing	<b>2,413</b>	<b>SF</b>	<b>\$2.00</b>	<b>\$4,826</b>
<b>211</b> 10" Cold formed metal framing	<b>2,413</b>	<b>SF</b>	<b>\$10.50</b>	<b>\$25,337</b>
<b>212</b> ⅝" GWB interior of exterior wall	<b>2,413</b>	<b>SF</b>	<b>\$2.50</b>	<b>\$6,033</b>
<b>213</b> Caulking and sealants at composite metal panel	<b>2,413</b>	<b>SF</b>	<b>\$0.65</b>	<b>\$1,568</b>
<b>214</b> Wood grain phenolic panel - Trespa @ ext wall incl's projections/window bay	<b>6,354</b>	<b>SF</b>	<b>\$70.00</b>	<b>\$444,780</b>
<b>215</b> 5" Fiberglass thermal Z-furring	<b>6,354</b>	<b>SF</b>	<b>\$3.50</b>	<b>\$22,239</b>
<b>216</b> 4" Mineral fiber insulation at Trespa cladding -	<b>6,354</b>	<b>SF</b>	<b>\$4.50</b>	<b>\$28,593</b>
<b>217</b> Fluid applied air vapor barrier	<b>6,354</b>	<b>SF</b>	<b>\$5.50</b>	<b>\$34,947</b>
<b>218</b> ½" Fiberglass faced gypsum sheathing	<b>6,354</b>	<b>SF</b>	<b>\$2.00</b>	<b>\$12,708</b>
<b>219</b> 10" Cold formed metal framing	<b>6,354</b>	<b>SF</b>	<b>\$10.50</b>	<b>\$66,717</b>
<b>220</b> ⅝" GWB interior of exterior wall	<b>6,354</b>	<b>SF</b>	<b>\$2.50</b>	<b>\$15,885</b>



**Fuller Middle School**

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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>221</b> Caulking and sealants at Trespa cladding	<b>6,354</b>	SF	\$0.65	\$4,130
<b>222</b>				
<b>223</b> Phenolic panel; Ext soffit at projection/window bay	<b>1,250</b>	SF	\$70.00	\$87,500
<b>224</b> Furring	<b>1,250</b>	SF	\$3.50	\$4,375
<b>225</b> 4" mineral fiber insulation at Trespa cladding - Exterior soffit	<b>1,250</b>	SF	\$4.00	\$5,000
<b>226</b> Air vapor barrier at Trespa cladding - Exterior soffit	<b>1,250</b>	SF	\$5.50	\$6,875
<b>227</b> 1/2" sheathing at Trespa cladding - Exterior soffit	<b>1,250</b>	SF	\$2.00	\$2,500
<b>228</b> 6" Metal stud at Trespa cladding - Exterior soffit	<b>1,250</b>	SF	\$10.50	\$13,125
<b>229</b> 5/8 GWB at Trespa cladding - Exterior soffit	<b>1,250</b>	SF	\$2.50	\$3,125
<b>230</b> Caulking and sealants at Trespa cladding - Ext. soffit	<b>1,250</b>	SF	\$0.65	\$813
<b>231</b>				
<b>232</b> <i>Miscellaneous</i>				
<b>233</b> Articulation to exterior	<b>1</b>	LS	\$35,000.00	\$35,000
<b>234</b> Cont galv relieving angle at masonry wall	<b>1,038</b>	LF	\$75.00	\$77,850
<b>235</b> Loose lintel @ exterior wall openings	<b>90</b>	LF	\$200.00	\$18,000
<b>236</b> Miscellaneous metals in exterior closure	<b>56,068</b>	SF	\$1.50	\$84,102
<b>237</b> Window caulking				Div B2020
<b>238</b> Through wall sheet metal flashing	<b>1,424</b>	LF	\$25.00	\$35,600
<b>239</b> Corrugated perforated metal; mechanical RTU screen	<b>1,678</b>	SF	\$60.00	\$100,680
<b>240</b> Metal louver	<b>625</b>	SF	\$70.00	\$43,750
<b>241</b> Exterior mockup	<b>1</b>	LS	\$50,000.00	\$50,000
<b>242</b> Temporary enclosures	<b>1</b>	LS	\$50,000.00	\$50,000
<b>243</b> <b>B2010 EXTERIOR WALLS TOTAL</b>				<b>\$4,459,287</b>
<b>244</b>				
<b>245</b> <b>B2020 EXTERIOR WINDOWS</b>	<b>14,082</b>	<b>SF</b>		
<b>246</b> <i>Aluminum storefronts, double glazed w/security insul glazing, school guard glass, laminated interior glass</i>	<b>888</b>	<b>SF</b>		
<b>247</b> Type 10A; 24'-8 1/4" x 12'-0"	<b>1</b>	EA	\$34,300.00	\$34,300
<b>248</b> Type 11A; 9'-6 1/4" x 12'-0"	<b>1</b>	EA	\$13,200.00	\$13,200
<b>249</b> Type 12A; 9'-7 1/2" x 12'-0"	<b>2</b>	EA	\$13,200.00	\$26,400
<b>250</b> Type 13A; 7'-6" x 12'-0"	<b>1</b>	EA	\$10,400.00	\$10,400
<b>251</b> Type 16A; 12'-0" x 13'-0 1/2"	<b>1</b>	EA	\$17,900.00	\$17,900
<b>252</b> <i>Bay windows</i>	<b>3,576</b>	<b>SF</b>		
<b>253</b> Type 1; 9'-3" x 12'-0"	<b>10</b>	EA	\$13,300.00	\$133,000
<b>254</b> Type 2; 9'-3" x 12'-0"	<b>11</b>	EA	\$13,300.00	\$146,300
<b>255</b> Type 2A; 9'-3" x 11'-0 1/4"	<b>2</b>	EA	\$12,200.00	\$24,400
<b>256</b> Type 3; 9'-3" x 11'-6"	<b>9</b>	EA	\$12,800.00	\$115,200
<b>257</b> Type 3C; 7'-0" x 12'-0"	<b>1</b>	EA	\$10,100.00	\$10,100
<b>258</b> <i>Curtain wall/Windows</i>	<b>9,618</b>	<b>SF</b>		
<b>259</b> Type 4; 3'-0" x 10'-1"	<b>57</b>	EA	\$3,500.00	\$199,500
<b>260</b> Type 5A; 3'-11" x 12'-0"	<b>6</b>	EA	\$5,500.00	\$33,000
<b>261</b> Type 5B; 3'-11" x 11'-6"	<b>22</b>	EA	\$5,300.00	\$116,600
<b>262</b> Type A1; 1'-4" x 3'-0"	<b>1</b>	EA	\$400.00	\$400





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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>263</b> Type A2; 2'-0" x 4'-0"	1	EA	\$900.00	\$900
<b>264</b> Type A3; 2'-0" x 12'-0"	27	EA	\$2,800.00	\$75,600
<b>265</b> Type B1; 3'-4" x 12'-0"	10	EA	\$4,600.00	\$46,000
<b>266</b> Type B1A; 3'-4" x 5'-10"	2	EA	\$2,100.00	\$4,200
<b>267</b> Type B3; 3'-4" x 7'-0"	1	EA	\$2,600.00	\$2,600
<b>268</b> Type B4; 3'-4" x 12'-0"	9	EA	\$4,600.00	\$41,400
<b>269</b> Type C1; 3'-4" x 12'-0"	14	EA	\$4,600.00	\$64,400
<b>270</b> Type D1; 5'-4" x 6'-2"	2	EA	\$3,600.00	\$7,200
<b>271</b> Type D3; 5'-4" x 12'-0"	12	EA	\$7,400.00	\$88,800
<b>272</b> Type E1; 5'-4" x 10'-0"	3	EA	\$6,100.00	\$18,300
<b>273</b> Type E2; 5'-4" x 12'-0"	6	EA	\$7,400.00	\$44,400
<b>274</b> Type F1; 7'-4" x 6'-2"	1	EA	\$5,000.00	\$5,000
<b>275</b> Type F2; 7'-4" x 10'-0"	3	EA	\$8,400.00	\$25,200
<b>276</b> Type F3; 7'-4" x 12'-0"	7	EA	\$10,100.00	\$70,700
<b>277</b> Type G1; 7'-4" x 12'-0"	11	EA	\$10,100.00	\$111,100
<b>278</b> Type H1; 9'-4" x 6'-0"	1	EA	\$6,400.00	\$6,400
<b>279</b> Type H2; 9'-4" x 10'-0"	1	EA	\$10,700.00	\$10,700
<b>280</b> Type H3; 9'-4" x 12'-0"	1	EA	\$12,900.00	\$12,900
<b>281</b> Type I1; 9'-4" x 6'-0"	1	EA	\$6,400.00	\$6,400
<b>282</b> Type I2; 9'-4" x 10'-0"	1	EA	\$10,700.00	\$10,700
<b>283</b> Type I3; 9'-4" x 12'-0"	1	EA	\$12,900.00	\$12,900
<b>284</b> Type K1; 11'-4" x 12'-0"	2	EA	\$15,600.00	\$31,200
<b>285</b> Type L1; 13'-4" x 12'-0"	1	EA	\$18,400.00	\$18,400
<b>286</b> Type M1; 10'-4" x 6'-2"	1	EA	\$7,300.00	\$7,300
<b>287</b> Type N1; 6'-4" x 4'-4"	2	EA	\$3,000.00	\$6,000
<b>288</b> Type N2; 6'-4" x 5'-10"	2	EA	\$4,100.00	\$8,200
<b>289</b> Type O1; 6'-4" x 12'-0"	2	EA	\$8,700.00	\$17,400
<b>290</b> Type Q1; 4'-4" x 7'-0"	1	EA	\$3,300.00	\$3,300
<b>291</b> Type R1; 3'-4" x 6'-11" irregular shape	1	EA	\$2,900.00	\$2,900
<b>292</b> Horizontal aluminum sun shades attached to CW/windows @ south elevation; allow	1,755	LF	\$175.00	\$307,132
<b>293</b> Blocking for openings	8,448	LF	\$10.00	\$84,480
<b>294</b> Window caulking	8,448	LF	\$3.00	\$25,344
<b>295</b> Add premium cost for translucent	360	SF	\$25.00	\$9,000
<b>296</b> Allow for premium cost for security glazing	570	SF	\$350.00	\$199,500
<b>297 B2020 EXTERIOR WINDOWS TOTAL</b>				<b>\$2,266,656</b>
<b>298</b>				
<b>299 B2030 EXTERIOR DOORS</b>				
<b>300</b> OH door, 12'-0" x 10'-6" motor operated @ Makerspace	1	EA	\$8,000.00	\$8,000
<b>301</b> Exterior HM doors; complete	45	LEAF		
<b>302</b> Type A, single	1	LEAF	\$1,800.00	\$1,800
<b>303</b> Type B1, single	5	LEAF	\$1,800.00	\$9,000
<b>304</b> Type B2, pair	9	PR	\$3,600.00	\$32,400



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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>305</b> Type B2, 10'-0" x 8'-6" @ Receiving	1	PR	\$5,000.00	\$5,000
<b>306</b> Aluminum entry doors including hardware	17	LEAF		
<b>307</b> Type SF1, single	7	LEAF	\$3,500.00	\$24,500
<b>308</b> Type SF2, pair	5	PR	\$7,000.00	\$35,000
<b>309</b> School guard premium	5	LVS	\$10,000.00	\$50,000
<b>310</b> Card reader	3	EA	\$2,500.00	\$7,500
<b>311</b> RDL; Remote door un/lock	16	EA	\$2,500.00	\$40,000
<b>312</b> <b>B2030 EXTERIOR DOORS TOTAL</b>				<b>\$213,200</b>
<b>313</b>				
<b>314</b> <b>TOTAL SYSTEM B20 EXTERIOR CLOSURE</b>				<b>\$6,939,143</b>
<b>315</b>				
<b>316</b>				
<b>317</b> <b>B30 ROOFING</b>				
<b>318</b>				
<b>319</b> <b>B3010 ROOF COVERINGS</b>				
<b>320</b>				
<b>321</b> Roofing				
<b>322</b> Rough carpentry/wood blocking to roof	5,138	LF	\$15.00	\$77,070
<b>323</b> Single-ply PVC membrane roofing system	65,560	SF		
<b>324</b> Type 1; Main roof, lower roof	36,386	SF	\$13.25	\$482,115
<b>325</b> Type 2; Gym & Auditorium	16,570	SF	\$13.25	\$219,553
<b>326</b> Type 3; Raised roof above Learning Commons	8,610	SF	\$13.25	\$114,083
<b>327</b> Type 4; Entry walkway & Terrace	1,258	SF	\$13.25	\$16,669
<b>328</b> Vertical roof membrane, 5'-6" h at raised roof	2,736	SF	\$14.25	\$38,988
<b>329</b> ½" roof cover board	65,560	SF	\$2.25	\$147,510
<b>330</b> 6" insulation	65,560	SF	\$2.50	\$163,900
<b>331</b> Vapor retarder	65,560	SF	\$1.50	\$98,340
<b>332</b> Add ½" fire rated roof board @ Auditorium, Gym & raised roof area over Learning Commons	25,180	SF	\$2.75	\$69,245
<b>333</b> Add acoustic insulation in flutes @ Auditorium & Gym roof deck	16,570	SF	\$1.50	\$24,855
<b>334</b> Precast concrete pavers over adjustable deck pedestal system @ roof type 4	1,258	SF	\$45.00	\$56,610
<b>335</b> Polycarbonate entrance canopy	420	SF	\$185.00	\$77,700
<b>336</b> Prefinished aluminum fascia/roof edge	3,054	LF	\$65.00	\$198,510
<b>337</b> Roof expansion joint	1	AL	\$25,000.00	\$25,000
<b>338</b>				
<b>339</b> Roofing Accessories				
<b>340</b> Miscellaneous roof accessories	1	LS	\$30,000.00	\$30,000
<b>341</b> Paver walkway	745	SF	\$25.00	\$18,625
<b>342</b>				
<b>343</b> Roof openings				
<b>344</b> Glazed aluminum-framed skylight	4,015	SF	\$150.00	\$602,250
<b>345</b> <b>B3010 ROOF COVERINGS TOTAL</b>				<b>\$2,461,021</b>



**Fuller Middle School**

Framingham, MA

137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>346</b>				
<b>347 TOTAL SYSTEM B30 ROOFING</b>				<b>\$2,461,021</b>
<b>348</b>				
<b>349</b>				
<b>350 C10 INTERIOR CONSTRUCTION</b>				
<b>351</b>				
<b>352 C1010 PARTITIONS</b>				
<b>353 04 00 00 Masonry</b>				
<b>354</b> 12" CMU wall reinforced; Gym & Auditorium, double hgt	<b>7,942</b>	SF	\$38.00	\$301,796
<b>355</b> 8" CMU wall, load bearing wall @ Auditorium	<b>1,284</b>	SF	\$22.00	\$28,248
<b>356</b> Stairs/elevator CMU wall	<b>3,266</b>	SF	\$22.00	\$71,852
<b>357</b>				
<b>358</b> Gypsum board partitions	115,966	SF		
<b>359</b> Type B3; 3 5/8" metal stud, 5/8" GWB	<b>203</b>	SF	\$6.70	\$1,360
<b>360</b> Type B4; same as type B3, add batt insulation	<b>7,845</b>	SF	\$8.20	\$64,329
<b>361</b> Type C2; 3 5/8" metal stud, 2x 5/8" GWB	<b>5,600</b>	SF	\$8.90	\$49,840
<b>362</b> Type C3; 3 5/8" metal stud, 2x 5/8" GWB, batt insulation	<b>6,483</b>	SF	\$10.40	\$67,423
<b>363</b> Type C4; same as type C3, add 1hr fire rated	<b>3,165</b>	SF	\$10.90	\$34,499
<b>364</b> Type C6; 6" metal stud, 2x 5/8" GWB, batt insulation	<b>1,118</b>	SF	\$12.40	\$13,863
<b>365</b> Type C7; same as type C6, add 1hr fire rated	<b>5,507</b>	SF	\$12.90	\$71,040
<b>366</b> Type C8; 8" metal stud, 2x 5/8" GWB, batt insulation	<b>172</b>	SF	\$14.40	\$2,477
<b>367</b> Type C10; 10" metal stud, 2x 5/8" GWB, batt insulation	<b>222</b>	SF	\$16.40	\$3,641
<b>368</b> Type D3; 3 5/8" metal stud, 2x 5/8" GWB, batt insulation	<b>1,526</b>	SF	\$10.40	\$15,870
<b>369</b> Type D6; 6" metal stud, 2x 5/8" GWB, batt insulation	<b>1,266</b>	SF	\$12.40	\$15,698
<b>370</b> Type E3; 3 5/8" metal stud, 3x 5/8" GWB, batt insulation	<b>23,327</b>	SF	\$12.60	\$293,920
<b>371</b> Type E4; same as type E3, add 1hr fire rated	<b>780</b>	SF	\$13.10	\$10,218
<b>372</b> Type E6; 6" metal stud, 3x 5/8" GWB, batt insulation	<b>1,158</b>	SF	\$14.80	\$17,138
<b>373</b> Type E7; 10" metal stud, 3x 5/8" GWB, batt insulation	<b>1,022</b>	SF	\$18.80	\$19,214
<b>374</b> Type E8; 8" metal stud, 3x 5/8" GWB, batt insulation	<b>18,060</b>	SF	\$16.80	\$303,408
<b>375</b> Type E9; same as type E8, add 1hr fire rated	<b>2,710</b>	SF	\$17.30	\$46,883
<b>376</b> Type F1; 3 5/8" metal stud, 4x 5/8" GWB, batt insulation	<b>4,988</b>	SF	\$14.80	\$73,822
<b>377</b> Type F2; same as type F1, add 1hr fire rated	<b>1,834</b>	SF	\$15.30	\$28,060
<b>378</b> Type F6; 6" metal stud, 4x 5/8" GWB, batt insulation	<b>9,646</b>	SF	\$16.80	\$162,053
<b>379</b> Type F7; 8" metal stud, 4x 5/8" GWB, batt insulation	<b>227</b>	SF	\$18.80	\$4,268
<b>380</b> Type F8; same as type F7, add 1hr fire rated	<b>1,065</b>	SF	\$19.30	\$20,555
<b>381</b> Type H4; 4" metal C-H stud, 3x 5/8" GWB, batt insulation, 2hr rated	<b>67</b>	SF	\$14.60	\$978
<b>382</b> Type H6; 6" metal C-H stud, 3x 5/8" GWB, batt insulation, 2hr rated @ Elevator	<b>1,561</b>	SF	\$16.60	\$25,913
<b>383</b> Type J1; 2 x (3 5/8" metal stud, 5/8" GWB, batt insulation)	<b>6,552</b>	SF	\$16.40	\$107,453
<b>384</b> Type J2; same as type J1	<b>1,157</b>	SF	\$16.40	\$18,975
<b>385</b> Type K1; 2 x (3 5/8" metal stud, 2x5/8" GWB, batt insulation)	<b>6,245</b>	SF	\$20.80	\$129,896
<b>386</b> Type K2; same as type K1, add 1hr fire rated	<b>2,460</b>	SF	\$21.30	\$52,398



**Fuller Middle School**

Framingham, MA

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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>387</b> Rough carpentry internal partitions and ceilings	<b>137,385</b>	GSF	\$1.25	\$171,731
<b>388</b> Misc metals for interior construction	<b>137,385</b>	GSF	\$1.50	\$206,078
<b>389</b>				
<b>390</b> <i>Operable partition</i>				
<b>391</b> Double acoustic operable partitions w/magnetic writable wall covering	<b>5,884</b>	SF	\$90.00	\$529,560
<b>392</b> Framing support beam to operable partitions	<b>633</b>	LF	\$175.00	\$110,775
<b>393</b>				
<b>394</b> <i>Interior windows</i>				
<b>395</b> Interior	<b>5,215</b>	SF	\$35.00	\$182,525
<b>396</b> Glazed film	<b>2,359</b>	SF	\$60.00	\$141,540
<b>397</b> Ballistic glass sliding window @ Admin	<b>1</b>	EA	\$2,500.00	\$2,500
<b>398</b> Mirror frameless	<b>1,454</b>	SF	\$45.00	\$65,430
<b>399</b> Graduated glass; premium	<b>2,359</b>	SF	\$50.00	\$117,950
<b>400</b> Acoustical glass premium	<b>505</b>	SF	\$250.00	\$126,250
<b>401</b> <i>Interior storefront</i>				
<b>402</b> Storefront @ vestibule	<b>3,115</b>	SF	\$85.00	\$264,775
<b>403</b> Breakout Space-A, B & C; Glazed partition/wood panel closure	<b>3</b>	EA	\$125,000.00	\$375,000
<b>404</b> <i>Interior penetration firestopping</i>				
<b>405</b> Interior caulking	<b>137,385</b>	GSF	\$0.50	\$68,693
<b>406</b> Top-of-partition firestopping	<b>137,385</b>	GSF	\$0.15	\$20,608
<b>407</b> <b>C1010 PARTITIONS TOTAL</b>				<b>\$4,440,502</b>
<b>408</b>				
<b>409</b> <b>C1020 INTERIOR DOORS, FRAMES &amp; HARDWARE</b>				
<b>410</b> <i>08 10 00 Hollow Metal Doors and Frames:</i>				
<b>411</b> Security gate 7'-0" x 7'-10", steel @ 1st Floor Corridors	<b>2</b>	EA	\$900.00	\$1,800
<b>412</b> <i>Hollow Metal Doors:</i>				
<b>413</b> type B1, single	<b>41</b>	EA	\$300.00	\$12,300
<b>414</b> type B2, pair	<b>6</b>	EA	\$600.00	\$3,600
<b>415</b> HM frames	<b>260</b>	EA	\$225.00	\$58,500
<b>416</b> HM frames for pair doors	<b>29</b>	EA	\$275.00	\$7,975
<b>417</b> <i>Wood Doors:</i>				
<b>418</b> type B1, single, wood	<b>91</b>	EA	\$300.00	\$27,300
<b>419</b> same as above w/applied surface both sides	<b>13</b>	EA	\$750.00	\$9,750
<b>420</b> type B1, 5'-0" x 26'-0" swinging panel @ AV rooms	<b>2</b>	EA	\$2,500.00	\$5,000
<b>421</b> type B2, pair, wood	<b>13</b>	EA	\$600.00	\$7,800
<b>422</b> type C1, single, wood w/full height glass	<b>111</b>	EA	\$375.00	\$41,625
<b>423</b> type C2, pair, w/full height glass	<b>9</b>	EA	\$750.00	\$6,750
<b>424</b> type C3, pair, w/vision panel 0'-5" x 6'-0"	<b>1</b>	EA	\$750.00	\$750
<b>425</b> Premium cost for acoustical doors	<b>40</b>	LOC	\$250.00	\$10,000
<b>426</b>				
<b>427</b> <i>Coiling drapery, security screen</i>				
<b>428</b> Cafeteria/Learning Commons; 21'-0" x 8'-0" (2 ea)	<b>336</b>	SF	\$55.00	\$18,480



**Fuller Middle School**

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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>429</b> Kitchen; 40'-0" x 8'-0" (1 ea)	<b>320</b>	SF	\$55.00	\$17,600
<b>430</b> Admin area; 21'-0" x 5'-6" (1 ea)	<b>116</b>	SF	\$55.00	\$6,353
<b>431</b>				
<b>432</b> <i>Aluminum-Framed Entrances and Storefronts, interior</i>				
<b>433</b> type SF1, single, aluminum/glass	<b>3</b>	EA	\$2,500.00	\$7,500
<b>434</b> type SF2, pair, aluminum/glass	<b>2</b>	PR	\$5,000.00	\$10,000
<b>435</b> School guard doors, premium	<b>5</b>	LVS	\$10,000.00	\$50,000
<b>436</b>				
<b>437</b> <i>Access Doors and Frames</i>				
<b>438</b> Access doors	<b>100</b>	EA	\$250.00	\$25,000
<b>439</b>				
<b>440</b> Door sidelights	<b>900</b>	SF	\$50.00	\$45,000
<b>441</b> Glazing to doors	<b>1,554</b>	SF	\$50.00	\$77,700
<b>442</b>				
<b>443</b> Hardware	<b>318</b>	SET	\$550.00	\$174,900
<b>444</b> Powered door openers	<b>4</b>	LOC	\$3,000.00	\$12,000
<b>445</b> CR; Card reader	<b>15</b>	EA	\$2,500.00	\$37,500
<b>446</b> RDL; Remote door un/lock	<b>14</b>	EA	\$2,500.00	\$35,000
<b>447</b> Paint door frames	<b>318</b>	EA	\$85.00	\$27,030
<b>448</b> Paint door	<b>318</b>	EA	\$65.00	\$20,670
<b>449</b> Miscellaneous metals	<b>137,385</b>	GSF	\$1.00	\$137,385
<b>450</b> Blocking at doors	<b>5,406</b>	LF	\$2.50	\$13,515
<b>451</b> Door Installation	<b>318</b>	EA	\$150.00	\$47,700
<b>452</b> <b>C1020 INTERIOR DOORS, FRAMES &amp; HARDWARE TOTAL</b>				<b>\$956,483</b>
<b>453</b>				
<b>454</b> <b>C1030 FITTINGS</b>				
<b>455</b> Tackboards	<b>2,688</b>	SF	\$12.00	\$32,256
<b>456</b> Markerboards	<b>5,376</b>	SF	\$18.00	\$96,768
<b>457</b> Tackable wall; allow	<b>3,000</b>	SF	\$10.50	\$31,500
<b>458</b> Magnetic writing surface	<b>17,600</b>	SF	\$22.00	\$387,200
<b>459</b>				
<b>460</b> <i>Signage</i>				
<b>461</b> Commerative plaque	<b>2</b>	LOC	\$1,500.00	\$3,000
<b>462</b> Dimensional characters; School name	<b>1</b>	AL	\$5,000.00	\$5,000
<b>463</b> Plastic panel signs for room idenfication, way finding, hazard identification	<b>1</b>	AL	\$7,500.00	\$7,500
<b>464</b> Framed paper signs	<b>1</b>	AL	\$2,180.00	\$2,180
<b>465</b> Miscellaneous signage	<b>137,385</b>	GSF	\$0.35	\$48,085
<b>466</b>				
<b>467</b> <i>Wall &amp; corner guards</i>				
<b>468</b> Stainless steel corner guards	<b>1</b>	LS	\$10,000.00	\$10,000
<b>469</b>				
<b>470</b> <i>Toilet compartments (plastic laminate)</i>				



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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>471</b> Toilet compartments	20	EA	\$1,200.00	\$24,000
<b>472</b> Toilet compartments - ADA	14	EA	\$1,400.00	\$19,600
<b>473</b> Urinal screen	20	EA	\$800.00	\$16,000
<b>474</b>				
<b>475</b> Lockers				
<b>476</b> Student lockers 15"x12"x36" w/angled top, phenolic w/plam finish and wd veneer sides and back	645	EA	\$300.00	\$193,500
<b>477</b> Locker base	806	LF	\$35.00	\$28,219
<b>478</b> Angled glass display cabinets above lockers	365	LF	\$275.00	NIC
<b>479</b> Athletic / PE lockers: metal 2-tier 30"h. x 15"w x 15"d	50	EA	\$250.00	\$12,500
<b>480</b> Kitchen staff lockers, single tier, 12" x 12" x 6' high	6	EA	\$250.00	\$1,500
<b>481</b>				
<b>482</b> Toilet accessories				
<b>483</b> Combination PTD/WR unit	8	EA	\$150.00	\$1,200
<b>484</b> Towel dispenser/waste receptacle	45	EA	\$100.00	\$4,500
<b>485</b> Soap dispensers	45	EA	\$35.00	\$1,575
<b>486</b> Toilet paper dispensers	48	EA	\$65.00	\$3,120
<b>487</b> Sanitary napkin disposal units	21	EA	\$250.00	\$5,250
<b>488</b> Robe hook	15	EA	\$25.00	\$375
<b>489</b> Fold-down shower seat	1	EA	\$200.00	\$200
<b>490</b> Grab bars	28	PR	\$160.00	\$4,480
<b>491</b> Mirrors - in private bathrooms	14	EA	\$150.00	\$2,100
<b>492</b> Mop holder w/shelf (Janitors)	6	EA	\$180.00	\$1,080
<b>493</b>				
<b>494</b> Fire extinguisher cabinets				
<b>495</b> Fully recessed/non-rated	14	EA	\$450.00	\$6,182
<b>496</b> Semi-recessed/non-rated	6	EA	\$300.00	\$1,800
<b>497</b>				
<b>498</b> Other fittings				
<b>499</b> Wood cantelevered benches at classroom glazed partitions	42	EA	\$350.00	\$14,700
<b>500</b> Curtain track, carriers and curtains	2	EA	\$200.00	\$400
<b>501</b> Chainlink fence & gate; custodial area; allow	250	SF	\$40.00	\$10,000
<b>502</b> <b>C1030 FITTINGS TOTAL</b>				<b>\$975,770</b>
<b>503</b>				
<b>504</b> <b>TOTAL SYSTEM C10 INTERIOR CONSTRUCTION</b>				<b>\$6,372,754</b>
<b>505</b>				
<b>506</b>				
<b>507</b> <b>C20 STAIRCASES</b>				
<b>508</b>				
<b>509</b> <b>C2010 STAIRCASES</b>				
<b>510</b> Interior stairs				
<b>511</b> Egress stairs	6	FLT	\$20,000.00	\$120,000
<b>512</b> Monumental/open stairs	4	FLT	\$65,000.00	\$260,000



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<b>513</b>				
<b>514</b> Stair finishes				
<b>515</b> Railings	1	LS	\$75,000.00	\$75,000
<b>516</b> VCT treads & risers with rubber nosing	828	LFR	\$15.50	\$12,834
<b>517</b> VCT tile at landings	1,717	SF	\$8.00	\$13,736
<b>518</b> Monumental/open stairs	920	LFR	\$75.00	\$69,000
<b>519</b> C2010 STAIRCASES TOTAL				<b>\$550,570</b>
<b>520</b>				
<b>521</b> TOTAL C20 STAIRCASES				<b>\$550,570</b>
<b>522</b>				
<b>523</b>				
<b>524</b> C30 INTERIOR FINISHES				
<b>525</b>				
<b>526</b> C3010 WALL FINISHES				
<b>527</b> Auditorium walls:				
<b>528</b> Sound absorbing wood wall panel	4,165	SF	\$55.00	\$229,075
<b>529</b> Ground faced block	6,084	SF	\$32.00	\$194,688
<b>530</b> FRP; fiber reinforced panels in Kitchen	1,921	SF	\$15.00	\$28,815
<b>531</b> Epoxy paint wainscot @ Locker/Toilet	8,234	SF	\$2.00	\$16,468
<b>532</b> Solid epoxy backsplash	650	SF	\$18.00	\$11,700
<b>533</b> Rubber base	12,630	LF	\$2.50	\$31,575
<b>534</b> Metal trim detail	12,630	LF	\$5.00	\$63,150
<b>535</b> Vented rubber wall base	375	LF	\$3.00	\$1,125
<b>536</b> Metal trim detail	375	LF	\$5.00	\$1,875
<b>537</b> Exposed column covers; allowance	1	LS	\$15,000.00	\$15,000
<b>538</b> P.lam panel wall cover	330	SF	\$25.00	\$8,250
<b>539</b> Academic areas:				
<b>540</b> Plam bumper w/HD wood marker tray	915	LF	\$90.00	\$82,350
<b>541</b> over curved gwb partition at curved wall	3,156	SF	\$27.50	\$86,790
<b>542</b> Fabric wrapped acoustic wall panels @ Music areas	1,443	SF	\$22.00	\$31,746
<b>543</b> sloped fabric wrapped acoustic panel	8,359	SF	\$24.50	\$204,796
<b>544</b> Cementitious wood fiber acoustical wall panel @ Gym	6,255	SF	\$15.00	\$93,825
<b>545</b> Mural panorama wall cover; angeled @ Media, Admin Install	1,575	SF	\$1.50	\$2,363
<b>546</b> Wall pads with cutout for MEH units; allow	1	AL	\$1,500.00	\$1,500
<b>547</b> Cafeteria fixed sound absorbing panel, wood fiber; allow	2,000	SF	\$25.00	\$50,000
<b>548</b> Wall panels at auditorium	1,500	SF	\$85.00	\$127,500
<b>549</b> Wall epoxy	1,100	SF	\$18.00	\$19,800
<b>550</b> Paint CMU wall	12,492	SF	\$1.25	\$15,615
<b>551</b> Paint drywall partitions	275,734	SF	\$1.00	\$275,734
<b>552</b> C3010 WALL FINISHES TOTAL				<b>\$1,593,739</b>
<b>553</b>				
<b>554</b> C3020 FLOOR FINISHES	130,516	SF		
<b>555</b> Tile:				



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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>556</b> EP; epoxy flooring at Toilets	<b>7,940</b>	SF	\$12.00	\$95,280
<b>557</b> Quarry tile at Kitchen	<b>1,705</b>	SF	\$16.00	\$27,280
<b>558</b>				
<b>559</b> <i>Flooring</i>				
<b>560</b> Self-leveling, gypsum cement; 2" maxxon topping slab-acoustic at floors 2 & 3, below VCT flooring	<b>100,164</b>	SF	\$3.75	\$375,615
<b>561</b> VCT flooring; Corridors, Academic area, Admin area	<b>100,164</b>	SF	\$6.00	\$600,984
<b>562</b> Wood athletic flooring at Gym	<b>8,405</b>	SF	\$25.00	\$210,125
<b>563</b> Stage wood flooring: 4" hardboard assembly- recessed:	<b>1,590</b>	SF	\$30.50	\$48,495
<b>564</b> 1/4" double tempered smooth both sides hardboard				
<b>565</b> (2) layers 3/4" plywood on sleepers with insulation				
<b>566</b> <i>Auditorium:</i>				
<b>567</b> slab on grade power troweled concrete at seats	<b>2,240</b>	SF	\$9.00	\$20,160
<b>568</b> carpet at aisles	<b>2,770</b>	SF	\$5.00	\$13,850
<b>569</b> PC; power troweled concrete @ Makerspace, Auditorium, AV	<b>2,018</b>	SF	\$9.00	\$18,162
<b>570</b> <i>Painting</i>				
<b>571</b> SC; sealed concrete at back of house	<b>3,288</b>	SF	\$1.75	\$5,754
<b>572</b> <i>Entrance mats</i>				
<b>573</b> RG; Vestibule	<b>396</b>	SF	\$35.00	\$13,860
<b>574</b> <b>C3020 FLOOR FINISHES TOTAL</b>				<b>\$1,429,565</b>
<b>575</b>				
<b>576</b> <b>C3030 CEILING FINISHES</b>	<i>116,094</i>	<i>SF</i>		
<b>577</b> ACT ceilings at Corridors, Public, Admin areas, Teacher Pl	<b>50,004</b>	SF	\$4.85	\$242,519
<b>578</b> ACT ceiling, washable in kitchen	<b>1,705</b>	SF	\$5.25	\$8,951
<b>579</b> <i>Academic areas: classrooms, science, media, art, music, etc</i>				
<b>580</b> E1; Exposed deck, painted @ Classrooms	<b>24,380</b>	SF	\$1.50	\$36,570
<b>581</b> Circulation Corridors ceiling	<b>13,581</b>	SF	\$33.00	\$448,173
<b>582</b> GWB soffit, light cove	<b>1,320</b>	LF	\$35.00	\$46,200
<b>583</b> GWB ceiling/soffit in classrooms	<b>16,127</b>	SF	\$35.00	\$564,445
<b>584</b> GWB - MR ceiling at Toilets	<b>6,869</b>	SF	\$12.50	\$85,866
<b>585</b> Sloped GWB soffit @ Art.	<b>175</b>	SF	\$18.00	\$3,150
<b>586</b> Lay in ACT ceiling at band/chorus	<b>4,550</b>	SF	\$4.85	\$22,068
<b>587</b> Auditorium ceiling; painted exposed metal deck	<b>6,600</b>	SF	\$2.50	\$16,500
<b>588</b> 50% suspended plam clouds	<b>3,300</b>	SF	\$55.00	\$181,500
<b>589</b> Gym ceiling; suspended lay in pre painted tegular edge tectum plank	<b>2,101</b>	SF	\$15.00	\$31,519
<b>590</b> B1; GWB ceiling @ Atrium	<b>6,402</b>	SF	\$15.00	\$96,030
<b>591</b> Gym exposed deck, painted	<b>8,405</b>	SF	\$2.00	\$16,810
<b>592</b> Paint	<b>137,385</b>	GSF	\$0.75	\$103,039
<b>593</b> Paint GWB ceilings w/high performance coating at Toilets	<b>30,893</b>	SF	\$1.00	\$30,893
<b>594</b> <b>C3030 CEILING FINISHES TOTAL</b>				<b>\$1,934,233</b>
<b>595</b>				
<b>596</b> <b>TOTAL SYSTEM C30 INTERIOR FINISHES</b>				<b>\$4,957,537</b>





**Fuller Middle School**

Framingham, MA

137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
597				
598				
599 <b>D10 CONVEYING SYSTEMS</b>				
600				
601 <b>D1010 CONVEYING SYSTEMS</b>				
602 Elevators; 3,500#, 4 stops	1	EA	\$205,000.00	\$205,000
603 Elevator pit ladder	1	EA	\$1,500.00	\$1,500
604 Elevator vent	1	EA	\$1,200.00	\$1,200
605 Sill angles	4	EA	\$175.00	\$700
606 Hoist beam	1	EA	\$5,000.00	\$5,000
607 <b>D1010 CONVEYING SYSTEMS TOTAL</b>				<b>\$213,400</b>
608				
609 <b>TOTAL SYSTEM D10 CONVEYING SYSTEMS</b>				<b>\$213,400</b>
610				
611				
612 <b>D15 MECHANICAL</b>				
613				
614 <b>D20 PLUMBING</b>				
615 6" Water Service w/ sub metera	1	EA	\$9,500.00	\$9,500
616 Hot Water Heater & Storage				
617 - WH-1	1	EA	\$65,000.00	\$65,000
618 - WH-2	1	EA	\$5,500.00	\$5,500
619 Mixing Valves	1	EA	\$2,450.00	\$2,450
620 Circulating Pumps	2	EA	\$1,050.00	\$2,100
621 Expansion Tank	1	EA	\$2,200.00	\$2,200
622 4" Backflow Preventers	1	EA	\$5,560.00	\$5,560
623 Pressure Reducing Station	1	EA	\$3,650.00	\$3,650
624 1" Backflow Preventers	2	EA	\$1,850.00	\$3,700
625 Grease Interceptor System 8,000 gal	1	EA	\$48,500.00	\$48,500
626 Grease Trap	1	EA	\$3,850.00	\$3,850
627 Oily Water Separator	1	EA	\$4,580.00	\$4,580
628 Acid Neutralization Tank	2	EA	By Others	\$0
629 Condensate Pump:				
630 - CP-1 5 GPH	1	EA	\$950.00	\$950
631 Heat Tracing	1	LS	\$5,000.00	\$5,000
632 Elevator Sump Pump:				
633 - SP-1	1	EA	\$1,850.00	\$1,850
634 Reducer Pressure Backflow Preventer:				
635 - RBP-1	1	EA	\$2,500.00	\$2,500
636 Emergency Gas Shut Off Valve	2	EA	\$1,250.00	\$2,500
637 <i>Fixtures</i>				
638 Water Closet P-1	20	EA	\$2,455.00	\$49,100
639 Water Closet P-1A	31	EA	\$2,455.00	\$76,105



**Fuller Middle School**

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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>640</b> Urinal P-2	17	EA	\$2,510.00	\$42,670
<b>641</b> Urinal P-2A	8	EA	\$2,510.00	\$20,080
<b>642</b> Lavatory P-3	49	EA	\$2,365.00	\$115,885
<b>643</b> Lavatory P-3A	28	EA	\$2,365.00	\$66,220
<b>644</b> Drinking Fountain P-4	11	EA	\$3,250.00	\$35,750
<b>645</b> Mop Sink P-5	5	EA	\$2,850.00	\$14,250
<b>646</b> Shower P-6	2	EA	\$3,850.00	\$7,700
<b>647</b> Science Room Sink P-7	36	EA	\$3,650.00	\$131,400
<b>648</b> Classroom Sink P-8	3	EA	\$2,565.00	\$7,695
<b>649</b> Art Sink P-9	3	EA	\$3,250.00	\$9,750
<b>650</b> Art Sink P-9A	1	EA	\$3,250.00	\$3,250
<b>651</b> Eyewash/Shower P-10	2	EA	\$2,250.00	\$4,500
<b>652</b> Fume Hood	3	EA	\$5,000.00	\$15,000
<b>653</b> Floor Clean Outs:				
<b>654</b> - FCO-1	54	EA	\$725.00	\$39,150
<b>655</b> Floor Drains:				
<b>656</b> - 3" FD-A	14	EA	\$1,050.00	\$14,700
<b>657</b> - 3" FD-B	8	EA	\$1,065.00	\$8,520
<b>658</b> - 4" FD-B	5	EA	\$1,165.00	\$5,825
<b>659</b> Trap Primers	16	EA	\$1,250.00	\$20,000
<b>660</b> Roof Drain:				
<b>661</b> - 8 RD-0	2	EA	\$1,650.00	\$3,300
<b>662</b> - 6" RD-1	12	EA	\$1,410.00	\$16,920
<b>663</b> - 5" RD-2	4	EA	\$1,220.00	\$4,880
<b>664</b> - 4" RD-3	8	EA	\$1,010.00	\$8,080
<b>665</b> Cup Sinks	8	EA	\$1,850.00	\$14,800
<b>666</b> Wall Hydrant				
<b>667</b> - WHYD-1	18	EA	\$375.00	\$6,750
<b>668</b> Hose Bibbs:				
<b>669</b> - HB-1	12	EA	\$285.00	\$3,420
<b>670</b> VTR	9	EA	\$650.00	\$5,850
<b>671</b> Lab Equipment	1	LS	\$25,000.00	\$25,000
<b>672</b> Storm piping, below grade:				
<b>673</b> - 12"	120	LF	\$125.00	\$15,000
<b>674</b> - 8"	50	LF	\$85.25	\$4,263
<b>675</b> - 6"	110	LF	\$62.55	\$6,881
<b>676</b> - 4"	40	LF	\$43.75	\$1,750
<b>677</b> Storm piping, above grade:				
<b>678</b> - 10"	155	LF	\$110.00	\$17,050
<b>679</b> - 8"	510	LF	\$92.35	\$47,099
<b>680</b> - 6"	1,010	LF	\$65.05	\$65,701
<b>681</b> - 4"	165	LF	\$45.10	\$7,442
<b>682</b> Waste and vent piping, below grade:				



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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>683</b> - 5"	<b>650</b>	LF	\$59.61	\$38,747
<b>684</b> - 4"	<b>560</b>	LF	\$43.75	\$24,500
<b>685</b> - 3"	<b>265</b>	LF	\$32.25	\$8,546
<b>686</b> - 2"	<b>110</b>	LF	\$26.85	\$2,954
<b>687</b> Waste and vent piping, above grade:				
<b>688</b> - 4"	<b>685</b>	LF	\$43.10	\$29,524
<b>689</b> - 3"	<b>785</b>	LF	\$31.55	\$24,767
<b>690</b> - 2"	<b>850</b>	LF	\$26.25	\$22,313
<b>691</b> Kitchen Waste Below grade:				
<b>692</b> - 4"	<b>510</b>	LF	\$32.00	\$16,320
<b>693</b> - 3"	<b>40</b>	LF	\$28.95	\$1,158
<b>694</b> - 2"	<b>290</b>	LF	\$22.50	\$6,525
<b>695</b> Acid Waste below grade:				
<b>696</b> - 4"	<b>425</b>	LF	\$32.00	\$13,600
<b>697</b> - 2"	<b>290</b>	LF	\$18.00	\$5,220
<b>698</b> Acid Waste below grade:				
<b>699</b> - 4"	<b>295</b>	LF	\$32.00	\$9,440
<b>700</b> - 3"	<b>210</b>	LF	\$28.25	\$5,933
<b>701</b> - 2"	<b>265</b>	LF	\$18.00	\$4,770
<b>702</b> Potable Water Piping:				
<b>703</b> - 2-1/2"	<b>620</b>	LF	\$48.95	\$30,349
<b>704</b> - 2"	<b>780</b>	LF	\$35.75	\$27,885
<b>705</b> - 1-1/2"	<b>550</b>	LF	\$30.45	\$16,748
<b>706</b> - 1-1/4"	<b>475</b>	LF	\$28.35	\$13,466
<b>707</b> - Branch	<b>8,500</b>	LF	\$25.75	\$218,875
<b>708</b> Insulate Potable Water Piping:				
<b>709</b> - 2-1/2"	<b>620</b>	LF	\$16.40	\$10,168
<b>710</b> - 2"	<b>780</b>	LF	\$15.65	\$12,207
<b>711</b> - 1-1/2"	<b>550</b>	LF	\$14.75	\$8,113
<b>712</b> - 1-1/4"	<b>475</b>	LF	\$14.05	\$6,674
<b>713</b> - Branch	<b>8,500</b>	LF	\$13.75	\$116,875
<b>714</b> Gas Piping				
<b>715</b> - 6"	<b>50</b>	LF	\$56.25	\$2,813
<b>716</b> - 4"	<b>80</b>	LF	\$48.95	\$3,916
<b>717</b> - 3"	<b>120</b>	LF	\$42.25	\$5,070
<b>718</b> - Branch	<b>980</b>	LF	\$29.65	\$29,057
<b>719</b> Gas Hook-ups	<b>4</b>	EA	\$850.00	\$3,400
<b>720</b> Master Gas Valves	<b>2</b>	EA	\$2,850.00	\$5,700
<b>721</b> labs & Consumer Science)	<b>36</b>	LS	\$385.00	\$13,860
<b>722</b> Flues	<b>120</b>	LS	\$65.00	\$7,800
<b>723</b> Kitchen	<b>1</b>	LS	\$50,000.00	\$50,000
<b>724</b> Storm Piping Insulation	<b>1</b>	LS	\$25,000.00	\$25,000
<b>725</b> Seismic Restraints	<b>1</b>	LS	\$10,500.00	\$10,500



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137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>726</b> Lift & Hoisting	1	LS	\$18,500.00	\$18,500
<b>727</b> Project Managers				
<b>728</b> Coring, cutting and sleeves	1	LS	\$15,000.00	\$15,000
<b>729</b> Commissioning	1	LS	\$25,000.00	\$25,000
<b>730</b> Valves and specialties	1	LS	\$12,500.00	\$12,500
<b>731</b> Permits & Fees	1	LS	\$7,850.00	\$7,850
<b>732</b> Test and sterilize	1	LS	\$18,500.00	\$18,500
<b>733</b> Shop drawings	1	LS	\$16,500.00	\$16,500
<b>734 D20 PLUMBING TOTAL</b>				<b>\$2,057,763</b>
<b>735</b>				
<b>736 D30 HVAC</b>				
<b>737</b> Boilers:				
<b>738</b> - B-1 & 2 3,844 MBH	2	EA	\$84,568.00	\$169,136
<b>739</b> Expantion Tank:				
<b>740</b> - ET-1 Thru 3	3	EA	\$2,150.00	\$6,450
<b>741</b> Air Separator:				
<b>742</b> - AS-1 & 2 8"	2	EA	\$3,950.00	\$7,900
<b>743</b> Buffer Tank:				
<b>744</b> - BT-1	1	EA	\$2,500.00	\$2,500
<b>745</b> Pumps:				
<b>746</b> - P-1 & 2 HP 790 GPM	2	EA	\$12,500.00	\$25,000
<b>747</b> - P-3 & 4 HP 800 GPM	2	EA	Pump House	\$0
<b>748</b> - BP-1 thru 3	3	EA	\$2,500.00	\$7,500
<b>749</b> - CP-1 5 GPH	5	EA	\$450.00	\$2,250
<b>750</b> Pumps House	0	EA	\$185,000.00	\$0
<b>751</b>				
<b>752</b> Chillers:				
<b>753</b> - CH-1 350 Ton	1	EA	\$367,500.00	\$367,500
<b>754</b> Rooftop Units:				
<b>755</b> - RTU-1 23,000 CFM	1	EA	\$276,000.00	\$276,000
<b>756</b> - RTU-2 23,000 CFM	1	EA	\$276,000.00	\$276,000
<b>757</b> - RTU-3 23,000 CFM	1	EA	\$276,000.00	\$276,000
<b>758</b> - RTU-4 23,000 CFM	1	EA	\$276,000.00	\$276,000
<b>759</b> - RTU-5 15,000 CFM	1	EA	\$180,000.00	NIC
<b>760</b> - RTU-6 12,000 CFM	1	EA	\$144,000.00	NIC
<b>761</b> - RTU-7 2,000 CFM	1	EA	\$28,000.00	NIC
<b>762</b> Make Up Units:				
<b>763</b> - MAU-1 5,000 CFM	1	EA	\$32,500.00	\$32,500
<b>764</b> Exhaust Fans:				
<b>765</b> - EF-1 2,500 CFM	1	EA	\$3,250.00	\$3,250
<b>766</b> - EF-2 2,500 CFM	1	EA	\$3,250.00	\$3,250
<b>767</b> - EF-3 500 CFM	1	EA	\$980.00	\$980
<b>768</b> - EF-4 500 CFM	1	EA	\$980.00	\$980



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<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>769</b> - EF-5 250 CFM	1	EA	\$685.00	\$685
<b>770</b> - EF-6 250 CFM	1	EA	\$685.00	\$685
<b>771</b> - SEF-1 50,000 CFM	1	EA	\$32,500.00	\$32,500
<b>772</b> - SEF-2 50,000 CFM	1	EA	\$32,500.00	\$32,500
<b>773</b> - SEF-3 50,000 CFM	1	EA	\$32,500.00	\$32,500
<b>774</b> - SEF-4 50,000 CFM	1	EA	\$32,500.00	\$32,500
<b>775</b> - KEF-1 4,170 CFM	1	EA	\$4,500.00	\$4,500
<b>776</b> - FEF-1 1,200 CFM	1	EA	\$2,100.00	\$2,100
<b>777</b> - FEF-2 1,200 CFM	1	EA	\$2,100.00	\$2,100
<b>778</b> - FEF-3 1,200 CFM	1	EA	\$2,100.00	\$2,100
<b>779</b> VAV Boxes:				
<b>780</b> - VAV-8	140	EA	\$1,050.00	\$147,000
<b>781</b> Radiant Heat Panels:				
<b>782</b> - R1	2,525	LF	\$135.00	\$340,875
<b>783</b> Fin-Tube Radiators:				
<b>784</b> - FT-1	100	LF	\$90.00	\$9,000
<b>785</b> Cabinet & Unit Heaters:				
<b>786</b> - CUH-1,2, 7 thru 16 350 MBH	12	EA	\$895.00	\$10,740
<b>787</b> - CUH-3 1050 MBH	1	EA	\$1,150.00	\$1,150
<b>788</b> - CUH-4 thru 6 450 MBH	3	EA	\$925.00	\$2,775
<b>789</b> Ductless Split Units:				
<b>790</b> - DCUe-1 1 Ton	1	EA	\$2,950.00	\$2,950
<b>791</b> - DCUe-2 2 Ton	1	EA	\$4,425.00	\$4,425
<b>792</b> - DCUe-3 2 Ton	1	EA	\$4,425.00	\$4,425
<b>793</b> - DCUe-4 1.5 Ton	1	EA	\$3,850.00	\$3,850
<b>794</b> - DCUe-5 1.5 Ton	1	EA	\$3,850.00	\$3,850
<b>795</b> - DCUe-6 1.5 Ton	1	EA	\$3,850.00	\$3,850
<b>796</b> - DCUe-7 1.5 Ton	1	EA	\$3,850.00	\$3,850
<b>797</b> Register & Diffusers:				
<b>798</b> - DD-1	22	EA	\$985.00	\$21,670
<b>799</b> - DD-2	18	EA	\$985.00	\$17,730
<b>800</b> - DD-3	16	EA	\$985.00	\$15,760
<b>801</b> - DD-4	1	EA	\$985.00	\$985
<b>802</b> - DD-5	42	EA	\$985.00	\$41,370
<b>803</b> - DD-6	2	EA	\$985.00	\$1,970
<b>804</b> - DD-7	4	EA	\$985.00	\$3,940
<b>805</b> - Slot	750	LF	\$45.00	\$33,750
<b>806</b> - E	80	EA	\$225.00	\$18,000
<b>807</b> Misc Diffusers, grills and registers	1	LS	\$5,000.00	\$5,000
<b>808</b> Fire & Motor Dampers	30	LS	\$1,850.00	\$55,500
<b>809</b> Volume Dampers	1	EA	\$42,000.00	\$42,000
<b>810</b> Flex Duct	1	LF	\$32,500.00	\$32,500
<b>811</b> Misc. Duct Accessories	1	LS	\$25,000.00	\$25,000



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<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>812</b> Double Wall Galvanized Duct (Auditorium)	<b>8,500</b>	LBS	\$20.25	\$172,125
<b>813</b> Galvanized Duct	<b>130,000</b>	LBS	\$16.00	\$2,080,000
<b>814</b> Ductsox	<b>300</b>	LF	\$45.00	\$13,500
<b>815</b> Duct Insulation	<b>4,500</b>	SF	\$4.65	\$20,925
<b>816</b> Duct Insulation @ Kitchen area	<b>1</b>	LS	\$35,000.00	\$35,000
<b>817</b> Black iron at kitchen	<b>2,125</b>	LBS	\$18.50	\$39,313
<b>818</b> Duct dishwasher s/s	<b>850</b>	LBS	\$20.20	\$17,170
<b>819</b> Seal Ductwork	<b>7,500</b>	LF	\$1.60	\$12,000
<b>820</b> Dust Collection System	<b>1</b>	LS	\$25,000.00	\$25,000
<b>821</b> Sound Attenuators				
<b>822</b> - SA-1S	<b>1</b>	EA	\$6,500.00	\$6,500
<b>823</b> - SA-1R	<b>1</b>	EA	\$6,500.00	\$6,500
<b>824</b> - SA-2S	<b>1</b>	EA	\$6,500.00	\$6,500
<b>825</b> - SA-2R	<b>1</b>	EA	\$6,500.00	\$6,500
<b>826</b> - SA-3S	<b>1</b>	EA	\$6,500.00	\$6,500
<b>827</b> - SA-3R	<b>1</b>	EA	\$6,500.00	\$6,500
<b>828</b> - SA-4S	<b>1</b>	EA	\$6,500.00	\$6,500
<b>829</b> - SA-4R	<b>1</b>	EA	\$6,500.00	\$6,500
<b>830</b> - SA-5S	<b>1</b>	EA	\$6,500.00	\$6,500
<b>831</b> - SA-5R	<b>1</b>	EA	\$6,500.00	\$6,500
<b>832</b> - SA-6S	<b>1</b>	EA	\$7,800.00	\$7,800
<b>833</b> - SA-6R	<b>1</b>	EA	\$6,200.00	\$6,200
<b>834</b> - SA-7S	<b>1</b>	EA	\$3,850.00	\$3,850
<b>835</b> - SA-7R	<b>1</b>	EA	\$3,850.00	\$3,850
<b>836</b> - SA-8	<b>1</b>	EA	\$4,250.00	\$4,250
<b>837</b> Hot & Chilles Water Piping				
<b>838</b> - Large Bore	<b>5,500</b>	LF	\$42.00	\$231,000
<b>839</b> - Small Bore	<b>8,500</b>	LF	\$28.00	\$238,000
<b>840</b> Insulate Hot Water Piping				
<b>841</b> - Large Bore	<b>5,500</b>	LF	\$16.95	\$93,225
<b>842</b> - Small Bore	<b>8,500</b>	LF	\$12.50	\$106,250
<b>843</b> Equipment Hook-Ups:				
<b>844</b> - 4" Boilers	<b>2</b>	EA	\$8,950.00	\$17,900
<b>845</b> - 8" Pump	-	EA	Pump House	\$0
<b>846</b> - 4" Pump	<b>3</b>	EA	\$2,100.00	\$6,300
<b>847</b> - 8" Chiller	<b>1</b>	EA	\$14,500.00	\$14,500
<b>848</b> - RCP	<b>95</b>	EA	\$1,075.00	\$102,125
<b>849</b> - CUH	<b>12</b>	EA	\$1,025.00	\$12,300
<b>850</b> - FT	<b>2</b>	EA	\$1,075.00	\$2,150
<b>851</b> - DD	<b>105</b>	EA	\$285.00	\$29,925
<b>852</b> - VAV	<b>140</b>	EA	\$1,105.00	\$154,700
<b>853</b> - 4" RTU Coils	<b>6</b>	EA	\$6,500.00	\$39,000
<b>854</b> - 2" RTU Coils	<b>3</b>	EA	\$2,650.00	\$7,950



**Fuller Middle School**

Framingham, MA

137,385 GSF

**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>855</b> VFD	1	LS	\$20,000.00	\$20,000
<b>856</b> Glycol:				
<b>857</b> - GF-1 & 2	2	EA	\$6,500.00	\$13,000
<b>858</b> Combustion	1	LS	\$30,000.00	\$30,000
<b>859</b> Flues S/S	380	LF	\$120.00	\$45,600
<b>860</b> Seismic Restraints	1	LS	\$10,500.00	\$10,500
<b>861</b> Misc. Valves & specialties	1	LS	\$15,000.00	\$15,000
<b>862</b> Commissioning support	1	LS	\$32,000.00	\$32,000
<b>863</b> Controls	1	LS	\$1,025,000.00	\$1,025,000
<b>864</b> Testing & Balancing	1	LS	\$35,600.00	\$35,600
<b>865</b> Rigging & Lifting	1	LS	\$12,500.00	\$12,500
<b>866</b> Permits & Fees	1	LS	\$8,500.00	\$8,500
<b>867</b> Shop Drawing	1	LS	\$15,500.00	\$15,500
<b>868</b> <b>D30 HVAC TOTAL</b>				<b>\$7,553,789</b>
<b>869</b>				
<b>870</b> <b>D40 FIRE PROTECTION</b>				
<b>871</b> Upright Sprinkler Heads	260	EA	\$390.00	\$101,400
<b>872</b> Pendent Sprinkler Heads	817	EA	\$415.00	\$339,055
<b>873</b> Pendent/Upright Sprinkler Heads	120	EA	\$510.00	\$61,200
<b>874</b> Upright Sprinkler Heads ( Gym)	70	EA	\$425.00	\$29,750
<b>875</b> Upright Sprinkler Heads ( Auditorium)	40	EA	\$425.00	\$17,000
<b>876</b> Upright Sprinkler Heads ( Skylights)	16	EA	\$440.00	\$7,040
<b>877</b> Sidewall Sprinkler Heads	121	EA	\$514.00	\$62,194
<b>878</b> Window Sprinkler Heads	22	EA	\$650.00	\$14,300
<b>879</b> Dry Sprinkler Heads	16	EA	\$495.00	\$7,920
<b>880</b> 8" Water Service	1	EA	\$6,250.00	\$6,250
<b>881</b> 6" Alarm Valves w/ trim	1	EA	\$5,560.00	\$5,560
<b>882</b> 6" Backflow Preventer	1	EA	\$8,500.00	\$8,500
<b>883</b> Zone control w/ standpipe (SCVA)	14	EA	\$3,650.00	\$51,100
<b>884</b> 6" Riser Valves	2	EA	\$950.00	\$1,900
<b>885</b> 6" FSP W/ Standpipe	5	EA	\$2,250.00	\$11,250
<b>886</b> 4" FSP W/ Standpipe	3	EA	\$2,045.00	\$6,135
<b>887</b> Fire Dept. Connections	1	EA	\$2,650.00	\$2,650
<b>888</b> Riser Valve w/ tamper switch	2	EA	\$750.00	\$1,500
<b>889</b> Main piping:				
<b>890</b> - 6"	950	LF	\$85.00	\$80,750
<b>891</b> Misc. Valves	1	LS	\$4,500.00	\$4,500
<b>892</b> Commissioning	1	LS	\$1,250.00	\$1,250
<b>893</b> Lifting	1	LS	\$3,800.00	\$3,800
<b>894</b> Testing	1	LS	\$3,650.00	\$3,650
<b>895</b> Coordination	1	LS	\$8,100.00	\$8,100
<b>896</b> Coring, Sleeves & sleeves	1	LS	\$5,450.00	\$5,450
<b>897</b> Seismic Restraints	1	LS	\$5,900.00	\$5,900



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<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>898</b> Shop drawings/hydraulic calculations	1	LS	\$13,500.00	\$13,500
<b>899</b> <b>D40 FIRE PROTECTION TOTAL</b>				<b>\$861,604</b>
<b>900</b>				
<b>901</b> <b>TOTAL SYSTEM D15 MECHANICAL</b>				<b>\$10,473,155</b>
<b>902</b>				
<b>903</b>				
<b>904</b> <b>D50 ELECTRICAL</b>				
<b>905</b>				
<b>906</b> <b>D5011 SERVICE &amp; DISTRIBUTION</b>				
<b>907</b> <i>Switchgear, Panelboards, Transformers</i>				
<b>908</b> 3000/2500 Amp Main Switchboard	1	LS	\$110,739.20	\$110,739
<b>909</b> Meter Pan	1	EA	\$738.10	\$738
<b>910</b> SPD @ Swbd	1	EA	\$2,855.60	\$2,856
<b>911</b> SPD @ Panelboard	43	EA	\$1,113.20	\$47,868
<b>912</b> 100 Amp Panel Board	14	EA	\$4,048.66	\$56,681
<b>913</b> 225 Amp Panel Board	9	EA	\$6,749.38	\$60,744
<b>914</b> 225 Amp Panel Board, 2-Section	9	EA	\$11,521.62	\$103,695
<b>915</b> 400 Amp Panel Board	4	EA	\$9,571.10	\$38,284
<b>916</b> 400 Amp Panel Board, 2-Section	1	EA	\$16,443.90	\$16,444
<b>917</b> 600 Amp Panel Board	2	EA	\$13,013.55	\$26,027
<b>918</b> 800 Amp Panel Board	2	EA	\$16,577.00	\$33,154
<b>919</b> 45 Kva Transformer	8	EA	\$6,062.10	\$48,497
<b>920</b> 75 Kva Transformer	5	EA	\$7,550.40	\$37,752
<b>921</b> 112 Kva Transformer	1	EA	\$10,490.70	\$10,491
<b>922</b> 150 Kva Transformer K13	1	EA	\$36,844.50	\$36,845
<b>923</b> 225 Kva Transformer	1	EA	\$17,061.00	\$17,061
<b>924</b> 225 Kva Transformer K13	1	EA	\$42,713.00	\$42,713
<b>925</b> 100 Amp Disconnect @ Xfmr	3	EA	\$1,432.64	\$4,298
<b>926</b> 200 Amp Disconnect @ Xfmr	1	EA	\$1,923.90	\$1,924
<b>927</b> 400 Amp Disconnect @ Xfmr	1	EA	\$4,017.20	\$4,017
<b>928</b> 800 Amp Disconnect @ Xfmr	1	EA	\$7,381.00	\$7,381
<b>929</b> <i>Emergency Generator, UPS</i>				
<b>930</b> 300 Kw Emergency Generator, WP/Sound	1	LS	\$131,043.00	\$131,043
<b>931</b> Autotransfer Sw 200A	1	EA	\$8,639.40	\$8,639
<b>932</b> Autotransfer Sw 600A	1	EA	\$17,387.70	\$17,388
<b>933</b> 200 Amp Encl Ckt Brkr	1	EA	\$1,923.90	\$1,924
<b>934</b> 600 Amp Encl Ckt Brkr	1	EA	\$5,771.70	\$5,772
<b>935</b> 24KW/30Kva UPS, batteries	1	LS	\$47,432.00	\$47,432
<b>936</b> 200 Amp Disconnect @ UPS	1	EA	\$1,923.90	\$1,924
<b>937</b> Generator Annunciator	1	EA	\$1,621.40	\$1,621
<b>938</b> <i>Motors:</i>				
<b>939</b> Install Limit Switch FBO	3	EA	\$121.00	\$363
<b>940</b> Install Misc Gym CP FBO	8	EA	\$465.85	\$3,727
<b>941</b> Motor Backbd Conn's, Switch	8	EA	\$779.24	\$6,234
<b>942</b> Scoreboard Conn's, Switch	1	EA	\$779.24	\$779





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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>943</b> Bleach Motor 20/3A Conn, Switch	7	EA	\$779.24	\$5,455
<b>944</b> 20/2 Amp Disconnect	12	EA	\$444.07	\$5,329
<b>945</b> 30/1 Amp Disconnect, Elev Cab	1	EA	\$444.07	\$444
<b>946</b> 30/2 Amp Disconnect, mech	10	EA	\$584.43	\$5,844
<b>947</b> 30 Amp Disconnect, mech,kit	10	EA	\$779.24	\$7,792
<b>948</b> 60 Amp Disconnect, mech, kit	7	EA	\$1,333.42	\$9,334
<b>949</b> 100 Amp Disconnect	10	EA	\$1,452.00	\$14,520
<b>950</b> 100 Amp Disconnect, Elev	1	EA	\$1,627.45	\$1,627
<b>951</b> 200 Amp Disconnect WP	4	EA	\$2,214.30	\$8,857
<b>952</b> 800 Amp Disconnect CH, WP	1	EA	\$8,845.10	\$8,845
<b>953</b> Junc Box, mech controls by others	13	EA	\$66.55	\$865
<b>954</b> Install Nema 0 Motor Starter FBO	11	EA	\$356.95	\$3,926
<b>955</b> Install Nema 1 Motor Starter FBO	2	EA	\$471.90	\$944
<b>956</b> Install <=10HP VFD FBO	9	EA	\$1,367.30	\$12,306
<b>957</b> Install 25-30HP VFD FBO	4	EA	\$2,734.60	\$10,938
<b>958</b> Install 40HP VFD FBO	4	EA	\$2,734.60	\$10,938
<b>959</b> Chiller CP Conn's	2	EA	\$3,509.00	\$7,018
<b>960</b>				
<b>961</b> <i>Power Circuitry</i>				
<b>962</b> 3/4" Emt, empty	520	LF	\$10.61	\$5,518
<b>963</b> 3/4" Emt, 4#12	3,320	LF	\$13.85	\$45,981
<b>964</b> 3/4" Emt, 4#10	2,400	LF	\$14.98	\$35,957
<b>965</b> 1" Emt, 4#8	840	LF	\$21.47	\$18,031
<b>966</b> 1 1/4" Emt, 4#4	200	LF	\$29.05	\$5,810
<b>967</b> 1 1/4" Emt, 4#2	3,270	LF	\$32.34	\$105,763
<b>968</b> 1 1/2" Emt, 4#1	50	LF	\$38.81	\$1,941
<b>969</b> 2" Emt, 4 1/0	1,660	LF	\$44.39	\$73,696
<b>970</b> 2" Emt, 4 3/0	70	LF	\$53.49	\$3,745
<b>971</b> 2 1/2" Emt, 4 250Mcm	60	LF	\$66.48	\$3,989
<b>972</b> 3" Emt, 4 350Mcm	580	LF	\$81.49	\$47,266
<b>973</b> 3 1/2" Emt, 4 500 Mcm	1,080	LF	\$105.02	\$113,417
<b>974</b> 4#6 MI Cable	50	LF	\$41.27	\$2,064
<b>975</b> 4#2 MI Cable	200	LF	\$83.99	\$16,797
<b>976</b>				
<b>977</b> Service Grounding	1	LS	\$5,033.60	\$5,034
<b>978</b> Lightning Protection System (Preventor)	1	LS	\$34,485.00	\$34,485
<b>979</b>				
<b>980</b> <i>Light Fixtures</i>				
<b>981</b> Type G4	80	EA	\$886.93	\$70,954
<b>982</b> Type LP4	6	EA	\$592.90	\$3,557
<b>983</b> Type LP4S	ZERO	EA	\$592.90	
<b>984</b> Type LP8	6	EA	\$1,185.80	\$7,115
<b>985</b> Type LR2	640	EA	\$411.40	\$263,296
<b>986</b> Type LR2A	10	EA	\$411.40	\$4,114
<b>987</b> Type LRD5	12	EA	\$1,536.70	\$18,440
<b>988</b> Type LRS 8'	ZERO	EA	\$895.40	



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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>989</b> Type LS2	<b>117</b>	EA	\$411.40	\$48,134
<b>990</b> Type LS4	<b>27</b>	EA	\$310.97	\$8,396
<b>991</b> Type LS4A	<b>22</b>	EA	\$310.97	\$6,841
<b>992</b> Type LS4B	<b>15</b>	EA	\$310.97	\$4,665
<b>993</b> Type LS8	<b>12</b>	EA	\$621.94	\$7,463
<b>994</b> Type LS8A	<b>5</b>	EA	\$621.94	\$3,110
<b>995</b> Type LUL	<b>52</b>	EA	\$310.97	\$16,170
<b>996</b> Type PC1	<b>8</b>	EA	\$381.15	\$3,049
<b>997</b> Type PC2	<b>20</b>	EA	\$381.15	\$7,623
<b>998</b> Type PC3	<b>190</b>	EA	\$381.15	\$72,419
<b>999</b> Type RC1	<b>68</b>	EA	\$381.15	\$25,918
<b>1000</b> Type RC2	<b>51</b>	EA	\$381.15	\$19,439
<b>1001</b> Type SC1	<b>ZERO</b>	EA	\$508.20	
<b>1002</b> Type SP1	<b>83</b>	EA	\$617.10	\$51,219
<b>1003</b> Misc Utility WP Jelly Jar	<b>10</b>	EA	\$308.55	\$3,086
<b>1004</b> Type SL4 Exterior Wallpack	<b>20</b>	EA	\$701.80	\$14,036
<b>1005</b> Type Exit	<b>45</b>	EA	\$332.75	\$14,974
<b>1006</b> Type LC2	<b>88</b>	LF	\$114.35	\$10,062
<b>1007</b> Type LC3	<b>1,488</b>	LF	\$114.35	\$170,145
<b>1008</b> Type LWS	<b>674</b>	LF	\$124.03	\$83,593
<b>1009</b> Type UC	<b>64</b>	LF	\$99.83	\$6,389
<b>1010</b>				
<b>1011</b> <i>Branch Circuitry</i>				
<b>1012</b> 3/4" Emt, 4#12	<b>13,627</b>	LF	\$12.65	\$172,382
<b>1013</b> MC Cable	<b>40,882</b>	LF	\$5.18	\$211,718
<b>1014</b> 3/4" Emt, 4#10	<b>600</b>	LF	\$16.66	\$9,997
<b>1015</b> Plenum Cable	<b>7,410</b>	LF	\$1.59	\$11,746
<b>1016</b>				
<b>1017</b> <i>Wiring Devices</i>				
<b>1018</b> Switches	<b>12</b>	EA	\$78.65	\$944
<b>1019</b> Switches WP	<b>10</b>	EA	\$101.64	\$1,016
<b>1020</b> Momentary Contact Switches	<b>6</b>	EA	\$124.03	\$744
<b>1021</b> Key Switches	<b>1</b>	EA	\$90.75	\$91
<b>1022</b> OS, PS Power Pack	<b>102</b>	EA	\$181.50	\$18,513
<b>1023</b> Local Switch/Dimming Station L	<b>187</b>	EA	\$151.25	\$28,284
<b>1024</b> Occupancy Sensor	<b>238</b>	EA	\$202.68	\$48,237
<b>1025</b> Photo Sensor	<b>69</b>	EA	\$202.68	\$13,985
<b>1026</b> Receptacles	<b>368</b>	EA	\$78.65	\$28,943
<b>1027</b> Junc Boxes, Misc	<b>37</b>	EA	\$64.13	\$2,373
<b>1028</b> Receptacles GFI	<b>102</b>	EA	\$96.80	\$9,874
<b>1029</b> Receptacles Quad	<b>236</b>	EA	\$129.47	\$30,555
<b>1030</b> Receptacles GFI WP	<b>16</b>	EA	\$177.87	\$2,846
<b>1031</b> Receptacles w/ I/O Module	<b>10</b>	EA	\$96.80	\$968
<b>1032</b> Receptacles Quad w/ I/O Modules	<b>6</b>	EA	\$181.50	\$1,089
<b>1033</b> Wiring Devices Not Shown - ALLOW	<b>194</b>	EA	\$78.65	\$15,258
<b>1034</b> Cond Pump Conn	<b>22</b>	EA	\$133.10	\$2,928



**Fuller Middle School**

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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>1035</b> Install Leak Det FBO	22	EA	\$121.00	\$2,662
<b>1036</b> Sol Valve Conn	2	EA	\$121.00	\$242
<b>1037</b> FS Conn	5	EA	\$121.00	\$605
<b>1038</b> GSM Conn	7	EA	\$121.00	\$847
<b>1039</b> Floor Power Outlet	2	EA	\$399.30	\$799
<b>1040</b> 4-Pole Lighting Contactor	1	EA	\$635.25	\$635
<b>1041</b> 12-Pole Lighting Contactor	1	EA	\$1,500.40	\$1,500
<b>1042</b> EPO Pushbutton	3	EA	\$229.90	\$690
<b>1043</b> Fume Hood Conn	1	EA	\$157.30	\$157
<b>1044</b> Manual Snap Switch Starter VRF, VAV,misc	130	EA	\$181.50	\$23,595
<b>1045</b> 20/1 Amp Receptacle L5-20	11	EA	\$84.70	\$932
<b>1046</b> 20/1 Amp Eqpt Conn	14	EA	\$66.55	\$932
<b>1047</b> 30/1 Amp Receptacle L5-30	11	EA	\$117.98	\$1,298
<b>1048</b> 30 Amp Receptacle	4	EA	\$130.08	\$520
<b>1049</b>				
<b>1050</b> <i>Fire Alarm</i>				
<b>1051</b> Teflon Cable	31,860	LF	\$2.34	\$74,634
<b>1052</b> 3" Rigid, Riser Cables	60	LF	\$114.95	\$6,897
<b>1053</b> Pull Station	23	EA	\$229.90	\$5,288
<b>1054</b> Audible/Visual	204	EA	\$347.88	\$70,967
<b>1055</b> Smoke Detector	156	EA	\$387.20	\$60,403
<b>1056</b> CO Detector	5	EA	\$350.90	\$1,755
<b>1057</b> Beam-Type Smoke Detector	11	EA	\$1,052.70	\$11,580
<b>1058</b> Strobe	44	EA	\$229.90	\$10,116
<b>1059</b> WP Beacon	1	EA	\$287.38	\$287
<b>1060</b> Duct Detector	40	EA	\$889.35	\$35,574
<b>1061</b> Central Equipment, testing, Voice Command	1	LS	\$62,508.60	\$62,509
<b>1062</b> Radio Box, Antenna, wiring	1	EA	\$4,549.60	\$4,550
<b>1063</b> Fused Disc	1	EA	\$738.10	\$738
<b>1064</b> Door Release DH	6	EA	\$459.80	\$2,759
<b>1065</b> Ansul Conn's	1	LS	\$895.40	\$895
<b>1066</b> Remote Mic EVAC	1	EA	\$580.80	\$581
<b>1067</b> Annunciator Panel	3	EA	\$2,323.20	\$6,970
<b>1068</b> Misc Connections, Relays	6	EA	\$272.25	\$1,634
<b>1069</b> Knox Box	1	EA	\$520.30	\$520
<b>1070</b>				
<b>1071</b> <i>Communications System</i>				
<b>1072</b> MDF Rack, PP's, Terms	1	EA	\$14,762.00	\$14,762
<b>1073</b> IDF Rack, PP's, Terms	3	EA	\$7,381.00	\$22,143
<b>1074</b> 4" Floor Sleeves	16	EA	\$229.90	\$3,678
<b>1075</b> 4" Wall Sleeves	16	EA	\$229.90	\$3,678
<b>1076</b> Main Ground Bar	1	EA	\$1,476.20	\$1,476
<b>1077</b> Tel Ground Bar	3	EA	\$738.10	\$2,214
<b>1078</b> #3/OG Wire	600	LF	\$9.19	\$5,511
<b>1079</b> Cable Tray 24" Alum	1,570	LF	\$41.62	\$65,350
<b>1080</b> 12 Strand Multi-Mode Fiber	600	LF	\$6.18	\$3,710



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<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>1081</b> 6 Strand Multi-Mode Fiber	<b>600</b>	LF	\$4.30	\$2,577
<b>1082</b> Cu Distr Cable	<b>600</b>	LF	\$10.29	\$6,171
<b>1083</b> 1" EMT CDT	<b>172</b>	LF	\$14.40	\$2,477
<b>1084</b> 2" EMT CDT	<b>1,040</b>	LF	\$22.90	\$23,819
<b>1085</b> 4" EMT Cdt	<b>200</b>	LF	\$34.64	\$6,928
<b>1086</b> Cat 6 Cable	<b>95,250</b>	LF	\$1.59	\$150,981
<b>1087</b> WAP Outlet AN 2c	<b>14</b>	EA	\$89.54	\$1,254
<b>1088</b> Tel Outlet	<b>55</b>	EA	\$72.60	\$3,993
<b>1089</b> Data Outlet	<b>2</b>	EA	\$72.60	\$145
<b>1090</b> Data Duplex Outlet 2c	<b>68</b>	EA	\$89.54	\$6,089
<b>1091</b> Tel/Data Outlet 3c	<b>66</b>	EA	\$111.93	\$7,387
<b>1092</b> Floor Tel/Data Outlet 3c	<b>6</b>	EA	\$399.30	\$2,396
<b>1093</b> Tel/Data Outlet T 2c	<b>47</b>	EA	\$89.54	\$4,208
<b>1094</b> TVE 2c	<b>50</b>	EA	\$169.40	\$8,470
<b>1095</b> TVC 2c	<b>2</b>	EA	\$169.40	\$339
<b>1096</b>				
<b>1097</b> <i>Clock/ Public Address System:</i>				
<b>1098</b> 2 1/2" Emt, Riser Cables	<b>50</b>	LF	\$66.74	\$3,337
<b>1099</b> 3/4" EMT Cdt	<b>2,730</b>	LF	\$11.93	\$32,571
<b>1100</b> 1" EMT Cdt	<b>2,530</b>	LF	\$14.40	\$36,429
<b>1101</b> Comm Cable	<b>14,100</b>	LF	\$1.59	\$22,350
<b>1102</b> Main Sound Rack	<b>1</b>	LS	\$48,884.00	\$48,884
<b>1103</b> Local Sound System Rack	<b>2</b>	EA	\$7,792.40	\$15,585
<b>1104</b> Outlet S Speaker	<b>232</b>	EA	\$254.10	\$58,951
<b>1105</b> Outlet S Speaker WP	<b>19</b>	EA	\$344.85	\$6,552
<b>1106</b> Volume Control	<b>26</b>	EA	\$181.50	\$4,719
<b>1107</b> Master Clock GPS	<b>1</b>	EA	\$5,493.40	\$5,493
<b>1108</b> Clock Antenna	<b>1</b>	EA	\$1,863.40	\$1,863
<b>1109</b> Wireless Clock Transceiver	<b>1</b>	EA	\$2,855.60	\$2,856
<b>1110</b> Wireless Clock Repeater	<b>4</b>	EA	\$1,427.80	\$5,711
<b>1111</b> Clock, wireless	<b>73</b>	EA	\$254.10	\$18,549
<b>1112</b>				
<b>1113</b> <i>A/V System:</i>				
<b>1114</b> 1" EMT Cdt	<b>1,600</b>	LF	\$14.40	\$23,038
<b>1115</b> BP Button Panel	<b>41</b>	EA	\$99.83	\$4,093
<b>1116</b> R1 Receptacle Panel	<b>41</b>	EA	\$99.83	\$4,093
<b>1117</b> V1 Video Projector	<b>41</b>	EA	\$99.83	\$4,093
<b>1118</b> S1 Speaker	<b>82</b>	EA	\$99.83	\$8,186
<b>1119</b> AV Eqpt, Inst, LV Wiring - Proj/Assist List	<b>41</b>	RM	FF&E	
<b>1120</b> J1	<b>2</b>	EA	\$99.83	\$200
<b>1121</b> Data Outlet P Projector	<b>1</b>	EA	\$99.83	\$100
<b>1122</b> Screen	<b>1</b>	EA	\$99.83	\$100
<b>1123</b> R2 Receptacle Panel	<b>4</b>	EA	\$169.40	\$678
<b>1124</b> R3 Receptacle Panel	<b>4</b>	EA	\$169.40	\$678
<b>1125</b> Speaker S1 Backbox	<b>4</b>	EA	\$99.83	\$399
<b>1126</b> Speaker S2 Backbox	<b>4</b>	EA	\$99.83	\$399



**Fuller Middle School**

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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>1127</b> Speaker S3 Backbox	14	EA	\$99.83	\$1,398
<b>1128</b> AV Rack Enclosure	1	EA	\$459.80	\$460
<b>1129</b> AV Eqpt, Installation, LV Wiring - ALLOW	1	LS	FF&E	
<b>1130</b> Gym Sound System Mat'l Package	1	LS	\$75,000.00	\$75,000
<b>1131</b> Auditorium AV Roughin	1	LS	\$75,000.00	\$75,000
<b>1132</b>				
<b>1133</b> Theater Lighting & Control System:ALLOW, systems not clearly shown				
<b>1134</b> Lighting and Controls included in "Equipment Section"				
<b>1135</b> Theat Lighting & Power Roughin	1	LS	\$30,000.74	\$30,001
<b>1136</b> Theat Lighting Controls Roughin	1	LS	\$10,000.25	\$10,000
<b>1137</b>				
<b>1138</b> Security Intrusion Alarm System:				
<b>1139</b> Power Supply Junc Box, 120v	1	EA	\$459.80	\$460
<b>1140</b> Central Eqpt	1	EA	\$14,713.60	\$14,714
<b>1141</b> 3/4" Emt, 4#12	40	LF	\$13.85	\$554
<b>1142</b> Plenum Cables	4,400	LF	\$1.59	\$6,974
<b>1143</b> 3/4" Emt	660	LF	\$11.93	\$7,874
<b>1144</b> CR Card Reader	9	EA	\$810.70	\$7,296
<b>1145</b> K Keypad	2	EA	\$810.70	\$1,621
<b>1146</b> EL Electric Lock	3	EA	\$490.05	\$1,470
<b>1147</b> EH Electric Hinge	28	EA	\$490.05	\$13,721
<b>1148</b> Intercom	2	EA	\$520.30	\$1,041
<b>1149</b> PT Install Power Transfer Hinge FBO	14	EA	\$411.40	\$5,760
<b>1150</b> REX Req to Exit	17	EA	\$290.40	\$4,937
<b>1151</b> DC Door Position Sw	50	EA	\$199.65	\$9,983
<b>1152</b> M Motion Sensor	71	EA	\$411.40	\$29,209
<b>1153</b> TS Door Switch	14	EA	\$181.50	\$2,541
<b>1154</b> DJ Door Junc Box	16	EA	\$139.15	\$2,226
<b>1155</b>				
<b>1156</b> CCTV System:				
<b>1157</b> 3/4" EMT Cdt	870	LF	\$11.41	\$9,927
<b>1158</b> Signal Cables	11,400	LF	\$1.59	\$18,070
<b>1159</b> Monitoring/Recording Eqpt	1	LS	\$33,577.50	\$33,578
<b>1160</b> Viewing Console	2	EA	\$1,161.60	\$2,323
<b>1161</b> Data Outlet CAM, Camera	55	EA	\$1,294.70	\$71,209
<b>1162</b> Data Outlet CAM, Camera WP	15	EA	\$1,996.50	\$29,948
<b>1163</b>				
<b>1164</b> BDA System	1	LS	\$200,000.00	\$200,000
<b>1165</b> Area of Rescue Assistance	1	LS	\$50,000.00	\$50,000
<b>1166</b>				
<b>1167</b> Temp Power and Lighting	1	LS	\$100,000.00	\$100,000
<b>1168</b> <b>D5011 SERVICE &amp; DISTRIBUTION TOTAL</b>				<b>\$4,997,258</b>
<b>1169</b>				
<b>1170</b> <b>TOTAL SYSTEM D50 ELECTRICAL</b>				<b>\$4,997,258</b>
<b>1171</b>				



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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>1172</b>				
<b>1173 E10 EQUIPMENT</b>				
<b>1174</b>				
<b>1175 E1020 INSTITUTIONAL EQUIPMENT</b>				
<b>1176</b> <i>Projection Screens</i>				
<b>1177</b> Motorized projection screen; Auditorium	1	EA	\$17,500.00	\$17,500
<b>1178</b> Projection screen - Media Center, room 1250	2	EA	\$3,500.00	\$7,000
<b>1179</b> <i>Residential Appliances</i>				
<b>1180</b> Refrigerator/Freezer, microwave oven	5	RMS	\$1,700.00	\$8,500
<b>1181</b> Dishwasher	1	EA	\$1,200.00	\$1,200
<b>1182</b> Undercounter refrigerator @ Nurse	1	EA	\$650.00	\$650
<b>1183</b> <i>Food service equipment</i>				
<b>1184</b> Dining & Food Service (Budget provided, July 19, 2019)	1	AL	\$415,270.00	\$415,270
<b>1185</b> <i>Auditorium/Theatre Equipment</i>				
<b>1186</b> AV	1	AL	\$200,000.00	\$200,000
<b>1187</b> Lighting	1	AL	\$129,018.00	\$129,018
<b>1188</b> Dimming	1	AL	\$95,749.00	\$95,749
<b>1189</b> Rigging	1	AL	\$158,300.00	\$158,300
<b>1190</b> Curtains	1	AL	\$33,854.00	\$33,854
<b>1191</b> Orchestra	1	AL	\$175,000.00	FF&E
<b>1192</b> Gym AV sound system	1	AL	\$120,000.00	\$120,000
<b>1193</b> Cafeteria AV	1	AL	\$50,000.00	\$50,000
<b>1194</b> Band and chorus AV	1	AL	\$60,000.00	\$60,000
<b>1195</b> Auditorium seating; budget provided	1	AL	\$416,921.00	\$416,921
<b>1196</b> <i>Science Room Equipment</i>				
<b>1197</b> Fume hoods	6	EA	\$10,000.00	NIC
<b>1198</b> <i>Gymnasium equipment</i>				
<b>1199</b> Electronic scoreboard	1	EA	\$7,500.00	\$7,500
<b>1200</b> Shot clock/shot timer	1	EA	\$1,250.00	\$1,250
<b>1201</b> Pull up bar	1	EA	\$850.00	\$850
<b>1202</b> Stall bar	1	EA	\$850.00	\$850
<b>1203</b> Vertical ladder	1	EA	\$550.00	\$550
<b>1204</b> Rope hoist	1	EA	\$500.00	\$500
<b>1205</b> Overhead mounted folding backstops w/glass backboards	6	EA	\$6,500.00	\$39,000
<b>1206</b> Gym motorized divider curtains	1	EA	\$30,000.00	\$30,000
<b>1207</b> Sleeves & floor plates for badminton & volleyball uprights; allow	2	SETS	\$6,000.00	\$12,000
<b>1208</b> Gym equipment controls-power touch	1	LS	\$5,000.00	\$5,000
<b>1209</b> Gym wall safety pads to be 8'-8" high	2,634	SF	\$20.00	\$52,680
<b>1210</b> Motorized telescoping bleachers, motorized	760	SEAT	\$100.00	\$76,000
<b>1211</b> Shop equipment	1	LS	\$25,000.00	\$25,000
<b>1212</b> Loading dock equipment	1	LS	\$15,000.00	\$15,000
<b>1213 E1020 INSTITUTIONAL EQUIPMENT TOTAL</b>				<b>\$1,980,142</b>
<b>1214</b>				



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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>RATE/UNIT</u></b>	<b><u>TOTAL</u></b>
<b>1215 TOTAL SYSTEM E10 FITTINGS &amp; EQUIPMENT</b>				<b>\$1,980,142</b>
<b>1216</b>				
<b>1217</b>				
<b>1218 E20 FURNISHINGS</b>				
<b>1219</b>				
<b>1220 E2020 SPECIALTIES / MILLWORK</b>				
<b>1221 Interior guardrails</b>				
<b>1222 Handrailing</b>	<b>150</b>	LF	\$250.00	\$37,500
<b>1223 Guardrail in Common areas</b>	<b>365</b>	LF	\$103.00	\$37,595
<b>1224 Guardrails at lockers</b>	<b>1,000</b>	LF	\$550.00	\$550,000
<b>1225 Railings in auditorium</b>	<b>1</b>	LS	\$50,000.00	\$50,000
<b>1226 Vertical duct enclosure</b>	<b>4,200</b>	LF	\$90.00 NIC	
<b>1227</b>				
<b>1228 Miscellaneous metals</b>				
<b>1229 Furnishings; miscellaneous metals</b>	<b>137,385</b>	GSF	\$0.50	\$68,693
<b>1230</b>				
<b>1231 Furnishings; miscellaneous wood blocking</b>	<b>137,385</b>	GSF	\$0.25	\$34,346
<b>1232</b>				
<b>1233 Academic areas: classrooms, science, media, music, vocational, sped</b>				
<b>1234 (4) Adj shelves 12" wide melamine</b>	<b>602</b>	LF	\$140.00	\$84,280
<b>1235 (6) Adj shelves 12" wide melamine @ Media</b>	<b>56</b>	LF	\$210.00	\$11,760
<b>1236 Bench; wood veneer cantilevered w/ptd supports</b>	<b>69</b>	LF	\$350.00	\$24,150
<b>1237 Epoxy counter 24" wide</b>	<b>325</b>	LF	\$325.00	\$105,625
<b>1238 Plam admin desk, curved @ Admin</b>	<b>20</b>	LF	\$500.00	\$10,000
<b>1239 Plam base cabinet</b>	<b>35</b>	LF	\$205.00	\$7,175
<b>1240 Plam base cabinet; mobile on casters</b>	<b>175</b>	EA	\$550.00	\$96,250
<b>1241 Plam counter 24" wide</b>	<b>1,425</b>	LF	\$200.00	\$285,000
<b>1242 Plam tall cabinets</b>	<b>4</b>	EA	\$1,000.00	\$4,000
<b>1243 Plam tall cabinets w/tackable surface</b>	<b>3</b>	EA	\$1,250.00	\$3,750
<b>1244 Plam upper cabinet</b>	<b>197</b>	LF	\$175.00	\$34,475
<b>1245 Plam work counter oval @ Admin</b>	<b>10</b>	LF	\$350.00	\$3,500
<b>1246 Toilets</b>				
<b>1247 Vanity counter; Toilets</b>	<b>319</b>	LF	\$200.00	\$63,800
<b>1248 Vanity counter; Dressing</b>	<b>33</b>	LF	\$200.00	\$6,600
<b>1249 Folding panel shutter w/w/magnetic writable surface both side:</b>	<b>40</b>	EA	\$1,000.00	\$40,000
<b>1250 Administration areas, Offices, Medical:</b>				
<b>1251 plam custom base &amp; upper cabinets w/plam counter</b>	<b>20</b>	LF	\$665.00	\$13,300
<b>1252 tackable surface backsplash</b>	<b>160</b>	SF	\$24.00	\$3,840
<b>1253 Other areas:</b>				
<b>1254 Mail slots, melamine</b>	<b>16</b>	LF	\$250.00	\$4,000
<b>1255 Window stools - Solid surfacing material</b>	<b>1,250</b>	LF	\$35.00	\$43,750
<b>1256 Window treatment, manually operated roller shades</b>	<b>11,439</b>	SF	\$6.00	\$68,634
<b>1257 motorized roller shades @ exterior CW and SF</b>	<b>1,788</b>	SF	\$10.00	\$17,880



**Fuller Middle School**

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**DETAILED ESTIMATE - NEW CONSTRUCTION**

<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>RATE/UNIT</b>	<b>TOTAL</b>
<b>1258</b> motorized shade units at skylights	<b>4,015</b>	SF	\$10.00	\$40,150
<b>1259</b> roller shade at interior doors w/lites & glazed partitions	<b>5,569</b>	SF	\$4.00	\$22,276
<b>1260</b> Perforated arch grille curved @ Classrooms 1' h	<b>1,345</b>	LF	\$55.00	\$73,975
<b>1261</b> E2020 SPECIALTIES / MILLWORK TOTAL				<b>\$1,846,304</b>
<b>1262</b>				
<b>1263</b> TOTAL SYSTEM E20 FURNISHINGS				<b>\$1,846,304</b>
<b>1264</b>				
<b>1265</b>				
<b>1266</b> F10 SPECIAL CONSTRUCTION				
<b>1267</b>				
<b>1268</b> F1010 SPECIAL CONSTRUCTION				
<b>1269</b> No work in this section				
<b>1270</b> F1010 SPECIAL CONSTRUCTION TOTAL				<b>\$0</b>
<b>1271</b>				
<b>1272</b> TOTAL SYSTEM F10 SPECIAL CONSTRUCTION				<b>\$0</b>
<b>1273</b>				
<b>1274</b>				
<b>1275</b> F20 SELECTIVE DEMOLITION				
<b>1276</b>				
<b>1277</b> F2020 SELECTIVE DEMOLITION				
<b>1278</b> Demolition of existing building allowance	<b>195,400</b>	SF		
<b>1279</b> Haz mat removal allowance				
<b>1280</b> F2020 SELECTIVE DEMOLITION TOTAL				<b>\$0</b>
<b>1281</b>				
<b>1282</b> TOTAL SYSTEM F20 DEMOLITION				<b>\$0</b>
<b>1283</b>				



**Fuller Middle School**

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**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>10 G10 SITE PREPARATION</b>				
<b>11</b>				
<b>12 G1010 Site Clearing</b>				
<b>13 31 10 00 Site Clearing</b>				
<b>14</b> Site clearing	7.3	ACRE	\$5,000.00	BP#1
<b>15</b> Safety barricade	1	AL	\$60,000.00	BP#1
<b>16</b> Construction fence, install, maintain, remove & reinstall; for all phases	11,344	LF	\$12.00	BP#1
<b>17</b> Double construction gate	2	PR	\$2,500.00	BP#1
<b>18</b> Temporary construction entrance	2	LOC	\$7,000.00	BP#1
<b>19</b> Add premium for moving and reinstalling for 3 phases	1	LS	\$37,385.00	BP#1
<b>20</b> Temporary Jersey Barriers; purchase and install	3,145	LF	\$65.00	BP#1
<b>21</b> Temp signs	1	LS	\$3,000.00	BP#1
<b>22</b> Wash down/re-fueling/parking allowance	3,000	SF	\$2.00	BP#1
<b>23 31 23 19 Dewatering and Drainage</b>				
<b>24</b> Dewatering for sitework excavation; allow	1	LS	\$100,000.00	BP#1
<b>25 31 25 00 Erosion and Sedimentation Controls</b>				
<b>26</b> Erosion control barrier	1,206	LF	\$14.00	BP#1
<b>27</b> Stockpile area (all phases), qty provided	35,000	CY	\$2.50	BP#1
<b>28</b> FM; discharge temp basin to existing DMH	271	LF	\$75.00	BP#1
<b>29</b> Stormwater basin	3,547	SF	\$2.50	BP#1
<b>30</b> Temporary pavement	47,106	SF	\$3.00	BP#1
<b>31</b> Temporary sedimentation and runoff basin	7,348	SF	\$2.00	BP#1
<b>32 G1010 Site Clearing Total</b>				<b>\$0</b>
<b>33</b>				
<b>34 G1020 Site Demolition and Relocation</b>				
<b>35 02 41 00 Demolition</b>				
<b>36</b> BP#1				BP#1
<b>37 <u>G1020.01 Building Demolition</u></b>				
<b>38 02 30 00 Building Demolition</b>				
<b>39</b> Building demoltion				<u>See Main Summary</u>
<b>40 G1020 Site Demolition and Relocation Total</b>				<b>\$0</b>
<b>41</b>				
<b>42 G1030 Site Earthwork</b>				
<b>43 32 18 00 Athletic and Recreational Surfacing</b>				
<b>44</b> Sports field mix (seed)	267,073	SF	\$0.50	\$133,537
<b>45 <u>Baseball field</u></b>				Existing to Remain
<b>46</b> Bollards	133	EA	\$500.00	\$66,500
<b>47</b> Bike rack	2	EA	\$3,500.00	\$7,000
<b>48</b> Wooden guardrail det 7/L3.0	420	LF	\$75.00	\$31,500
<b>49</b> 42" galv perforated metal guardrail	21	LF	\$175.00	\$3,675
<b>50</b> Galvanized handrails, ramps and steps	310	LF	\$250.00	\$77,463



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<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>51</b> Wood slat bench on metal bracket	<b>25</b>	LF	\$200.00	\$5,000
<b>52</b> Phenolic bench w/sloped back	<b>7</b>	LF	\$225.00	\$1,575
<b>53</b> Flagpole	<b>2</b>	EA	\$7,500.00	\$15,000
<b>54</b> Signage	<b>1</b>	EA	\$15,000.00	\$15,000
<b>55</b> Outdoor fitness equipment				NIC
<b>56</b> Traffic signs	<b>1</b>	AL	\$25,000.00	\$25,000
<b>57</b> Miscellaneous site improvements	<b>1</b>	LS	\$75,000.00	\$75,000
<b>58 G1030 Site Earthwork Total</b>				<b>\$456,249</b>
<b>59</b>				
<b>60 G10 SITE PREPARATION TOTAL</b>				<b>\$456,249</b>
<b>61</b>				
<b>62</b>				
<b>63 G20 SITE IMPROVEMENTS</b>				
<b>64</b>				
<b>65 G2020 Roadways</b>				
<b>66 32 12 00 Flexible Paving</b>				
<b>67</b> Existing public roadway 'Flagg Drive' to remain		SF		ETR
<b>68</b> Vehicular asphalt pavement, incl's temporary pavement	<b>202,060</b>	SF	\$3.00	BP#1
<b>69</b> Raised bituminous pavement (stamped)	<b>11,716</b>	SF	\$15.00	BP#1
<b>70</b> Gravel base to roadway & parking lot	<b>9,445</b>	CY	\$35.00	BP#1
<b>71</b> 32 16 00 Curbs and Gutters				BP#1
<b>72</b> VGC; vertical granite curb	<b>3,965</b>	LF	\$42.00	BP#1
<b>73</b> SGC; sloped granite curb	<b>191</b>	LF	\$43.50	BP#1
<b>74</b> PCC; precast concrete curb	<b>8,105</b>	LF	\$25.00	BP#1
<b>75</b> Bit. berm curb	<b>1,336</b>	LF	\$5.00	BP#1
<b>76</b> 32 17 00 Paving Specialties				BP#1
<b>77</b> Crosswalk	<b>2,350</b>	SF	\$2.50	BP#1
<b>78</b> Parking stall painting	<b>302</b>	EA	\$15.00	BP#1
<b>79</b> Parking stall painting; HC	<b>12</b>	EA	\$75.00	BP#1
<b>80</b> Crosswalk striping, temporary	<b>2,440</b>	SF	\$2.50	BP#1
<b>81</b> Temporary parking spaces, incl's HC bus	<b>162</b>	EA	\$75.00	BP#1
<b>82</b> Jersey barrier between vehicle parking, temporary	<b>745</b>	LF	\$10.00	BP#1
<b>83</b> Misc. marking other than above	<b>1</b>	LS	\$50,000.00	BP#1
<b>84 G2020 Roadways Total</b>				<b>\$0</b>
<b>85</b>				
<b>86 G2030 Pedestrian Paving</b>				
<b>87 32 13 10 Rigid Paving</b>				
<b>88</b> Concrete paving/Conc sidewalk	<b>21,021</b>	SF	\$8.00	\$168,168
<b>89</b> Bituminous conc sidewalk	<b>26,443</b>	SF	\$2.25	BP#1
<b>90</b> Gravel base to concrete pavement	<b>879</b>	CY	\$35.00	\$30,765
<b>91</b> Curb cut	<b>16</b>	EA	\$450.00	\$7,200
<b>92</b> Concrete pad	<b>1</b>	AL	\$24,000.00	BP#1



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137,385 GSF

**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>93</b> Handicap ramp	<b>402</b>	SF	\$20.00	BP#1
<b>94</b> Temporary modular handicap ramp	<b>138</b>	SF	\$20.00	BP#1
<b>95</b> <b>G2030 Pedestrian Paving Total</b>				<b>\$206,133</b>
<b>96</b>				
<b>97</b> <b>G2040 Site Development</b>				
<b>98</b> <u>G2040.01 Fences and Gates</u>				
<b>99</b> 32 31 00 Fences and Gates				
<b>100</b> Vehicular guardrail	<b>271</b>	LF	\$250.00	\$67,750
<b>101</b> Railing	<b>1,000</b>	LF	\$75.00	\$75,000
<b>102</b> <u>Unit block retaining wall</u>				
<b>103</b> Footing	472	lf		
<b>104</b> Concrete	<b>37</b>	CY	\$135.00	\$4,995
<b>105</b> Concrete; place	<b>37</b>	CY	\$85.00	\$3,145
<b>106</b> Reinforcing	<b>2,405</b>	LBS	\$1.10	\$2,646
<b>107</b> Formwork	<b>2,832</b>	SF	\$12.00	\$33,984
<b>108</b> Wall				
<b>109</b> Concrete	<b>55</b>	CY	\$135.00	\$7,425
<b>110</b> Concrete; place	<b>55</b>	CY	\$85.00	\$4,675
<b>111</b> Reinforcing	<b>8,250</b>	LBS	\$1.10	\$9,075
<b>112</b> Formwork	<b>2,832</b>	SF	\$12.00	\$33,984
<b>113</b> Wall	<b>1,652</b>	SF	\$28.00	\$46,256
<b>114</b> Segmented wall	<b>2,000</b>	SF	\$60.00	\$120,000
<b>115</b> <u>Bandshell</u>				
<b>116</b> Footing	46	lf		
<b>117</b> Concrete; material	<b>7</b>	CY	\$135.00	\$945
<b>118</b> Concrete; place	<b>7</b>	CY	\$85.00	\$595
<b>119</b> Reinforcing	<b>455</b>	LBS	\$1.10	\$501
<b>120</b> Formwork	<b>96</b>	SF	\$9.00	\$864
<b>121</b> Wall	182	sf		
<b>122</b> Concrete	<b>10</b>	CY	\$130.00	\$1,300
<b>123</b> Placing	<b>10</b>	CY	\$85.00	\$850
<b>124</b> Reinforcing	<b>1,500</b>	LBS	\$1.10	\$1,650
<b>125</b> Formwork	<b>382</b>	SF	\$8.00	\$3,056
<b>126</b> Concrete steps	<b>340</b>	LFR	\$150.00	\$51,000
<b>127</b> Concrete steps , amphitheatre steps	<b>206</b>	LFR	\$125.00	\$25,750
<b>128</b> Bandshell	<b>696</b>	SF	\$200.00	\$139,200
<b>129</b> Bollards	<b>115</b>	EA	\$750.00	\$86,250
<b>130</b> Premium for architectural featured bollards	<b>1</b>	LS	\$100,000.00	\$100,000
<b>131</b> Signage	<b>1</b>	AL	\$15,000.00	\$15,000
<b>132</b> Bicycle racks	<b>20</b>	EA	\$1,000.00	\$20,000
<b>133</b> Basketball court; complete, fence, gate, court marking	<b>2,000</b>	SF	\$75.00	\$150,000
<b>134</b> <b>G2040 Site Development Total</b>				<b>\$1,005,895</b>



**Fuller Middle School**

Framingham, MA

137,385 GSF

**SITework: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>135</b>				
<b>136 G2050 Landscaping</b>				
<b>137 <u>G2050.02 Lawns and Grasses</u></b>				
<b>138 32 92 00 Turfs and Grasses</b>				
<b>139</b> Topsoil for planting beds, shrubs and perennials	<b>308</b>	CY	\$25.00	\$7,699
<b>140</b> Meadow mix seed	<b>111,408</b>	SF	\$0.50	\$55,704
<b>141</b> Lawn	<b>180,759</b>	SF	\$0.35	\$63,266
<b>142</b> Sod	<b>24,294</b>	SF	\$1.50	\$36,441
<b>143</b> Sod at fields	<b>267,073</b>	SF	\$1.50	\$400,610
<b>144</b> Plant bed	<b>5,384</b>	SF	\$10.00	\$53,840
<b>145</b> Mulch	<b>1</b>	LS	\$35,000.00	\$35,000
<b>146</b> Precast concrete planter w/galv steel connection & cross bracing	<b>212</b>	SF	\$25.00	\$5,300
<b>147</b> Remove and install new irrigation System	<b>81,000</b>	SF	\$1.25	\$101,250
<b>148</b> Irrigation in front of Amphitheater	<b>24,294</b>	SF	\$2.00	\$48,588
<b>149</b>				
<b>150</b> Fine grading	<b>180,759</b>	SF	\$0.75	\$135,569
<b>151</b>				
<b>152</b>				
<b>153 <u>G2050.03 Trees, Plants and Ground Covers</u></b>				
<b>154 32 93 00 Plants</b>				
<b>155 Trees</b>				
<b>156</b> AL; Allegheny Serviceberry 2½ - 3" Cal	<b>12</b>	EA	\$900.00	\$10,800
<b>157</b> AC; Shadblow Serviceberry 2½ - 3" Cal	<b>1</b>	EA	\$900.00	\$900
<b>158</b> AR; Red Maple 3 - 3½" Cal	<b>6</b>	EA	\$850.00	\$5,100
<b>159</b> CK; American Yellowwood 3 - 3½" Cal	<b>28</b>	EA	\$800.00	\$22,400
<b>160</b> FG; American Beech 3 - 3½" Cal	<b>11</b>	EA	\$850.00	\$9,350
<b>161</b> LT; Tulip Tree 3 - 3½" Cal	<b>8</b>	EA	\$900.00	\$7,200
<b>162</b> NS; Black Tupelo 3 - 3½" Cal	<b>16</b>	EA	\$850.00	\$13,600
<b>163</b> OA; Sourwood 2½-3" Cal	<b>3</b>	EA	\$750.00	\$2,250
<b>164</b> PA; London Plain Tree 3 - 3½" Cal	<b>24</b>	EA	\$850.00	\$20,400
<b>165</b> QP; Pin Oak 3 - 3½" Cal	<b>7</b>	EA	\$900.00	\$6,300
<b>166</b> QR; Red Oak 3 - 3½" Cal	<b>7</b>	EA	\$950.00	\$6,650
<b>167 Shrubs</b>				
<b>168</b> CA; Sweet Pepperbush 3½ - 4' HT	<b>28</b>	EA	\$95.00	\$2,660
<b>169</b> HQ; Oak-leaf Hydrangea 3 - 3½' HT	<b>48</b>	EA	\$95.00	\$4,560
<b>170</b> HV; Witch Hazel 7- 8' B+B	<b>3</b>	EA	\$350.00	\$1,050
<b>171</b> IG; Compact Incberry 2½ - 3' HT	<b>62</b>	EA	\$125.00	\$7,750
<b>172</b> IV; Winterberry 2 - 2½ HT	<b>58</b>	EA	\$95.00	\$5,510
<b>173</b> JC; Common Juniper 24" SPD	<b>7</b>	EA	\$75.00	\$525
<b>174</b> JH; Creeping Juniper 15-24" SPD	<b>69</b>	EA	\$75.00	\$5,175
<b>175</b> JV; Eastern Red Cedar 7- 8' HT	<b>26</b>	EA	\$205.00	\$5,330



**Fuller Middle School**

Framingham, MA

137,385 GSF

**SITWORK: NEW CONSTRUCTION**

	<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
176	MG; Sweetgale 3½ - 4' HT	40	EA	\$95.00	\$3,800
177	PF; Pink Beauty Potentilla 24" SPD	13	EA	\$75.00	\$975
178	RA; Grow Low Sumac 2 - 2½' SPD	63	EA	\$115.00	\$7,245
179	RT; Staghorn Sumac 3 Gal	13	EA	\$115.00	\$1,495
180	RV; Virginia Rose 2½ - 3' SPD	14	EA	\$75.00	\$1,050
181	VA; Lowbush Blueberry 15-24" SPD	31	EA	\$75.00	\$2,325
182	VD; Arrowwood 4 - 4½' HT	31	EA	\$150.00	\$4,650
183	VT; Dwarf Cranberry Bush 3 - 3½' HT	12	EA	\$115.00	\$1,380
184	Groundcover				
185	CP; Sweet Fern 1 Gal	2,372	EA	\$15.00	\$35,580
186	Grass at temporary parking area	6,650	SF	\$0.35	\$2,328
187	Maintenance of landscaping	1	LS	\$10,000.00	\$10,000
188	<b>G2050 Landscaping Total</b>				<b>\$1,151,604</b>
189					
190	<b>G20 SITE IMPROVEMENTS TOTAL</b>				<b>\$2,363,632</b>
191					
192					
193	<b><u>G30 SITE CIVIL/MECHANICAL UTILITIES</u></b>				Early Bid package
194					
195	<b>G3010 Water Supply</b>				
196	33 10 00 Water Distribution				
197	2" Domestic water service	120	LF	\$60.00	BP#1
198	6" Fire water service	170	LF	\$70.00	BP#1
199	Water service; not sized	680	LF	\$95.00	BP#1
200	Hydrant	5	EA	\$4,500.00	BP#1
201	Miscellaneous gates, valves, etc. (gate valve 8x8x6)	1	LS	\$10,000.00	BP#1
202	<b>G3010 Water Supply Total</b>				<b>\$0</b>
203					
204	<b>G3020 Sanitary Sewer</b>				
205	33 31 00 Sanitary Sewerage				
206	All incl. trench and backfill				
207	6" DI	78	LF	\$70.00	BP#1
208	6" PVC	42	LF	\$70.00	BP#1
209	8" PVC	472	LF	\$75.00	BP#1
210	SMH; Sewer manhole	4	EA	\$4,500.00	BP#1
211	CO; Cleanout	1	EA	\$600.00	BP#1
212	Connect to existing	1	EA	\$3,500.00	BP#1
213	Acid neutralization tank	2	EA	\$7,500.00	BP#1
214	Grease trap	1	EA	\$15,000.00	BP#1
215	<b>G3020 Sanitary Sewer Total</b>				<b>\$0</b>
216					
217	<b>G3030 Storm Sewer</b>				



**Fuller Middle School**

Framingham, MA

137,385 GSF

**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>218</b> 33 41 00 Storm Utility Drainage				
<b>219</b> All incl. trench and backfill				
<b>220</b> 6" PVC	47	LF	\$35.00	BP#1
<b>221</b> 12" HDPE	2,435	LF	\$42.00	BP#1
<b>222</b> 15" HDPE	635	LF	\$45.00	BP#1
<b>223</b> 18" HDPE	548	LF	\$48.00	BP#1
<b>224</b> 24" HDPE	371	LF	\$50.00	BP#1
<b>225</b> 30" HDPE	547	LF	\$60.00	BP#1
<b>226</b> DMH; Manhole	9	EA	\$3,500.00	BP#1
<b>227</b> CB; catch basin	19	EA	\$4,500.00	BP#1
<b>228</b> Temporary CB, convert to DMH	3	EA	\$4,500.00	BP#1
<b>229</b> Headwall @ 24" HDPE end	2	EA	\$1,500.00	BP#1
<b>230</b> Allowances for:				BP#1
<b>231</b> Water quality structures	4	EA	\$15,000.00	BP#1
<b>232</b> Gravel and sod buffer for pretreatment	1	LS	\$10,000.00	BP#1
<b>233</b> Stormceptors:				BP#1
<b>234</b> 450i	2	EA	\$10,000.00	BP#1
<b>235</b> 3600	1	EA	\$35,000.00	BP#1
<b>236</b> 6000	1	EA	\$60,000.00	BP#1
<b>237</b> Outlet structure	1	EA	\$5,000.00	BP#1
<b>238</b> Perimeter drainage				Bldg Tab
<b>239</b> G3030 Storm Sewer Total				<u>\$0</u>
<b>240</b>				
<b>241</b> G3040 Heating Distribution				
<b>242</b> 33 50 00 Gas Service				
<b>243</b> Trench and backfill only	313	LF	\$45.00	\$14,085
<b>244</b> Connection to existing gas main				By Other
<b>245</b> Gas line piping, incl's valves (2)				By Other
<b>246</b> G3040 Heating Distribution Total				<u>\$14,085</u>
<b>247</b>				
<b>248</b> G30 SITE CIVIL/MECHANICAL UTILITIES TOTAL				\$14,085
<b>249</b>				
<b>250</b>				
<b>251</b> G40 SITE ELECTRICAL UTILITIES				
<b>252</b>				
<b>253</b> G4010 Site Electrical Utilities				
<b>254</b> 33 70 00 Electrical Utilities				
<b>255</b> Site Lighting, Site Eqpt				
<b>256</b> Type SL1, 1-Fixt, 30' pole	33	EA	\$4,767.40	BP#1
<b>257</b> Type SL1A, 1-Fixt, 30' pole	0	EA	\$4,767.40	BP#1
<b>258</b> Type SL3, Wallpack	4	EA	\$701.80	\$2,807
<b>259</b> Type SL3 Pedestrian Light Pole	42	EA	\$3,242.80	\$136,198
<b>260</b> WP Signage w/ Lights, FBO	1	EA	\$1,113.20	\$1,113



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**SITWORK: NEW CONSTRUCTION**

<b><u>DESCRIPTION</u></b>	<b><u>QUANTITY</u></b>	<b><u>UNIT</u></b>	<b><u>UNIT COST</u></b>	<b><u>TOTAL</u></b>
<b>261</b> Type SL10 Plant uplight	12	EA	\$520.30	\$6,244
<b>262</b> Receptacle WP GFI	5	EA	\$284.35	\$1,422
<b>263</b> CCTV Camera, Pole Mtd	3	EA	\$1,863.40	\$5,590
<b>264</b> Elect Vehicle Charging Station	3	EA	\$1,645.60	\$4,937
<b>265</b> Relocate Exist EM Call Box	1	EA	\$1,113.20	\$1,113
<b>266</b> Time Clock	1	EA	\$1,004.30	\$1,004
<b>267</b>				
<b>268</b> Branch Circuitry:				
<b>269</b> 3/4" Emt, 4#10	280	LF	\$14.98	BP#1
<b>270</b> 1" PVC CDT UG	6,050	LF	\$5.41	BP#1
<b>271</b> 2" PVC CDT UG	900	LF	\$7.70	BP#1
<b>272</b> 2 1/2" PVC CDT UG	8,400	LF	\$10.31	BP#1
<b>273</b> 17x30x12" Site Pullbox	14	EA	\$2,323.20	\$32,525
<b>274</b> Handhole, future PV	14	EA	\$2,323.20	\$32,525
<b>275</b> #10 Wire	12,400	LF	\$1.25	\$15,535
<b>276</b> #8 Wire	12,090	LF	\$1.76	\$21,288
<b>277</b> #6 Wire	2,700	LF	\$2.11	\$5,707
<b>278</b> Signal Cable	1,150	LF	\$1.82	\$2,087
<b>279</b>				
<b>280</b> Site Power, EG Feeders, Utilities:				
<b>281</b> 1" PVC, EG Controls, Misc UG	200	LF	\$10.44	\$2,088
<b>282</b> 4" PVC (Primary, empty) UG	460	LF	\$16.95	\$7,797
<b>283</b> 4" PVC CDT, 4 600 Mcm, UG (service)	600	LF	\$104.70	\$62,819
<b>284</b> 4" PVC CDT UG (spare)	100	LF	\$16.95	\$1,695
<b>285</b> 4" PVC CDT, 4 500 Mcm, UG (EG)	0	LF	\$87.18	\$0
<b>286</b> 4" PVC CDT, 4 350 Mcm, UG (EG)	200	LF	\$68.01	\$13,602
<b>287</b> 350Mcm THHN CU		LF	\$12.77	\$0
<b>288</b> 4" PVC, 4#3/0 MI, UG	100	LF	\$200.92	\$20,092
<b>289</b> Utility Pole Riser	1	LS	\$4,767.40	\$4,767
<b>290</b> Utility Transformer Pad	1	EA	\$4,162.40	\$4,162
<b>291</b> Manhole	2	EA	\$11,616.00	\$23,232
<b>292</b> Trenching, Concrete, Backfill	1	LS	\$100,000.00	BP#1
<b>293</b>				
<b>294</b> Miscellaneous:				
<b>295</b> 4" PVC CDT UG (Comm)	800	LF	\$16.95	\$13,560
<b>296</b> Innerduct	600	LF	\$3.99	\$2,396
<b>297</b> Tel Utility Pole Riser	1	LS	\$3,121.80	\$3,122
<b>298</b> 3'x3' Comm Handhole	1	EA	\$6,243.60	\$6,244
<b>299</b>				
<b>300</b> Misc Site Demo	1	LS	\$10,890.00	\$10,890
<b>301</b> Site Security Lighting	1	LS	\$12,584.00	\$12,584
<b>302</b> Temp Power and Lighting	1	LS	\$31,460.00	\$31,460
<b>303</b> Eqpt Rentals	1	LS	\$7,260.00	\$7,260
<b>304</b> <b>G4010 Site Electrical Utilities Total</b>				<b>\$497,865</b>



**Fuller Middle School**

Framingham, MA

137,385 GSF

**SITWORK: NEW CONSTRUCTION**

<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT COST</u>	<u>TOTAL</u>
305				
306 <b>G40 SITE ELECTRICAL UTILITIES TOTAL</b>				\$497,865
307				
308			<b>TOTAL SITWORK SUMMARY</b>	<b>\$3,331,831</b>
309				





**Fuller Middle School**  
Fuller Middle School

**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV. ELEMENTS</u></b>	<b><u>60%CD ESTIMATE</u></b>	<b><u>DD ESTIMATE</u></b>	<b><u>DIFFERENCE</u></b>	<b><u>% DIFF</u></b>
	<b><u>TOTAL</u></b>	<b><u>TOTAL</u></b>		
	137,385 GSF	136,600 GSF	785 GSF	0.57%
<b>A-G <u>BUILDING</u></b>				
<b><u>A SUBSTRUCTURES</u></b>				
A10 FOUNDATIONS				
Foundations	\$1,324,802	\$1,705,271	(\$380,469)	-22.31%
Slab on Grade	\$984,489	\$967,386	\$17,103	1.77%
FOUNDATIONS TOTAL	<b>\$2,309,291</b>	<b>\$2,672,657</b>	<b>(\$363,366)</b>	<b>-13.60%</b>
A20 BASEMENT CONSTRUCTION				
<b>A SUBSTRUCTURES TOTAL</b>	<b>\$2,309,291</b>	<b>\$2,672,657</b>	<b>(\$363,366)</b>	<b>-13.60%</b>
<b><u>B SHELL</u></b>				
B10 STRUCTURE				
Upper Floor Construction	\$2,909,479	\$2,752,008	\$157,471	5.72%
Roof Construction	\$2,150,845	\$2,258,699	(\$107,854)	-4.78%
STRUCTURE TOTAL	<b>\$5,060,324</b>	<b>\$5,010,707</b>	<b>\$49,617</b>	<b>0.99%</b>
B20 EXTERIOR CLOSURE				
Exterior walls	\$4,459,287	\$5,066,787	(\$607,499)	-11.99%
Exterior windows	\$2,266,656	\$2,544,354	(\$277,698)	-10.91%
Exterior Doors	\$213,200	\$160,500	\$52,700	32.83%
EXTERIOR CLOSURE TOTAL	<b>\$6,939,143</b>	<b>\$7,771,641</b>	<b>(\$832,498)</b>	<b>-10.71%</b>
B30 ROOFING				
Roof Coverngs	\$2,461,021	\$2,015,117	\$445,904	22.13%
ROOFING TOTAL	<b>\$2,461,021</b>	<b>\$2,015,117</b>	<b>\$445,904</b>	<b>22.13%</b>
<b>B SHELL TOTAL</b>	<b>\$14,460,488</b>	<b>\$14,797,465</b>	<b>(\$336,977)</b>	<b>-2.28%</b>
<b><u>C INTERIORS</u></b>				
C10 INTERIOR CONSTRUCTION				
Partitions	\$4,440,502	\$4,102,073	\$338,429	8.25%
Interior Doors, frames & Hardware	\$956,483	\$856,335	\$100,148	11.69%
Fittings	\$975,770	\$975,460	\$310	0.03%
INTERIOR CONSTRUCTION TOTAL	<b>\$6,372,754</b>	<b>\$5,933,868</b>	<b>\$438,886</b>	<b>7.40%</b>

**Fuller Middle School**  
Fuller Middle School

**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV. ELEMENTS</u></b>	<b><u>60%CD ESTIMATE</u></b>	<b><u>DD ESTIMATE</u></b>	<b><u>DIFFERENCE</u></b>	<b><u>% DIFF</u></b>
	<b><u>TOTAL</u></b>	<b><u>TOTAL</u></b>		
	137,385 GSF	136,600 GSF	785 GSF	0.57%
<b>C20 STAIRCASES</b>				
Staircases	\$550,570	\$550,570	\$0	0.00%
<b>STAIRCASES TOTAL</b>	<b>\$550,570</b>	<b>\$550,570</b>	<b>\$0</b>	<b>0.00%</b>
<b>C30 INTERIOR FINISHES</b>				
Wall finishes	\$1,593,739	\$1,345,446	\$248,293	18.45%
Floor finishes	\$1,429,565	\$1,348,763	\$80,803	5.99%
Ceiling finishes	\$1,934,233	\$1,895,535	\$38,698	2.04%
<b>INTERIOR FINISHES TOTAL</b>	<b>\$4,957,537</b>	<b>\$4,589,743</b>	<b>\$367,793</b>	<b>8.01%</b>
<b>C INTERIORS TOTAL</b>	<b>\$11,880,861</b>	<b>\$11,074,181</b>	<b>\$806,680</b>	<b>7.28%</b>
<b><u>D SERVICES</u></b>				
<b>D10 VERTICAL MOVEMENT</b>				
Conveying System	\$213,400	\$213,400	\$0	0.00%
<b>VERTICAL MOVEMENT TOTAL</b>	<b>\$213,400</b>	<b>\$213,400</b>	<b>\$0</b>	<b>0.00%</b>
<b>D20 PLUMBING</b>				
Plumbing	\$2,057,763	\$2,078,465	(\$20,703)	-1.00%
<b>PLUMBING TOTAL</b>	<b>\$2,057,763</b>	<b>\$2,078,465</b>	<b>(\$20,703)</b>	<b>-1.00%</b>
<b>D30 HVAC</b>				
HVAC	\$7,553,789	\$8,440,833	(\$887,044)	-10.51%
<b>HVAC TOTAL</b>	<b>\$7,553,789</b>	<b>\$8,440,833</b>	<b>(\$887,044)</b>	<b>-10.51%</b>
<b>D40 FIRE PROTECTION</b>				
Fire Protection	\$861,604	\$785,790	\$75,815	9.65%
<b>FIRE PROTECTION TOTAL</b>	<b>\$861,604</b>	<b>\$785,790</b>	<b>\$75,815</b>	<b>9.65%</b>
<b>D50 ELECTRICAL</b>				
Service and distribution	\$4,997,258	\$4,661,399	\$335,859	7.21%
<b>ELECTRICAL TOTAL</b>	<b>\$4,997,258</b>	<b>\$4,661,399</b>	<b>\$335,859</b>	<b>7.21%</b>
<b>D SERVICES TOTAL</b>	<b>\$15,683,813</b>	<b>\$16,179,887</b>	<b>(\$496,074)</b>	<b>-3.07%</b>
<b><u>E EQUIPMENT AND FURNISHINGS</u></b>				

**Fuller Middle School**  
Fuller Middle School

**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV. ELEMENTS</u></b>	<b><u>60%CD ESTIMATE</u></b>	<b><u>DD ESTIMATE</u></b>	<b><u>DIFFERENCE</u></b>	<b><u>% DIFF</u></b>
	<b><u>TOTAL</u></b>	<b><u>TOTAL</u></b>		
	137,385 GSF	136,600 GSF	785 GSF	0.57%
<b>E10 EQUIPMENT</b>				
Institutional Equipment	\$1,980,142	\$1,836,566	\$143,576	7.82%
<b>EQUIPMENT TOTAL</b>	<b>\$1,980,142</b>	<b>\$1,836,566</b>	<b>\$143,576</b>	<b>7.82%</b>
<b>E20 FURNISHINGS</b>				
Specialties / Millwork	\$1,846,304	\$1,851,660	(\$5,356)	-0.29%
<b>FURNISHINGS TOTAL</b>	<b>\$1,846,304</b>	<b>\$1,851,660</b>	<b>(\$5,356)</b>	<b>-0.29%</b>
<b>D EQUIPMENT AND FURNISHINGS TOTAL</b>	<b>\$3,826,446</b>	<b>\$3,688,226</b>	<b>\$138,220</b>	<b>3.75%</b>
<b><u>F SPECIAL CONSTRUCTION &amp; DEMO</u></b>				
<b>F10 SPECIAL CONSTRUCTION</b>				
Special construction	\$0	\$0	\$0	0.00%
<b>SPECIAL CONSTRUCTION TOTAL</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>0.00%</b>
<b>F20 SELECTIVE DEMOLITION</b>				
Selectice Demolition	\$0	\$0	\$0	0.00%
<b>SELECTIVE DEMOLITION TOTAL</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>0.00%</b>
<b>D SPECIAL CONSTRUCTION &amp; DEMO TOTAL</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G EQUIPMENT AND FURNISHINGS TOTAL</b>	<b>\$5,739,669</b>	<b>\$5,532,339</b>	<b>\$207,330</b>	<b>3.75%</b>
<b>A-G BUILDING TOTAL</b>	<b>\$48,160,899</b>	<b>\$48,412,416</b>	<b>(\$251,517)</b>	<b>-0.52%</b>
<b><u>G BUILDING SITEWORK</u></b>				
<b>G10 G10 SITE PREPARATION</b>				
G1010 Site Clearing	\$0	\$792,029	(\$792,029)	-100.00%
G1020 Site Demolition and Relocation	\$0	\$299,336	(\$299,336)	-100.00%
G1030 Site Earthwork	\$456,249	\$1,851,506	(\$1,395,257)	-75.36%
<b>G10 SITE PREPARATION TOTAL</b>	<b>\$456,249</b>	<b>\$2,942,871</b>	<b>(\$2,486,622)</b>	<b>-84.50%</b>
<b>G20 G20 SITE IMPROVEMENTS</b>				
G2020 Roadways	\$0	\$1,534,644	(\$1,534,644)	-100.00%
G2030 Pedestrian Paving	\$206,133	\$288,430	(\$82,297)	-28.53%
G2040 Site Development	\$1,005,895	\$1,844,861	(\$838,966)	-45.48%

**Fuller Middle School**  
Fuller Middle School

**DIRECT COST SUMMARY - NEW CONSTRUCTION**

<b><u>DIV. ELEMENTS</u></b>	<b><u>60%CD ESTIMATE</u></b>	<b><u>DD ESTIMATE</u></b>	<b><u>DIFFERENCE</u></b>	<b><u>% DIFF</u></b>
	<b><u>TOTAL</u></b>	<b><u>TOTAL</u></b>		
	137,385 GSF	136,600 GSF	785 GSF	0.57%
G2050 Landscaping	\$1,151,604	\$573,597		100.00%
<b>G20 SITE IMPROVEMENTS TOTAL</b>	<b>\$2,363,632</b>	<b>\$3,667,935</b>	<b>(\$2,455,907)</b>	<b>-66.96%</b>
G30 G30 SITE CIVIL/MECHANICAL UTILITIES				
G3010 Water Supply	\$0	\$116,200	(\$116,200)	-100.00%
G3020 Sanitary Sewer	\$0	95900	(\$95,900)	100.00%
G3030 Storm Sewer	\$0	\$533,664	(\$533,664)	-100.00%
G3040 Heating Distribution	\$14,085	\$14,085	\$0	0.00%
<b>G30 SITE CIVIL/MECHANICAL UTILITIES TOTAL</b>	<b>\$14,085</b>	<b>\$759,849</b>	<b>(\$745,764)</b>	<b>-98.15%</b>
G40 G40 SITE ELECTRICAL UTILITIES				
G4010 Site Electrical Utilities	\$497,865	\$777,829	(\$279,964)	-35.99%
<b>G40 SITE ELECTRICAL UTILITIES TOTAL</b>	<b>\$497,865</b>	<b>\$777,829</b>	<b>(\$1,025,728)</b>	<b>-131.87%</b>
<b>G BUILDING SITEWORK TOTAL</b>	<b>\$3,331,831</b>	<b>\$8,435,282</b>	<b>(\$6,341,138)</b>	<b>-75.17%</b>
<b>CONSTRUCTION TRADE TOTAL</b>	<b>\$51,492,730</b>	<b>\$56,847,698</b>	<b>(\$6,592,655)</b>	<b>-11.60%</b>
Demolish Existing Building	\$1,465,500	\$1,465,500	\$0	0.00%
Hazardous Waste Abatement (Budget provided)	\$1,602,280	\$1,384,630	\$217,650	15.72%
Design and Pricing Contingency	\$2,728,026	\$4,198,924	(\$1,470,898)	-35.03%
<b>Building Cost</b>	<b>\$57,288,536</b>	<b>\$62,882,842</b>	<b>(\$10,139,567)</b>	<b>-16.12%</b>
Escal. to Midpoint of Construction (June 2020 Start)	\$859,328	\$1,395,992	(\$536,664)	-38.44%
<b>Trade Cost SubTotal</b>	<b>\$58,147,864</b>	<b>\$64,278,834</b>	<b>(\$13,830,246)</b>	<b>-21.52%</b>
General Conditions	\$3,994,976	\$3,988,224	(\$20,745,369)	-520.17%
General Requirements	\$2,796,428	\$3,130,549	(\$31,059,953)	-992.16%
Builder's Risk	\$115,218	\$115,218	(\$46,541,980)	-40394.71%
Traffic mitigation	NIC	\$200,000	(\$69,546,138)	-34773.07%
General Liability Insurance	\$668,571	\$780,000	(\$104,319,207)	-13374.26%
Performance & Payment Bond	\$0	\$436,800	(\$156,105,928)	-35738.54%
Construction Contingency	\$1,453,697	\$1,639,489	(\$234,158,892)	-14282.44%
CM Fee	\$1,337,143	\$1,560,000	(\$351,238,338)	-22515.28%
<b>Estimated Construction Cost Total</b>	<b>\$79,471,739</b>	<b>\$77,684,303</b>	<b>\$1,787,436</b>	<b>2.30%</b>

**60% Construction Documents**  
**Fuller Middle School**  
**Framingham, MA**

**26-Jul-19**

EARLY SITE PACKAGE #1				\$8,711,050
NEW BUILDING				\$48,681,480
SITWORK				\$2,394,938
BUILDING DEMOLITION	196,000	GSF	\$7.50	\$1,470,000
ASBESTOS REMOVAL ( cdw 5/5/19 )				\$710,330
VAT REMOVAL ( cdw 5/5/19 )				\$536,250
OTHER HAZARDOUS MATERIAL ( cdw 5/5/19 )				\$138,050
				-----
TOTAL DIRECT COST ( estimated to the mid-point of construction )				\$62,642,098
Chapter 149 a:				
DESIGN CONTINGENCY		5%		\$3,132,105
CM CONTINGENCY		2.5%		\$1,644,355
ESCALATION ( bid 12/19 )		2%		\$1,348,371
GENERAL CONDITIONS				\$3,988,224
GENERAL REQUIREMENTS		4.5%		\$3,273,982
TRAFFIC MITIGATION				\$200,000
BUILDING PERMIT		waived		
BUILDERS RISK				\$115,218
P&P BOND		1.10%		\$756,436
GENERAL LIABILITY INSURANCE				\$780,000
FEE				\$1,576,384
				-----
TOTAL CONSTRUCTION COST				\$79,457,173
COST PER S.F.				\$581.68

**60% CD ALTERNATES**

ALTERNATE NO. 1 - RESURFACE FLAGG DRIVE	\$0
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PROJECT: Fuller Middle School  
 LOCATION: Framingham, MA  
 CLIENT: SMMA Architects  
 DATE: 26-Jul-19

NO. OF SQ. FT.: 136,600  
 COST PER SQ. FT.: \$373.91

No.: 18020

SUMMARY

	<u>TOTAL</u>	<u>PERCENT OF PROJECT</u>	<u>COST PER SF</u>
<b>A. SUBSTRUCTURE</b>			
<b>A10 - FOUNDATIONS</b>			
A1010 STANDARD FOUNDATIONS	987,963	2%	7.23
A1020 SPECIAL FOUNDATIONS	0	0%	0.00
A1030 SLAB ON GRADE	644,361	1%	4.72
<b>A20 - BASEMENT CONSTRUCTION</b>			
A2010 BASEMENT EXCAVATION	0	0%	0.00
A2020 BASEMENT WALLS	0	0%	0.00
<b>B. SHELL</b>			
<b>B10 - SUPERSTRUCTURE</b>			
B1010 FLOOR CONSTRUCTION	3,382,721	7%	24.76
B1020 ROOF CONSTRUCTION	2,059,731	4%	15.08
<b>B20 - EXTERIOR ENCLOSURE</b>			
B2010 EXTERIOR WALLS	4,577,695	9%	33.51
B2020 EXTERIOR WINDOWS	2,152,312	4%	15.76
B2030 EXTERIOR DOORS	193,692	0%	1.42
<b>B30 - ROOFING</b>			
B3010 ROOF COVERINGS	1,916,155	4%	14.03
B3020 ROOF OPENINGS	689,020	1%	5.04
<b>C. INTERIORS</b>			
<b>C10 - INTERIOR CONSTRUCTION</b>			
C1010 PARTITIONS	4,024,048	8%	29.46
C1020 INTERIOR DOORS	845,613	2%	6.19
C1030 FITTINGS	1,848,225	4%	13.53
<b>C20 - STAIRS</b>			
C2010 STAIR CONSTRUCTION	408,107	1%	2.99
C2020 STAIR FINISHES	44,038	0%	0.32
<b>C30 - INTERIOR FINISHES</b>			
C3010 WALL FINISHES	1,654,945	3%	12.12
C3020 FLOOR FINISHES	1,405,254	3%	10.29
C3030 CEILING FINISHES	2,175,480	4%	15.93
<b>D. SERVICES</b>			
<b>D10 - CONVEYING</b>			
D1010 ELEVATORS & LIFTS	218,037	0%	1.60
<b>D20 - PLUMBING</b>			
D2010 PLUMBING	2,293,619	4%	16.79

Fuller Middle School

	<u>TOTAL</u>	<u>PERCENT OF PROJECT</u>	<u>COST PER SF</u>
D30 - HVAC			
D3010 HVAC	7,500,106	15%	54.91
D40 - FIRE PROTECTION			
D4010 SPRINKLERS	867,675	2%	6.35
D4020 STANDPIPES	0	0%	0.00
D4030 FIRE PROTECTION SPECIALTIES	0	0%	0.00
D4090 OTHER FIRE PROTECTION SYSTEMS	0	0%	0.00
D50 - ELECTRICAL			
D5010 ELECTRICAL SERVICE & DISTRIBUTION	5,083,192	10%	37.21
E. EQUIPMENT & FURNISHINGS			
E10 - EQUIPMENT			
E1010 COMMERCIAL EQUIPMENT	415,270	1%	3.04
E1020 INSTITUTIONAL EQUIPMENT	0	0%	0.00
E1030 VEHICULAR EQUIPMENT	0	0%	0.00
E1090 OTHER EQUIPMENT	1,281,637	3%	9.38
E20 - FURNISHINGS			
E 2010 FIXED FURNISHINGS	2,012,585	4%	14.73
E2020 MOVABLE FURNISHINGS	0	0%	0.00
F. SPECIAL CONSTRUCTION & DEMOLITION			
F10 - SPECIAL CONSTRUCTION			
F1010 SPECIAL STRUCTURES	0	0%	0.00
F20 - SELECTIVE BUILDING DEMOLITION			
F2010 BUILDING ELEMENTS DEMOLITION	0	0%	0.00
F2020 HAZARDOUS COMPONENTS ABATEMENT	0	0%	0.00
G. BUILDING SITEWORK			
G10 - SITE PREPARATION			
G1010 SITE CLEARING	0	0%	0.00
G1020 SITE DEMOLITION & RELOCATIONS	0	0%	0.00
G1030 SITE EARTHWORK	231,124	0%	1.69
G1040 HAZARDOUS WASTE REMEDIATION	0	0%	0.00
G20 - SITE IMPROVEMENTS			
G2010 ROADWAYS	0	0%	0.00
G2020 PARKING LOTS	0	0%	0.00
G2030 PEDESTRIAN PAVING	284,062	1%	2.08
G2040 SITE DEVELOPMENT	696,685	1%	5.10
G2050 LANDSCAPING	604,900	1%	4.43

Fuller Middle School

	<u>TOTAL</u>	<u>PERCENT OF PROJECT</u>	<u>COST PER SF</u>
G30 - SITE MECHANICAL UTILITIES			
G3010 WATER SUPPLY	0	0%	0.00
G3020 SANITARY SEWER	0	0%	0.00
G3030 STORM SEWER	0	0%	0.00
G3040 HEATING DISTRIBUTION	0	0%	0.00
G3050 COOLING DISTRIBUTION	0	0%	0.00
G3060 FUEL DISTRIBUTION	0	0%	0.00
G3090 OTHER SITE MECHANICAL UTILITIES	0	0%	0.00
G40 - SITE ELECTRICAL UTILITIES			
G4010 ELECTRICAL DISTRIBUTION	106,696	0%	0.78
G4020 SITE LIGHTING	471,470	1%	3.45
G4030 SITE COMMUNICATIONS & SECURITY	0	0%	0.00
G4090 OTHER SITE ELECTRICAL UTILITIES	0	0%	0.00
G90 - OTHER SITE CONSTRUCTION			
G9090 OTHER SITE SYSTEMS	0	0%	0.00
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TOTAL DIRECT COST	51,076,418	100%	373.91



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>A. SUBSTRUCTURE</u>				
A10 - FOUNDATIONS				
A1010 STANDARD FOUNDATIONS				
<u>033000 CAST IN PLACE CONCRETE</u>				
Column Footing - (F 3 thru F 12 @ 135 ea):				
4000 psi, NW, (incl. placement)	450	CY	205.00	92,250
Formwork	6,004	SFCA	9.50	57,038
Rebar	45,000	LBS	1.22	54,900
<i>*unit cost \$453.75</i>				
Perim Wall Footing 1' x 3/4' ( 1,578 LF ):				
4000 psi, NW, (incl. placement)	180	CY	208.00	37,440
Formwork	3,200	SFCA	8.10	25,920
Rebar	9,000	LBS	1.22	10,980
<i>*unit cost \$413.00</i>				
Foundation Wall 16" thick x height varies ( 1,962 lf):				
4000 psi, NW, (incl. placement)	442	CY	215.00	95,030
Formwork - 4' or less	8,808	SFCA	13.00	114,504
Formwork - 4' Aud/Gym	4,960	SFCA	13.50	66,960
Formwork - 15'	3,120	SFCA	20.00	62,400
Brick Shelf	1,962	LF	14.50	28,449
Reinforcing steel	66,300	LBS	1.22	80,886
<i>*unit cost \$1,014.09</i>				
Auditorium Interior Foundations:				
Wall footing	32	CY	350.00	11,200
12" Knee wall	48	CY	850.00	40,800
Loading Dock:				
Wall footing - 8'		inc. above		
Foundation wall	36	CY	975.00	35,100
Misc. Foundations:				
CMU Footing	19	CY	385.00	7,315
Grade Beam #1, #2	53	CY	675.00	35,775
12" Elevator mat	6	CY	650.00	3,900
Elev sump pit	1	EA	900.00	900
12" Elevator pit wall -5'D	7	CY	900.00	6,300
Interior Mechanical pads - allow	1	LS	5,000.00	5,000
Concrete Pilaster	28	CY	1,100.00	30,800
Setting Anchor Bolts and Grout	132	EA	310.00	40,920

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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\*Includes Section 031000 - 033500

Band Shell Foundation:

Wall Footing 1' x 5'	6	CY	800.00	4,800
16" Radial Found wall	9	CY	1,300.00	11,700

071000 DAMPPROOF., WATERPROOF. & CAULKING\*

Foundation dampproofing	6,884	SF	1.90	13,080
Retaining wall waterproofing	1,360	SF	6.85	9,316
Elev. pit waterproofing	1	LOC	4,300.00	4,300

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987,963

A1030 SLAB ON GRADE

310000 EARTHWORK

Excavate plumbing trenches	64,048	SF	0.50	32,024
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033000 CAST IN PLACE CONCRETE

5" Slab on Grade - Typ:

3,500 psi, NW, (incl. placement)	988	CY	228.00	225,264
6x6 W2.9 X W2.9	64,048	SF	1.80	115,286
Control Joint	4,300	LF	2.60	11,180
Form Commons slab edge/ haunch	735	LF	45.00	33,075
Trowel Finish	64,048	SF	2.10	134,501

\*unit cost \$8.11

Misc. Slabs and Concrete:

Ext. 6" Loading Dock	1,125	SF	10.00	11,250
Loading Dock Stair Structure-allow	1	FLT	7,500.00	7,500
Gyp cement underlayment(spec 035413)		w/C3020		

072100 INSULATION

2" Rigid Slab Insul.- 4' @ perim.	6,400	SF	3.10	19,840
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\*Exterior wall sections do not show 100%

072600 VAPOR RETARDER

Stegro vapor barrier (15 mil)	64,048	SF	0.85	54,441
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\*Excludes under slab waterproofing system

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
				-----
				644,361
<b>TOTAL A10 FOUNDATIONS</b>				<b>1,632,324</b>

B. SHELL

## B10 - SUPERSTRUCTURE

## B1010 FLOOR CONSTRUCTION

051200 STRUCTURAL STEEL

Wide Flange - beam	260.52	TONS	3,550.00	924,846
HSS Beam	36.2	TONS	3,900.00	141,180
HSS Brace Frame	46.7	TONS	4,075.00	190,303
Wide Flange- Column	10.7	TONS	3,550.00	37,985
HSS Column	88.3	TONS	3,900.00	344,370
Bolted Ledger Angle	1.5	TONS	3,550.00	5,325
Relieving Angle - Masonry Veneer only	1,533	LF	185.00	283,605
4" x 4" x 1/8" Bolted angle at found - allow	250	LF	65.00	16,250
Folding Panel partition Support:				
Typ classroom (13 EA)	208	LF	165.00	34,320
Music classroom (DBL panel 1 EA)	19	LF	165.00	3,135
SPED suite (3 EA)	120	LF	165.00	19,800
Hilti bolt conn	74	EA	128.00	9,472
Moment Connection	194	EA	750.00	145,500
Shear stud ( 10/100sf)	16,200	EA	5.35	86,670
Atrium Beam Detailing #4/S500	1	LS	50,000.00	50,000

<b>TOTAL STEEL WEIGHT</b>	<b>444</b>	<b>TONS</b>		
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033000 CAST IN PLACE CONCRETE

3 1/4" LW Deck fill	70,031	SF	8.65	605,768
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053100 STEEL DECKING

3" x 18 Ga. Comp Deck- Typ	70,031	SF	3.20	224,099
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078120 FIREPROOFING

Allow:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Spray fireproofing	70,031	SF	3.00	210,093
<u>090007 PAINTING*</u>				
Intumescent paint- flr struct. *Includes Section 099646	1	LS	50,000.00	50,000
				-----
				3,382,721

## B1020 ROOF CONSTRUCTION

051200 STRUCTURAL STEEL

Wide Flange - beam	200.8	TONS	3,550.00	712,840
HSS Beam	61.0	TONS	3,900.00	237,900
DLH Bar Joist	47.84	TONS	3,657.00	174,951
HD Galv HSS Roof Screen	4.70	TONS	5,200.00	24,440
HD Galv HSS/ C Channel Band Shell	3.40	TONS	6,500.00	22,100
HD Galv HSS Entrance Canopy	2.60	TONS	6,000.00	15,600
HSS Brace Frame		w/ floor construction		
Wide Flange- Column		w/ floor construction		
HSS Column		w/ floor construction		
Bolted Ledger Angle	3	TONS	3,550.00	10,650
Hilti bolt conn	140	EA	128.00	17,920
Moment connection	38	EA	750.00	28,500

033000 CAST IN PLACE CONCRETE

3 1/4" LW Deck fill :				
R 6.25 3" x 18 Ga. Comp Deck- Typ	3,641	SF	8.70	31,677
3 1/4" LW Deck fill :				
R 5.5 3" x 18 Ga. Comp Deck- Typ	29,586	SF	8.70	257,398
Allow - Roof top 8" x 12"H Concrete Curb @:				
Pre-fab mech PH unit ( loc)	500	LF	82.00	41,000
Misc Equip curbs	1	LS	10,000.00	10,000

053100 STEEL DECKING

R 1.5 1 1/2" x 20Ga Roof deck	765	SF	2.80	2,142
R3 3" X 18 Ga. Typical Roof Deck	13,702	SF	3.00	41,106
R 6.25 3" x 18 Ga. Comp Deck- Typ	3,641	SF	3.18	11,578
R 5.5 3" x 18 Ga. Comp Deck- Typ	29,586	SF	3.18	94,083
R 1.5A 1 1/2" Acoustical Roof Deck - gym	8,835	SF	4.25	37,549
R3A 3" Acoustical Roof Deck - aud	7,563	SF	7.25	54,832

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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078120 FIREPROOFING

Allow:

Spray fireproofing	36,041	SF	2.80	100,915
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080002 GLASS & GLAZING

Band Shell (A500):

9/16 " Temp. lam glazing - roof	132	SF	175.00	23,100
9/16 " Temp. lam glazing - wall	254	SF	175.00	44,450

090007 PAINTING\*

Band shell structure

Field Paint Exposed Steel	1	LS	15,000.00	15,000
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Intumescent paint - roof struct.

1	LS	50,000.00	50,000
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\*Exposed structure @ atrium noted

\*Includes Section 099646

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2,059,731

<b>TOTAL B10 SUPERSTRUCTURE</b>	<b>320</b>	<b>TONS</b>		<b>5,442,452</b>
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## B20 - EXTERIOR ENCLOSURE

## B2010 EXTERIOR WALLS

**100% GSF Exterior -73,206**040001 MASONRY\*

Backup :

Gym 12" CMU Back-up - Exposed	7,497	SF	25.50	191,174
Aud 12" CMU Back-up - Exposed	7,342	SF	25.50	187,221
Int GF finish premium		nic		

Masonry Veneer Building ( QTY Noted):

4x4x12 Scored brick veneer	6,252	SF	31.00	193,812
4x4x8 Scored brick veneer	12,222	SF	33.75	412,493
4x8x16 Scored ground face CMU	21,345	SF	27.00	576,315
4x4x12 Scored ground face CMU	3,512	SF	29.00	101,848
Insulation		W/072000		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SS Masonry flashing Staging	1	LS inc. w/ unit	35,000.00	35,000
A501 Premium: Sill brick Lip brick		w/Unit Cost w/Unit Cost		
Precast Concrete: Precast Planter - on grade Precast Planter - on roof Misc. BLDG precast veneer *Site planters are included w/ site improvements	26 24	LF LF N/A	750.00 750.00	19,500 18,000
2nd Floor Main Entry Terrace: (3/ A316)4'6"H Brick Partial HT wall-complete (3/ A316) Wall Cap	26 26	LF LF	560.00 175.00	14,560 4,550
Entry Ramp and Stair - ALLOWANCE ONLY: Brick Vanner at Walls Precast Caps and trim	3,000	SF NIC	35.00	105,000
<u>054000 COLD FORMED METAL FRAMING</u>				
Exterior wall Backup: 10" x 16 Ga. stud @ Typ 14' (6/A323) 6" stud @ raised common 5-6'h Chimney framing 1/2" Dens glass sheathing * Mech Penthouse Unit - Complete	41,150 2,486 650 44,286	SF SF SF SF W / HVAC	11.70 9.85 9.85 3.30	481,455 24,487 6,403 146,144
Ext Ceiling Framing @ : Canopy & covered entry 1/2" Dens glass sheathing	1,056 1,056	SF SF	6.50 3.50	6,864 3,696
<u>050001 MISCELLANEOUS &amp; ORNAMENTAL IRON*</u>				
42" Perf Metal Guardrail: LVL 2 entry LVL 2 emerg. egress	20 34	LF LF	350.00 350.00	7,000 11,900
Galv, loose lintel Misc metals @ ext wall - allow Reliving angle Bolted galv. sill angle @ fnd	67 1	LF LS W /Structural W /Structural	36.00 25,000.00	2,412 25,000
<u>062000 FINISH CARPENTRY</u>				

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<b>Main Entry LVL 2:</b>				
Wd bench @ precast planter	24	LF	550.00	13,200
Phenolic bench @ col. M	7	LF	500.00	3,500
<b><u>071000 DAMPPROOF., WATERPROOF. &amp; CAULKING*</u></b>				
<b>Fluid Applied air &amp; vapor barrier:</b>				
Exterior Wall - CMU & Sheathing	59,125	SF	8.00	473,000
Bay covered entry	1,119	SF	8.00	8,952
<b><u>072100 INSULATION</u></b>				
<b>Exterior Wall A501:</b>				
3" Mineral fiber insul @ masonry	43,331	SF	3.72	161,191
4" Mineral fiber insul @ panel wall	11,380	SF	4.15	47,227
Spray foam at perm openings	9,299	LF	8.25	76,717
<b>6/A323 Exterior Wall:</b>				
Mineral fiber insul	2,486	SF	2.65	6,588
<b>Exterior Ceiling Insulation @ :</b>				
Bay / covered entry	1,119	SF	5.00	5,595
<b><u>070002 ROOFING AND FLASHING*</u></b>				
<b>6/A323 Raised Common Exterior Wall:</b>				
5'6"H Ridid Insul. W/ PVC Membrane ( sa roofing sy	2,486	SF	15.00	37,290
<b><u>074000 WALL PANELS &amp; TRIM</u></b>				
<b>Exterior Wall Panel System ( QTY Noted):</b>				
Exposed fastener composite metal panel	2,662	SF	55.00	146,410
Phenolic panel	8,718	SF	76.00	662,568
<b>Exterior Ceiling Stucco System:</b>				
Bay/covered entry	1,119	SF	32.00	35,808
<b>8'H Mech roof screen(NIC Struct Frame):</b>				
8' Corrugated Perf Mtl wall panel-complete	1,112	SF	42.00	46,704
Screen wall cap	139	LF	30.00	4,170
<b>(2 sided) Phenolic fin - complete:</b>				
Fin 4'x12'h (3 loc)	288	SF	120.00	34,560
Fin 6'x20'h (2 loc)	480	SF	120.00	57,600
*Includes Sections 074214 & 074224				
<b><u>079513 EXPANSION JOINTS (SPEC)</u></b>				

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Control and expansion joints	1	LS	30,000.00	30,000
<u>090007 PAINTING*</u>				
Misc exterior painting -allow	1	LS	10,000.00	10,000
<u>092116 GYPSUM WALLBOARD ASSEMBLIES</u>				
1 lyr 5/8" gyp @ stud	43,553	SF	2.50	108,883
<u>109000 MISCELLANEOUS SPECIALTIES</u>				
Ext. Signage:				
18" Cast bronze letter (1 loc)	6	EA	650.00	3,900
Misc. bldg mtd signage -allow	1	LS	20,000.00	20,000
LVL 2 entry flagpole 34' H	1	EA	9,000.00	9,000
				-----
				4,577,695
B2020 EXTERIOR WINDOWS				
<u>061000 ROUGH CARPENTRY</u>				
P.T. - perim blocking	9,009	LF	8.65	77,928
<u>071000 DAMPPROOF., WATERPROOF. &amp; CAULKING*</u>				
Flex flashing - perim	9,009	LF	8.00	72,072
Exterior sealants - perim.	9,009	LF	7.50	67,568
<u>080001 METAL WINDOWS*</u>				
Storefront (RFI #)	14,162	SF	110.00	1,557,820
ALLOW:				
Security Glazing Film 2nd flr entry	125	SF	36.00	4,500
Exterior Wall Mock-up	1	LS	35,000.00	35,000
<u>089000 METAL WALL LOUVERS</u>				
Vert Alum louver w/damper (RFI #17)	660	SF	125.00	82,500
<u>107113 EXT SUN CONTROL DEVICES</u>				



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Allow:				
Horizontal Sun Shade 4' Projection - Verify ???	595	LF	315.00	187,425
Vert. Sun Shade		N/A		
Interior:				
A312 Int panel grilles (Rulon)	450	LF	150.00	67,500
				-----
				2,152,312

## B2030 EXTERIOR DOORS

050001 MISCELLANEOUS & ORNAMENTAL IRON\*

OH door frame @:

Tech-Makerspace (12'x 10' )	1	EA	500.00	500
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061000 ROUGH CARPENTRY

P.T. - perim blocking HM open	316	LF	8.00	2,528
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071000 DAMPPROOF., WATERPROOF. & CAULKING\*

Perim. Ext HM &amp; OH opening:

Flex flashing - perim	348	LF	8.00	2,784
Exterior sealants - perim.	348	LF	7.50	2,610

080001 METAL WINDOWS\*

Alum. Doors (Incl. Glass, Glazing):

7' 1st Flr Entry - sgl	2	EA	4,100.00	8,200
7' 1st Flr Entry - dbl	3	PR	8,200.00	24,600
7' 2nd Flr Entry - dbl	1	PR	8,200.00	8,200
2nd Flr Terrace - sgl	1	EA	4,100.00	4,100
2nd Flr Terrace - dbl	1	PR	8,250.00	8,250
7' Main office egress - sgl	1	EA	4,100.00	4,100
7' Stair egress - sgl	2	EA	4,100.00	8,200
7' Staff lunch rm	1	EA	4,100.00	4,100
8' Media ctr - sgl	1	EA	4,100.00	4,100

Premium :

Auto opener	2	EA	4,500.00	9,000
School Guard (5 lvs ) - Factory glazing	75	SF	36.00	2,700

081113 HOLLOW METALWORK

Ext Insulated HM Doors and Frame:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Sgl B1 7'H	4	EA	585.00	2,340
Db1 B2 7'H	1	EA	1,170.00	1,170
Sgl B1 8'H	1	EA	630.00	630
Db1 B2 8'H	8	EA	1,260.00	10,080
<u>083323 SPECIAL DOORS</u>				
Motor Operated Insulated OH Door: Tech-Makerspace (12'x 10' )	1	EA	8,500.00	8,500
<u>087100 DOOR HARDWARE</u>				
Hardware Set @ Ext. Alum Door:				
1	1	EA	750.00	750
2	1	EA	825.00	825
3	3	EA	2,250.00	6,750
4	2	EA	2,300.00	4,600
5	1	EA	3,850.00	3,850
SGL -allow	2	EA	2,500.00	5,000
9	1	EA	1,425.00	1,425
11	1	EA	5,900.00	5,900
12	1	EA	6,300.00	6,300
Hardware Set # Ext HM Door:				
6	1	EA	1,150.00	1,150
8	3	EA	2,925.00	8,775
10	2	EA	4,500.00	9,000
13	1	EA	2,475.00	2,475
14	3	EA	2,325.00	6,975
16	1	EA	750.00	750
17	1	EA	3,350.00	3,350
18	1	EA	1,400.00	1,400
19	1	EA	5,100.00	5,100
*Hardware also included with 080001				
<u>090007 PAINTING*</u>				
Paint HM door & Frame - sgl	5	EA	120.00	600
Paint HM door & Frame - dbl	9	EA	225.00	2,025
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				193,692
<b>TOTAL B20 - EXTERIOR ENCLOSURE</b>				<b>6,923,699</b>

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<b>B30 - ROOFING</b>				
<b>B3010 ROOF COVERINGS</b>				
<b><u>061000 ROUGH CARPENTRY</u></b>				
Flat Roof Blocking @:				
Base flashing	1,620	LF	12.50	20,250
Typ roof fascia	3,182	LF	12.50	39,775
Expansion joint	86	LF	40.00	3,440
Gable skylight curb ( 4 EA)	567	LF	45.00	25,515
Flash Pre Fab Roof Top Mech curb block	500	LF	35.00	17,500
Misc Equip blocking	1	LS	7,500.00	7,500
Roof hatch-allow	1	EA	750.00	750
Stage vent-allow	1	EA	750.00	750
Atrium vent-allow	2	EA	750.00	1,500
<b><u>070002 ROOFING AND FLASHING*</u></b>				
White 60 mil PVC Roofing w/R-36 (6" Insul ) :				
Typ Flat roof	64,092	SF	16.50	1,057,518
1/2 " glass mat cover bd -100%	64,092	SF	1.68	107,675
1/2" glass mat protection bd(nic conc deck)	33,000	SF	1.68	55,440
Self adhering vapor retarder-100%	64,092	SF	3.30	211,504
3' High Rubber Walkway Pad	765	SF	7.00	5,355
Membrane flashing	64,092	SF	0.50	32,046
Base flashing	1,620	LF	32.00	51,840
Alum Typ roof fascia	3,182	LF	22.00	70,004
Expansion joint - allow	86	LF	185.00	15,910
Flash gable skylight curb ( 4 EA)	567	LF	32.00	18,144
Flash Pre Fab Roof Top Mech encl curb	500	LF	32.00	16,000
Scupper - allow	4	EA	750.00	3,000
Flash roof drain - allow	32	EA	135.00	4,320
Chimney cap flashing -complete	60	SF	100.00	6,000
Misc roof flashing	1	LS	25,000.00	25,000
Premium Terrace Paver Sys:				
Terrace #2063	306	SF	45.00	13,770
Main entrance #2000	730	SF	45.00	32,850
Egress #2025		N/A		
*Includes Sections 075419, 076200, 077236 & 086300				
<b><u>084500 STRUCTURED-POLY CARB PANEL</u></b>				
Main Entrance Canopy -Complete:				
Clear Polycarb glazing w/ alum struct -7'w	416	SF	175.00	72,800

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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				1,916,155

## B3020 ROOF OPENINGS

## 05510000 MISCELLANEOUS METALS

Roof &amp; Terrace Guardrail W C1030

070002 ROOFING AND FLASHING\*

Gable Skylight ( 4 loc)	4,261	SF	140.00	596,540
Gable Skylight Endwall ( 8 loc)	427	SF	140.00	59,780
Roof hatch-allow	1	EA	4,200.00	4,200
Stage vent-allow	2	EA	13,500.00	27,000

089000 LOUVERS AND VENTS

Elevator vent 1 EA 1,500.00 1,500

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689,020

TOTAL B30 ROOFING				2,605,175
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C. INTERIORS

## C10 - INTERIOR CONSTRUCTION

## C1010 PARTITIONS

**Breakout 3,400 GSF**

Breakout Space (RFI #18 7/19/19/):

Pavilion A:

Plam walls	54	SF	55.00	2,970
GWB walls	1,684	SF	25.00	42,100
Glass walls	334	SF	75.00	25,050

Pavilion B:

Plam walls	74	SF	55.00	4,070
GWB walls	1,134	SF	25.00	28,350
Glass walls	683	SF	75.00	51,225

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Pavilion C:				
Plam walls	150	SF	55.00	8,250
GWB walls	1,360	SF	25.00	34,000
Glass walls	482	SF	75.00	36,150
Pavilion D:				
Plam walls	0	SF	55.00	0
GWB walls	0	SF	25.00	0
Glass walls	556	SF	75.00	41,700
Pavilion E:				
Plam walls	47	SF	55.00	2,585
GWB walls	430	SF	25.00	10,750
Glass walls	222	SF	75.00	16,650
GWB roof	60	SF	25.00	1,500
<u>040001 MASONRY*</u>				
Interior 12" CMU Partition:				
Gym - 28'	4,480	SF	26.00	116,480
Auditorium - 28'	2,660	SF	26.00	69,160
Auditorium - 14'	420	SF	26.00	10,920
GF CMU - Premium		NIC		
CMU Partition (Gym & Aud):				
Bond beam	37	LF	48.00	1,776
<u>050001 MISCELLANEOUS &amp; ORNAMENTAL IRON*</u>				
Folding Panel partition Support:				
Typ classroom (13 EA)		w/ structural		
Music classroom (DBL panel 1 EA)		w/ structural		
SPED suite (3 EA)		w/ structural		
Folding Grille Support @:				
Learning common	46	LF	200.00	9,200
Sgl custom security gate (7'w)	2	EA	4,000.00	8,000
Coiling Grille Support:				
Servery	35	LF	100.00	3,500
Main office(1 EA)	21	LF	100.00	2,100
CMU Partition (Gym & Aud):				
CMU clip @ 4' oc	70	EA	115.00	8,050
Glazed Toilet Screen Partition:				
13/A-600 Stl pipe	12	LOC	1,000.00	12,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>061000 ROUGH CARPENTRY</u>				
Interior blocking	136,600	GSF	0.50	68,300
Misc. rough carpentry	136,600	GSF	0.50	68,300
(5/A601) Frame AV monitor box	65	EA	250.00	16,250
<u>062000 FINISH CARPENTRY</u>				
Interior Borrowed Light Window /Sidelight-A620 (NIC Break out Area):				
PTD MDF sill 9"	866	LF	32.00	27,712
PTD MDF head 9"	866	LF	25.00	21,650
PTD MDF jamb 9"		N/A		
<u>072100 INSULATION</u>				
Firestopping	136,600	GSF	0.65	88,790
<u>071000 DAMPPROOF., WATERPROOF. &amp; CAULKING*</u>				
Joint sealants	136,600	GSF	0.85	116,110
<u>079513 EXPANSION JOINT COVER ASSEMBLIES (NO SPEC)</u>				
Int Wall Expansion joints	1	LS	10,000.00	10,000
<u>081113 HOLLOW METALWORK</u>				
Interior HM Frame Glass & Glazing:		N/A		
<u>083323 SPECIAL DOORS</u>				
Access panels	1	LS	30,000.00	30,000
<u>080001 METAL WINDOWS*</u>				
Aluminum Storefront Frame, Glass & Glazing-Allow:				
1st Floor Vestibule (11A/A221)		w/B2010		
Office/ vestibule security window (6/A403)				
2nd Flr Main office	1	EA	5,000.00	5,000
<u>080002 GLASS AND GLAZING*</u>				
Toilet Entry Screen (Translucent/etched):				
4'Wx5'6" - 12 loc	264	SF	150.00	39,600

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Interior Window /Sidelight-A620 (NIC Break out Area):				
SGL Alum channel ,glass & glazing	5,071	SF	62.00	314,402
DBL Alum channel ,glass & glazing	930	SF	88.00	81,840
GL-Graduated pattern film premium	3,094	SF	10.00	30,940
3m Safty Glazing	4,332	SF	15.00	64,980
<u>092116 GYPSUM WALLBOARD</u>				
H6 Elevator shaft - 56'6"H	2,095	SF	14.75	30,901
C4 Auditorium -28'H	952	SF	14.55	13,852
C7 Auditorium - 28'H	4,755	SF	13.55	64,430
Aud. furr w/gyp @ fnd stage front	300	SF	9.00	2,700
F1 gym storage -28'H	695	SF	16.95	11,780
F1 gym storage chase 1 side -28'H	105	SF	16.95	1,780
1 side class radial mech chase 14'H	7,318	SF	11.50	84,157
B4 1 side radial plumb chase14'H	1,095	SF	11.00	12,045
Chase @ fnd wall14'H	996	SF	9.00	8,964
Drinking fountain chase wing wall14'H	689	SF	9.00	6,201
D6 & D6 Bulkhead @ dbl op part - 6'H	114	SF	12.00	1,368
Curb 1'H @ glazed part	866	SF	15.00	12,990
Curb 1'H @ toilet rm screen (12 loc)	66	LF	15.00	990
Bulkhead 6'H @ galzed part	5,196	SF	12.00	62,352
F6 Bulkhead @ op part - 6'H	1,248	SF	12.00	14,976
Breakout Room		Above		
TYP -14' Drywall Partitions:				
B1	2,541	SF	7.10	18,041
B3	1,726	SF	72.45	125,049
B4	5,348	SF	9.85	52,678
C2	3,758	SF	11.75	44,157
C3	9,149	SF	11.75	107,501
C4	2,589	SF	11.75	30,421
C6	1,184	SF	14.00	16,576
C7	1,112	SF	11.75	13,066
C8	181	SF	16.50	2,987
C10	229	SF	14.00	3,206
D3	1,429	SF	9.80	14,004
D6	455	SF	12.05	5,483
E3	10,614	SF	13.60	144,350
E4	580	SF	13.60	7,888
E6	1,181	SF	15.85	18,719
E7	894	SF	20.60	18,416
E8	18,658	SF	18.35	342,374
E9	2,588	SF	18.35	47,490
F1	4,933	SF	15.15	74,735
F2	2,142	SF	17.40	37,271
F6	4,592	SF	15.15	69,569
F8	775	SF	19.90	15,423

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
H4	686	SF	13.75	9,433
J1	7,734	SF	16.40	126,838
K1	7,317	SF	20.60	150,730
K2	1,724	SF	20.60	35,514
GWB @ Corridor Locker Enclosure (nic mtl locker) - allow (7/A650):				
Freestanding	315	LF	150.00	47,250
Freestanding -guardrail	735	LF	55.00	40,425
Additional framing @ sloped AWP (A601)	10,700	SF	7.50	80,250
(5/A601) frame AV monitor box	65	EA	100.00	6,500
Tile Backer Bd Premium		W / TILE FSB		
Impact resis. Gwb premium	1	LS	50,000.00	50,000
Misc. GWB assemblies (inc extruded alum reveal trin	136,600	GSF	0.50	68,300
Load, Distribute and Misc.	136,600	GSF	0.25	34,150
*Partitions include sound attenuation, tape & joint compound finish				
<u>109000 MISCELLANEOUS SPECIALTIES</u>				
Folding Panel partition:				
16' x 8' H Typ classroom (13 EA)	1,664	SF	110.00	183,040
(22/A620)Dbl 19' x 8' H Music class -acoustical (1 E	152	SF	110.00	16,720
8' H SPED suite (3 LOC)	960	SF	110.00	105,600
*Includes pass dr & white bd finish				
				-----
				4,024,048

## C1020 INTERIOR DOORS

081113 HOLLOW METAL DOORS AND FRAMES

## Int. HM Door Frame:

Single Door 7'H	22	EA	285.00	6,270
Double Door 7'H	1	EA	305.00	305
Single Door 8' H	238	EA	320.00	76,160
Double door 8'H	26	EA	345.00	8,970

## Int. HM Door:

Sgl B1 7'H	15	EA	495.00	7,425
90 Min Sgl B1 7'H	1	EA	530.00	530
Dbl B2 7'H	1	EA	990.00	990
Sgl B1 8'H	25	EA	540.00	13,500
90 Min Sgl B1 8'H	1	EA	565.00	565
90 Min Dbl B2 8'H	3	EA	1,130.00	3,390

081416 FLUSH WOOD DOORS



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Int. Prefinished Wood Door:				
Sgl B1 2'x 8'H	35	EA	490.00	17,150
Sgl B1 3'x 8'H	64	EA	530.00	33,920
90 Min Sgl B1 3'x 8'H	8	EA	560.00	4,480
Dbl B2 8'H	13	EA	1,060.00	13,780
Sgl C1 7'H	6	EA	610.00	3,660
Sgl C1 8'H	105	EA	635.00	66,675
Dbl C2 8'H	9	EA	1,270.00	11,430
Dbl C3 8'H	1	EA	1,240.00	1,240
<u>080002 GLASS AND GLAZING*</u>				
Glass & Glazing @ Interior Wood Door:				
Sgl C1 7'H ( 6 EA )	60	SF	48.00	2,880
Sgl C1 8'H ( 105 EA )	1,260	SF	48.00	60,480
Dbl C2 8'H ( 9 EA )	216	SF	48.00	10,368
Dbl C3 8'H ( 1 EA )	4	SF	48.00	192
<u>087100 DOOR HARDWARE</u>				
Hardware Set @ Int. Alum Door:				
15	5	EA	5,425.00	27,125
Hardware Set @ Typ Int. Doors ( per Spec ):				
20	1	EA	1,500.00	1,500
21 Slider	24	DELETED		
22	2	EA	785.00	1,570
23	1	EA	805.00	805
24	13	EA	695.00	9,035
25	2	EA	485.00	970
26	1	EA	460.00	460
27	2	EA	590.00	1,180
28	23	EA	670.00	15,410
29	10	EA	510.00	5,100
30	44	EA	585.00	25,740
31	1	EA	480.00	480
32	39	EA	680.00	26,520
33	1	EA	510.00	510
34	1	EA	510.00	510
35	1	EA	810.00	810
36	12	EA	810.00	9,720
37	1	EA	910.00	910
38	2	EA	835.00	1,670
39	1	EA	835.00	835
40	49	EA	985.00	48,265
41	18	EA	835.00	15,030
42	2	EA	1,785.00	3,570
43	5	EA	785.00	3,925

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
44	1	EA	805.00	805
45	1	EA	1,835.00	1,835
46	6	EA	2,005.00	12,030
47	1	EA	3,085.00	3,085
48	2	EA	1,470.00	2,940
49	1	EA	885.00	885
50	1	EA	1,045.00	1,045
51	3	EA	1,345.00	4,035
52	1	EA	1,415.00	1,415
53	5	EA	1,665.00	8,325
54	3	EA	1,485.00	4,455
55	2	EA	1,135.00	2,270
56	3	EA	2,790.00	8,370
57	2	EA	1,945.00	3,890
58	1	EA	4,270.00	4,270
59	1	EA	4,465.00	4,465
60	1	EA	4,445.00	4,445
61	2	EA	4,610.00	9,220
62 - Coiling dr		w/Unit Cost		
63 - Stage panel		w/Unit Cost		

080001 METAL WINDOWS\*

## Aluminum ( Frame, Door, Glass, Glazing and Hdw):

7' 1st Flr Entry Vestibule - sgl	1	EA	4,000.00	4,000
7' 1st Flr Entry Vestibule - dbl	2	PR	8,150.00	16,300
8' 2nd Flr Entry Vestibule- sgl	1	EA	4,400.00	4,400
8' 2nd Flr Entry Vestibule - dbl	1	PR	8,600.00	8,600

## Premium:

School Guard (5 lvs ) - Factory glazing	75	SF	36.00	2,700
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083323 SPECIAL DOORS

## Coiling Door :

Kitchen dish drop window ( 5'x4')		W/Kitchen Equip		
Servery (15'x7')		N/A		
Servery (7'x7')		N/A		

## Café/Learning Common:

Coiling Security Mesh Drape ( 21'x 8' -2EA)	336	SF	95.00	31,920
Coiling Security Gate- sgl ( 7' x7'10")	2	EA	7,000.00	14,000

## Servery :

Coiling Security Mesh Drape ( 40'x 8' -1EA)	320	SF	95.00	30,400
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## Main office:

Coiling Security Mesh Drape ( 21' x 5' 6"-1EA)	116	SF	95.00	10,973
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DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Auditorium Swing Panel (Dr Schedule):				
5'w x 26'h door #1348 a #1344 a	2	EA	25,000.00	50,000
<u>090007 PAINTING*</u>				
Paint Int HM door frame:				
Single Door 7'H	22	EA	125.00	2,750
Double Door 7'H	1	EA	145.00	145
Single Door 8' H	238	EA	140.00	33,320
Double door 8'H	26	EA	160.00	4,160
Paint Int HM door:				
Sgl B1 7'H	15	EA	150.00	2,250
90 Min Sgl B1 7'H	1	EA	150.00	150
Dbl B2 7'H	1	EA	300.00	300
Sgl B1 8'H	25	EA	175.00	4,375
90 Min Sgl B1 8'H	1	EA	175.00	175
90 Min Dbl B2 8'H	3	EA	300.00	900
				-----
				845,613
C1030 FITTINGS				
<u>050001 MISCELLANEOUS &amp; ORNAMENTAL IRON*</u>				
Auditorium:				
Stage front access stair & rails	2	FLT	2,500.00	5,000
Aisle access stair & rails	2	FLT	2,500.00	5,000
Auditorium equip. supports	1	LS	15,000.00	15,000
Interior Metals:				
1st Flr common stair guardrail (4 loc)	14	LF	310.00	4,340
Learning commons #1059 ramp guardrail	45	LF	310.00	13,950
Learning commons #1050 ramp guardrail	45	LF	310.00	13,950
1st Flr Lobby guard rail (5.39)	70	LF	450.00	31,500
2nd & 3rd Flr Lobby guard rail (6/A650)	367	LF	450.00	165,150
OT/PT equip support-allow	1	RM	2,500.00	2,500
Gym equip supports	1	LS	10,000.00	10,000
Concealed stl angle @ corr built-in bench		W/ Unit Cost		
Concealed stl angle @ casework ctr		W/ Unit Cost		
4/ A601 Curved perf arch grille - classroom 2' 6"h	1,536	SF	50.00	76,800
Misc. metals	136,600	GSF	1.00	136,600

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Exterior Rails:				
Loading dock stair/ramp guardrail	15	LF	265.00	3,975
Loading dock stair/ramp wall rail	15	LF	150.00	2,250
2nd flr entry terrace guardrail	30	LF	500.00	15,000
2nd flr Terrace rail	28	LF	500.00	14,000
High roof safety rail	73	LF	125.00	9,125
Misc Metals @ Corridor Locker Enclosure (nic mtl locker) - allow (7/A650):				
#7 Guard Rial support - ground floor	315	LF	250.00	78,750
#7 Guard Rial support - upper floor	735	LF	425.00	312,375

062000 FINISH CARPENTRY

Int panel grilles (Rulon) W/ EXT WALL  
 \*casework is included w/ E2010

080002 GLASS & GLAZING\*

Multi User Toilet & Locker Rm (16 ea):				
5'H mirror @ lav ctr	1,215	SF	38.00	46,170
Dressing Rm (2 ea):				
5'H mirror @ ctr	190	SF	38.00	7,220

097233 DRY ERASE WALL COVERING

Dry Erase Wall Finish	17,845	SF	25.00	446,125
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102113 TOILET COMPARTMENTS

HDPE Toilet Partitions (Per Plan):				
Std. partition	23	EA	1,220.00	28,060
HC partition	16	EA	1,430.00	22,880
Urinal screen	15	EA	310.00	4,650
*Spec notes metal				

102813 TOILET ACCESSORIES

SGL User Toilet Rm Accessories ( 15 ea):				
Tilt mirror @ wall hung lav	15	EA	220.00	3,300
Soap dispenser (owner furnish & installed)		NIC		
Toilet tissue dispenser	15	EA	48.00	720
San. prod. disposal	15	EA	60.00	900
Toilet grab bars	30	EA	85.00	2,550
Paper towel dispenser-allow	15	EA	135.00	2,025
Waste receptacle	15	EA	150.00	2,250
Elec hand dryer - allow		NIC		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Coat hook	15	EA	25.00	375
Fixed diaper changing sta - allow	3	EA	550.00	1,650
3' ADA SHW accessories -allow	1	EA	550.00	550
Multi User Toilet & Locker Rm Accessories (16 ea):				
Soap dispenser (owner furnish & installed)		NIC		
Toilet tissue dispenser	39	EA	48.00	1,872
San. prod. disposal	27	EA	60.00	1,620
Toilet grab bars	32	EA	85.00	2,720
Paper towel dispenser- 2/rm	32	EA	135.00	4,320
Waste receptacle - 2/rm	32	EA	150.00	4,800
Elec hand dryer - allow		NIC		
Coat hook	39	EA	25.00	975
5' ADA shw accessories - allow	2	EA	550.00	1,100
Dressing Rm Accessories (2 ea):				
Soap dispenser (owner furnish & installed)		NIC		
Allow:				
Misc. locker rm accessories	2	EA	1,000.00	2,000
Janitor shelf/mop holder	7	EA	200.00	1,400
*Excludes classroom and workroom accessories				
<u>101100 MARKERBOARDS &amp; TACKBOARDS - No Spec</u>				
Allow:				
4'H Tack Board	30	EA	400.00	12,000
*Dry-erase magnetic wall covering is included in C3010				
*Classroom folding panel partition include white bd finish				
<u>102600 WALL AND DOOR PROTECTION</u>				
Vinyl/Acrylic Composite:				
Corner guard	1	LS	5,000.00	5,000
Crash rail	1	LS	5,000.00	5,000
<u>109000 MISCELLANEOUS SPECIALTIES</u>				
Allow:				
Building directory	1	EA	5,000.00	5,000
Dedication plaque	1	EA	3,800.00	3,800
Room ID sign	136,600	GSF	0.22	30,052
Misc Int. ADA signage	136,600	GSF	0.12	16,392
Phenolic Locker-Allow:				
15" wx12"dx36"H Student corridor (nic enclosure)	660	EA	330.00	217,800

Metal Locker:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
15"w x 15"d x 30"H PE student 2 tiered	40	EA	215.00	8,600
12" Custodian/kitchen staff dbl tier	6	EA	265.00	1,590
12" Kitchen staff dbl tier	3	EA	265.00	795
Locker base @ :				
Student corridor		W /Enclosure		
PE student	50	LF	36.00	1,800
PE staff	9	LF	36.00	324
Free Standing Wood Bench:				
PE locker rm (2 EA)	12	LF	125.00	1,500
Health office cubicle track w/ curtain	3	EA	1,325.00	3,975
Safety Specialties (104000):				
Hose connection cabinet	16	EA	350.00	5,600
First aid kit (nic sci rm)	6	EA	450.00	2,700
Fire Dept key cab	2	EA	1,000.00	2,000
Fire extinguisher and cab (nic sci rm)	20	EA	475.00	9,500
AED & cabinets	4	EA	750.00	3,000
*See also science equipment				
Secure wall panels-Allow:				
OT/PT rm (1 ea)	320	SF	15.00	4,800
Padded athletic flr tiles - allow:				
OT/PT rm (1 ea)	100	SF	15.00	1,500
*Includes Sections 101400, 102600 & 104000				
				-----
				1,848,225
<b>TOTAL C10 - INTERIOR CONSTRUCTION</b>				<b>6,717,885</b>

## C20 - STAIRS

## C2010 STAIR CONSTRUCTION

050001 MISCELLANEOUS & ORNAMENTAL IRON\*

5' 6"W Metal Pan Stair #3 @ Learning Commons 1st- 2nd (1 FLT):				
Metal pan stair treads/risers	132	LFR	85.00	11,220
Metal pan landing	33	SF	55.00	1,815
Guardrail	66	LF	400.00	26,400
Cane rail	1	EA	1,350.00	1,350

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
8'6" W Metal Pan Stair #14 @ Learning Commons 1st- 2nd ( 1 FLT):				
Metal pan stair treads/risers	204	LFR	85.00	17,340
Metal pan landing	51	SF	55.00	2,805
Guardrail	66	LF	400.00	26,400
Cane rail	1	EA	1,350.00	1,350
5'10" W Metal Pan Stair #6 @ Learning Commons 2nd - 3rd( 1 FLT):				
Metal pan stair treads/risers	138	LFR	85.00	11,730
Metal pan landing	33	SF	55.00	1,815
Guardrail	66	LF	400.00	26,400
8' 6"W Metal Pan Stair #5 @ Learning Commons 2nd - 3rd(1 FLT):				
Metal pan stair treads/risers	204	LFR	85.00	17,340
Metal pan landing	55	SF	55.00	3,025
Guardrail	66	LF	400.00	26,400
5' W Metal Pan Stair Hall 1 & 2 ( 2 loc 1st - 3rd 4 FLT):				
Metal pan stair treads/risers	480	LFR	85.00	40,800
Metal pan landing	240	SF	55.00	13,200
Wall rail	128	LF	165.00	21,120
Guardrail	128	LF	400.00	51,200
Guardrail flr open	12	LF	400.00	4,800
Cane rail	2	EA	1,350.00	2,700
5' W Metal Pan Stair @ #1 Penthouse ( 1 FLT):				
Metal pan stair treads/risers	120	LFR	85.00	10,200
Metal pan landing	60	SF	55.00	3,300
Wall rail	32	LF	165.00	5,280
Guardrail	32	LF	400.00	12,800
Access gate	1	EA	1,800.00	1,800
* Typ, perforated metal mesh guardrail				
Aud Rails & Stairs		W/ C1030		
Lobby rails		W/ C1030		
<u>033000 CAST IN PLACE CONCRETE</u>				
Conc stair pan fill :				
Metal pan stair treads and risers	1,278	LFR	22.00	28,116
Metal pan landing	472	SF	18.00	8,496
(A651) Precast tread		NIC		
Recessed Slab 12" Common #1009 & #1059( 2 LOC) :				
Sloped walkway - premium	325	SF	5.00	1,625
Stepped slab	176	LFR	155.00	27,280
				-----
				408,107

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
C2020 STAIR FINISHES				
<u>090005 RESILIENT FLOORING*</u>				
Metal Pan Stair Learning Commons Stair ( 4 FLT):				
VCT tile landing	172	SF	8.00	1,376
VCT treads & risers w/rub nosing	678	LFR	14.25	9,662
Aud Stair Finish		W/ C1030		
Recessed Slab 12" Common #1009 & #1059( 2 LOC)		W/ C1030		
<u>090007 PAINTING*</u>				
Paint Metal Pan Stair & Rail:				
5' W @ Learning Commons 1st- 3rd	2	FLTS	2,500.00	5,000
8' W @ Learning Commons 1st- 2nd	2	FLTS	2,750.00	5,500
5' W @ Stair Hall	5	FLTS	2,500.00	12,500
Seal Concrete Finish:				
5' W @ Stair Hall	5	FLTS	2,000.00	10,000
				-----
				44,038
<b>TOTAL C20 - STAIRS</b>				<b>452,145</b>

## C30 - INTERIOR FINISHES

## C3010 WALL FINISHES

Breakout Areas w/C1010

040001 MASONRY\*

CMU premium finish w/Partition

062000 FINISH CARPENTRY

(A600) 18" mdo w/ ample cap Bumper w/HD Wd Marker Tray:

Media ctr	37	LF	75.00	2,775
Science Lab Classroom ( 17 LF/ 6 EA)	102	LF	75.00	7,650
Makerspace ( 1 EA)	50	LF	75.00	3,750
Fab-lab ( 1 EA)	44	LF	75.00	3,300
Art Class Room (37 LF/1 EA)	37	LF	75.00	2,775



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Staff Lunch Room ( 1 EA)	46	LF	75.00	3,450
Typ, SPED & ELL Classroom ( 25 LF / 33 EA)	825	LF	75.00	61,875
Band Classroom ( 1 EA)	20	LF	75.00	1,500
Chorus Classroom ( 1 EA)	30	LF	75.00	2,250
Music practice rm ( 35 LF / 3 EA)	105	LF	75.00	7,875
Guidance Suite (50 LF /3 Loc):	150	LF	75.00	11,250
SPED suite (112 LF /3 loc)	336	LF	75.00	25,200
Main office & health center	203	LF	75.00	15,225
Corridors & commons	773	LF	75.00	57,975
P.lam Wall Panel:				
11/A600 Drinking Fountain Alcove (7 loc 7'H)	245	SF	55.00	13,475
P.Lam wall panel @ class entry controls	59	LOC	550.00	32,450
Auditorium vestibule	393	SF	48.00	18,864
Stage full ht	2,880	SF	48.00	138,240
Learning Commons/ Corridors Full Ht P Lam Wall Panel & Trim- Allow :				
1st Flr	750	SF	40.00	30,000
2nd Flr	750	SF	40.00	30,000
3rd Flr	750	SF	40.00	30,000
Misc Wood Wall Panel & Trim- Allow :				
Lower stage front p.lam panel(8/A602)	300	SF	55.00	16,500
Auditorium -allow	1	LS	25,000.00	25,000
Stage (100% wall fin?)	W/ Acoustical Panels			
<u>097200 WALL COVERING</u>				
Mural - Digital image wall covering - install only w/ 1 /2" GWB Back up:				
Media center	1,400	SF	15.00	21,000
Main office	50	SF	50.00	2,500
<u>097733 WALL PANELS</u>				
8' FRP Wall Panel -allow:				
Main kitchen	2,233	SF	9.75	21,772
Cementitious Wood Fiber Wall Panel:				
Music practice rm ( 3 EA)	409	SF	19.00	7,771
Band Rm ( 1 EA)	833	SF	19.00	15,827
Gymnasium	4,344	SF	19.00	82,536
Fabric Wrapped Acoustical Panels 1" (Per Email 7/22/19):				
Media ctr	1,260	SF	32.00	40,320
Science Lab Classroom (260 SF /6 EA)	1,560	SF	32.00	49,920
Makerspace ( 1 EA)	224	SF	32.00	7,168
Fab-lab ( 1 EA)	250	SF	32.00	8,000
Art Class Room ( 1 EA)	300	SF	32.00	9,600

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Teacher Prep Room ( 24 EA)		N/A		
Typ, SPED & ELL Classroom 206SF / 32 EA)	6,592	SF	32.00	210,944
Drama Classroom ( 1 EA)	300	SF	32.00	9,600
Band Rm ( 1 EA)	912	SF	32.00	29,184
Chorus Classroom ( 1 EA)	309	SF	32.00	9,888
Guidance Suite (133 SF /3 Loc)	399	SF	32.00	12,768
Break out areas		NIC		
Stage		NIC		
Auditorium		NIC		
<u>090002 TILE*</u>				
Drinking Fountain Alcove (7 loc):				
Ceramic wall tile 7'h	476	SF	35.00	16,660
Multi User Toilet Rm (16 EA)				
Ceramic wall tile 5'6"	2,033	SF	23.00	46,759
Sgl User Toilet Rm (15 EA):				
Ceramic wet wall tile 5'6"	777	SF	23.00	17,871
1/4" Stl plate @ tile - 6" w (10/A620)	1	LS	30,000.00	30,000
*Tile includes alum trim				
Tile Backer Bd Premium	3,210	SF	1.85	5,939
<u>090005 RESILIENT FLOORING*</u>				
Wall base 12" VCT tile w/ Schluter top edge where e:	28,500	LF	6.50	185,250
Wall base 6" @ locker box	1,050	LF	5.00	5,250
Typ resilient wall base - allow	1	LS	7,500.00	7,500
<u>090007 PAINTING*</u>				
Interior painting- walls	136,600	GSF	1.90	259,540
				-----
				1,654,945
C3020 FLOOR FINISHES				
Gyp cement underlayment:				
2" Maxxon acoustic topping slab 2nd & 3rd flr	69,467	SF	4.30	298,708
<u>033000 CAST IN PLACE CONCRETE</u>				

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
PC Power Troweled Concrete Floor Finish::				
Auditorium	3,788	SF	5.00	18,940
Makerspace ( 1 EA)	1,972	SF	5.00	9,860
<u>090007 PAINTING:</u>				
SC Sealed Concrete Floor Finish (030513):				
Storage, mech, elec & receiving	5,561	SF	2.00	11,122
<u>093000 TILE</u>				
(10/A602) Learning Common Step (2 loc):				
Porcelain tile tread	176	LFT	45.00	7,920
Porcelain tile riser	176	LFR	30.00	5,280
Café/Learning Commons:				
Porcelain tile	5,546	SF	24.00	133,104
Anti-fracture membrane	5,546	SF	6.00	33,276
Quarry Tile:				
Kitchen / serverly	1,654	SF	17.25	28,532
Wall base	290	LF	9.75	2,828
Transitions strip		inc.		
Anti-fracture membrane	1,654	SF	6.00	9,924
*Includes cooler & freezer				
<u>090005 RESILIENT FLOORING*</u>				
Moisture mitigation -spec	45,525	SF	1.00	45,525
LT-linoleum tile TYP	59,665	SF	5.00	298,325
LP - linoleum plank Corridor	28,069	SF	6.50	182,449
LP - linoleum plank breakout area		w/ corr.		
*Includes sections 0965000 & 096513				
<u>095000 WOOD &amp; ATHLETIC FLOOR</u>				
Main Gym:				
Moisture mitigation -allow	8,276	SF	4.75	39,311
Athletic synthetic flooring	8,276	SF	15.25	126,209
Vented wall base	365	LF	9.85	3,595
Auditorium (8/A602):				
Stage flooring - 4" assembly	1,540	SF	14.00	21,560
Stage nosing	59	LF	38.00	2,242
Stage wall base /transition	113	LF	9.85	1,113

\*Includes Sections 096429 & 096466

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>096723 RESINOUS FLOORING</u>				
SGL User Toilet Room (15 EA) :				
Epoxy flr w/int base	997	SF	18.00	17,946
Shw receptor 3x3	1	EA	550.00	550
Shw receptor 5x3	2	EA	700.00	1,400
Threshold/transition	15	EA	200.00	3,000
Multi User Toilet & Locker Room( 18 EA):				
Epoxy flr w/int base	4,601	SF	18.00	82,818
Threshold/transition	18	EA	200.00	3,600
<u>096800 CARPET</u>				
Auditorium:				
Carpet aisle	1,033	SF	6.00	6,198
Carpet aisle stair/stage (4 riser)	4	FLT	500.00	2,000
<u>124813 MATS</u>				
Walk off mat (2 loc)	360	SF	22.00	7,920
				-----
				1,405,254
C3030 CEILING FINISHES				
<u>050001 MISCELLANEOUS METALS</u>				
Note #5.55 Perf Arch Grille:				
3rd Flr clg -12"W	210	SF	200.00	42,000
6/A690 Uni strut support - allow	1	LS	50,000.00	50,000
<u>092116 GYPSUM WALLBOARD</u>				
Acoustical Gypsum Plaster (092313):				
Clg spray sys - allow	1	LS TBD		
Typ, Sci, Art, Music, SPED & ELL Classroom CLG & Soffits:				
Summer Beam bottom 3'W (1/A690)	3,530	SF	12.00	42,360
Summer Beam light cove & vert framing (1/A690)	2,354	LF	75.00	176,550
Typ. gyp clg bay	1,161	SF	15.00	17,415
Complete soffit @ gyp bay	326	LF	48.00	15,648
Complete beam box 11'6" bot	998	LF	80.00	79,840
Sloped ACT clg - metal deck transition soffit	1,365	LF	32.00	43,680
Complete soffit @ OP partition class (6/A601)		N/A		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<b>Central Corridor CLG &amp; Soffits:</b>				
Horiz gyp clg 8'AFF	5,869	SF	14.00	82,166
Horiz gyp clg 12'AFF	1,851	SF	14.00	25,914
(9/A690) Soffit @ bot of sloped ACT	1,852	LF	35.00	64,820
(8/A690) Soffit @ topof sloped ACT	1,590	LF	45.00	71,550
(7/A650) Cap @ locker box	565	LF	50.00	28,250
(6/A650) Soffit @ guardrail	367	LF	50.00	18,350
<b>Misc. Soffits @:</b>				
Toilet rm light cove (7/A690)	593	LF	48.00	28,464
ACT - GWB transition 8" AFF	150	LF	32.00	4,800
Pyramid Skylight 2'H	1,134	SF	22.00	24,948
<b>Gyp Ceiling System :</b>				
Atrium 3rd flr sloped gyp clg	6,727	SF	21.00	141,267
Typ Toilet Room (NICArea C & kit)	3,684	SF	11.00	40,524
Typ gyp ceiling	1,680	SF	12.00	20,160
Emergency shw gyp clg	54	SF	12.00	648
1 Hr gyp mech/elec	474	SF	12.00	5,688
2Hr gyp mech/elec	169	SF	16.00	2,704
A651 Underside monumental Stair w/ return	800	SF	16.00	12,800
Underside proj rm/bridge	600	SF	16.00	9,600
Sub acoustical clg (2/A690)	5,296	SF	24.00	127,104
<b><u>062000 FINISH CARPENTRY</u></b>				
<b>Auditorium/Stage-(A461 &amp; A691):</b>				
P. lam clouds	2,000	SF	120.00	240,000
<b><u>090003 ACOUSTICAL TILE*</u></b>				
<b>A1 2'x2'and 4' ACT Ceiling System @ :</b>				
Splayed admin	1,452	SF	9.00	13,068
Commons w/ exp structure	2,963	SF	8.25	24,445
Corr, Admin, workroom & storage	13,502	SF	8.25	111,392
Area C Toilet & Locker Room	1,224	SF	8.25	10,098
<b>A2 Typ, Sci, Art, Music, &amp; Media :</b>				
A2 ACT	6,786	SF	9.00	61,074
A2 Splayed ACT (20%)	18,480	SF	9.00	166,320
<b>A 3 ACT 2 x 2</b>				
A 4 Kitchen / servery	1,688	SF	6.75	11,394
<b>Random Size Ultima:</b>				
Corridor 8'w	14,190	SF	10.00	141,900

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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C1 Aud vestibule	393	SF	10.00	3,930
Breakout rooms (GWB Roof NIC)	3,430	SF	10.00	34,300
Exterior Soffit panel		W /Ext Wall		

\*Includes Sections 095100 & 095133

090007 PAINTING\*

Paint gyp ceiling	45,000	SF	1.00	45,000
Paint gyp soffits	1	LS	25,000.00	25,000

Paint exposed structure- 100%:

Class Small Closet( 34 loc)	408	SF	2.00	816
Typ mech, elec & storage rm	5,527	SF	2.00	11,054
Auditorium & stage	5,996	SF	2.50	14,990
Main gym deck	8,268	SF	4.00	33,072
Typ, Sci, Art, Music, & Media - exp deck	23,986	SF	2.00	47,972
Stairhall	1,203	SF	2.00	2,406

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2,175,480

<b>TOTAL C30 - INTERIOR FINISHES</b>				<b>5,235,679</b>
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D. SERVICES

D10 - CONVEYING

D1010 ELEVATORS & LIFTS

140001 ELEVATORS & LIFTS\*

Passenger elevator ( 1 door - 4,500 lb)	4	STOP	53,000.00	212,000
*Includes roof level stop				

050001 MISCELLANEOUS & ORNAMENTAL IRON\*

Elev. framing	1	EA	3,000.00	3,000
Elev. pit ladder	1	EA	1,537.00	1,537
Elev. sump grate	1	EA	1,500.00	1,500

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218,037

<b>TOTAL D10 - CONVEYING</b>				<b>218,037</b>
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DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
D20 - PLUMBING				
D2010 PLUMBING				
<u>220001 PLUMBING*</u>				
Plumbing Fixtures ( Per Plumbing):				
P-1 water closet	20	EA	1,850.00	37,000
P-1A water closet	31	EA	1,850.00	57,350
P-2 Urinal	18	EA	1,575.00	28,350
P-2A Urinal	8	EA	1,575.00	12,600
P-3 Lav ctr mtd	47	EA	1,100.00	51,700
P-3A Lav wall hung	31	EA	1,375.00	42,625
P-4 Drinking Fountain	11	EA	3,150.00	34,650
P-5 Mop Receptor	5	EA	1,425.00	7,125
P-6 Shower 3x3	1	EA	2,850.00	2,850
P-6 Shower 5x3	2	EA	3,000.00	6,000
P-7 Science	40	EA	2,200.00	88,000
P-7A	2	EA	2,200.00	4,400
P - 8	4	EA	1,500.00	6,000
P - 9 Art Sink w/ Plaster Trap	4	EA	2,150.00	8,600
P - 10 Eye Wash Station	5	EA	2,800.00	14,000
Sink - Aud. dressing rm	4	EA	1,500.00	6,000
Sink - health office	1	EA	1,500.00	1,500
Sink - SPED	1	EA	1,500.00	1,500
Sink - Tech Lab	2	EA	1,500.00	3,000
Sensor Faucet ( spec only)	78	EA	525.00	40,950
Sensor Flush ( spec onl; not indicated)	77	EA	485.00	37,345
FPSC wall hydrant	8	EA	450.00	3,600
HB hose bibb	18	EA	350.00	6,300
IMB Conn	5	EA	500.00	2,500
Fix Connection	237	EA	300.00	71,100
Misc. Specialties:				
MV-1	1	EA	7,500.00	7,500
MV-2 - science room	5	EA	1,250.00	6,250
1" Mech BFP	3	EA	950.00	2,850
Misc. Mix valve	4	EA	450.00	1,800
P - 11 Fume Hood Connection	3	EA	2,500.00	7,500
Heat Trace non potable water ( spec )	1	LS	5,000.00	5,000
Fire sealing penetration	1	LS	45,000.00	45,000
Elevator Sump pump	1	EA	3,500.00	3,500
Pumps:				
RP-1 & RP-2	2	EA	15,000.00	30,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
RP-3	1	EA	4,500.00	4,500
RP-4	1	EA	4,500.00	4,500
Science Room Gas Fired Hot Water Heater:				
GWH-1	1	EA	25,000.00	25,000
Gas Fire Hot Water Supply Boiler:				
BLR-1, 2???? (Lochinvar - Armor AWN501P )	2	LS	19,500.00	39,000
HW Storage Tank	1	EA	18,000.00	18,000
Mech Rm Neutralization	1	EA	4,000.00	4,000
Boiler Valve and Trim	1	LS	30,000.00	30,000
Interior Grease Interceptor:				
GI-1 & GI-2	2	EA	8,500.00	17,000
Roof/Storm Drain System				
Underground D/W/V Pipe:				
4"	61	LF	46.00	2,806
6"	75	LF	61.00	4,575
8"	75	LF	96.00	7,200
10"	93	LF	110.00	10,230
12"	19	LF	132.00	2,508
FCO	8	LF	425.00	3,400
Above Ground D/W/V Pipe:				
4"	230	LF	48.00	11,040
6"	932	LF	63.00	58,716
8"	486	LF	99.50	48,357
10"	150	LF	112.00	16,800
CO	20	EA	400.00	8,000
RD - 4"	7	EA	1,275.00	8,925
RD - 5"	3	EA	1,320.00	3,960
RD - 6"	9	EA	1,460.00	13,140
RD - 8"	2	EA	1,545.00	3,090
Insulate leader	1,000	LF	13.00	13,000
Footing drain	100	LF	36.50	3,650
Acid Waster System:				
Underground D/W/V Pipe:				
2"	43	LF	41.00	1,763
4"	587	LF	62.00	36,394
FCO	6	EA	485.00	2,910
FD	5	EA	725.00	3,625
Above Ground Sanitary D/W/V Pipe:				
4"	447	LF	67.00	29,949
Acid Neutralization Precast Structure	1	EA	15,000.00	15,000
Neutralization Tank and Alarm	1	EA	35,000.00	35,000
Precast Pump Chamber	1	EA	25,000.00	25,000



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<b>Domestic Piping:</b>				
1 1/2"	339	LF	33.75	11,441
1 1/4"	754	LF	26.90	20,283
1"	2,678	LF	22.25	59,586
1/2"	1,245	LF	17.25	21,476
2 1/2"	533	LF	66.00	35,178
2"	567	LF	46.00	26,082
3"	50	LF	89.00	4,450
3/4"	1,590	LF	19.90	31,641
6"	100	LF	142.00	14,200
Kitchen conn	1	LS	30,000.00	30,000
Water Hammer arrestors	1	LS	5,000.00	5,000
Allow for Piping	1	LS	50,000.00	50,000
<b>1" Pipe Insulation:</b>				
1 1/2"	339	LF	8.00	2,712
1 1/4"	754	LF	7.90	5,957
1"	2,678	LF	7.50	20,085
1/2"	1,245	LF	7.10	8,840
2 1/2"	533	LF	9.00	4,797
2"	567	LF	8.45	4,791
3"	50	LF	9.50	475
3/4"	1,590	LF	7.40	11,766
6"	100	LF	14.45	1,445
<b>Sanitary System</b>				
<b>Underground D/W/V Pipe:</b>				
2"	79	LF	32.00	2,528
3"	392	LF	38.00	14,896
4"	971	LF	49.00	47,579
5"	284	LF	56.00	15,904
6"	14	LF	63.00	882
8"	31	LF	99.50	3,085
Floor Drain	17	EA	580.00	9,860
Gas and Sand separator	1	EA	15,000.00	15,000
5,000 gal. Grease Trap	1	EA	22,000.00	22,000
Sewer manhole	1	EA	4,000.00	4,000
Floor Sink	8	EA	2,200.00	17,600
FCO	25	EA	425.00	10,625
<b>Above Ground D/W/V Pipe:</b>				
2"	1,289	LF	32.00	41,248
3"	600	LF	38.00	22,800
4"	1,249	LF	49.00	61,201
FD	18	EA	800.00	14,400
CO	20	EA	495.00	9,900
Trap primer Pipe	1	LS	5,000.00	5,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Roof Vent Term.	8	EA	1,100.00	8,800
Allow for Piping	1	LS	50,000.00	50,000
Gas Pipe:				
1" - Science hw conn?	300	LF	36.00	10,800
2" - main	135	LF	75.00	10,125
3/4" - kitchen	50	LF	30.00	1,500
1" - 1/2' lab connection	1	RM	30,000.00	30,000
Kitchen Connection	1	LS	5,000.00	5,000
Boiler Room Connections	1	LS	5,000.00	5,000
Kitchen Master Shut off	1	LS	4,000.00	4,000
Gas sub metering	3	EA	3,000.00	9,000
Flues:				
10" Boiler flue	275	LF	160.00	44,000
6" HW Flue	60	LF	95.00	5,700
Generator:				
Gas Connection	1	LS	25,000.00	25,000
Exhaust Breaching	1	LS	20,000.00	20,000
Underground Water Service:				
6"	10	LF	150.00	1,500
Meter Install Only	1	EA	2,500.00	2,500
Sub-meter	3	EA	3,000.00	9,000
6" BFP	1	EA	12,500.00	12,500
Staging and Lifts	1	LS	30,000.00	30,000
Commissioning Coordination	200	HRS	125.00	25,000
Sanitize system	1	LS	25,000.00	25,000
Test , permit misc gc	1	LS	75,000.00	75,000
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				2,293,619

<b>TOTAL D20 - PLUMBING</b>	<b>\$16.79 /SF</b>	<b>2,293,619</b>
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D30 - HVAC

D3010 HVAC

230001 HVAC\*

Rooftop Units:

RTU-1 (22,000 cfm)	22,000	CFM	15.00	330,000
RTU-2 (22,000 cfm)	22,000	CFM	15.00	330,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
RTU-3 (22,000 cfm)	22,000	CFM	15.00	330,000
RTU-4 (22,000 cfm)	22,000	CFM	15.00	330,000
RTU-5 (15,000 cfm)	15,000	CFM	15.00	225,000
RTU-6 (12,000 cfm)	12,000	CFM	15.00	180,000
RTU-7 (2,000 cfm)	2,000	CFM	13.50	27,000
Make Up Air Units:				
MAU-1 (5,000 cfm)	5,000	CFM	12.00	60,000
Sound Attenuators ( 17 ea )	234,000	CFM	0.55	128,700
Exhaust Fans:				
EF-1 G-VG - roof	1	EA	3,150.00	3,150
EF-2 G-VG - roof	1	EA	3,150.00	3,150
EF-3 G-VG - roof	1	EA	3,150.00	3,150
EF-4 G-VG - roof	1	EA	3,150.00	3,150
EF-5 SQ-VG - kiln	1	EA	2,850.00	2,850
SEF-1 QEI - roof	1	EA	22,000.00	22,000
SEF-2 QEI - roof	1	EA	22,000.00	22,000
SEF-3 QEI - roof	1	EA	22,000.00	22,000
SEF-4 QEI - roof	1	EA	22,000.00	22,000
KEF-1 Cube - roof	1	EA	5,500.00	5,500
KEF-2 Cube - roof	1	EA	5,500.00	5,500
FEF-1 Vektor - roof	1	EA	12,250.00	12,250
FEF-2 Vektor - roof	1	EA	12,250.00	12,250
FEF-3 Vektor - roof	1	EA	12,250.00	12,250
Dust Collection:				
DC-1	1	EA	35,000.00	35,000
Dust Connection:				
Bandsaw	1	EA	2,500.00	2,500
Combo sander	1	EA	2,500.00	2,500
Planer	1	EA	2,500.00	2,500
Table swa	1	EA	2,500.00	2,500
Jointer	1	EA	2,500.00	2,500
Mitre saw	1	EA	2,500.00	2,500
HW System:				
HWB-1 (AR 4,000)	1	EA	52,500.00	52,500
HWB-2 (AR 4,000)	1	EA	52,500.00	52,500
HWP-1,2	2	EA	15,000.00	30,000
BP 1,2	2	EA	2,250.00	4,500
VFD	2	EA	3,200.00	6,400
Chemical feed	1	LS	35,000.00	35,000
Air separator	1	EA	2,800.00	2,800
Expansion tank	1	EA	3,200.00	3,200
8" Feed Manifold	50	LF	350.00	17,500
6" Manifold S&R	100	LF	225.00	22,500
Boiler piping trim and valves	1	LS	26,000.00	26,000
10" Flue	365	LF	185.00	67,525

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Flue Roof Term and Mast	4	EA	1,500.00	6,000
PH Tank	1	LS	1,500.00	1,500
Intake Louver and Damper	1	LS	6,000.00	6,000
Exhaust Louver and Damper	1	LS	6,000.00	6,000
Elec Room Exhaust fan and Louver	1	LS	3,500.00	3,500
Air-Cooled Chiller:				
CH - 1	370	TON	1,050.00	388,500
Chiller rough in, valve and trim	1	LS	20,000.00	20,000
Pump Package	1	LS	175,000.00	175,000
Ductwork:				
Corridor - dbl wall	49,596	LBS	9.80	486,041
Aud - dbl wall	10,299	LBS	9.80	100,930
Atrium Spiral	15,376	LBS	13.54	208,191
Corridor Rect - return	24,796	LBS	10.50	260,358
Gal Ductwork - allow	35,000	LBS	10.50	367,500
24" Fabric duct soc	706	LF	38.00	26,828
Kitchen hood exhaust duct - welded	1,250	LBS	17.50	21,875
Alum. dishwasher ductwork	500	LBS	12.00	6,000
Duct Insulation:				
Duct liner - corr	17,015	SF	6.25	106,344
Duct liner - aud.	3,208	SF	6.25	20,050
Duct liner - s&r	2,368	SF	6.25	14,800
1" Duct insul	39,000	SF	3.90	152,100
EPDM wrap	3,000	SF	12.00	36,000
Fire wrap at duct	400	SF	9.00	3,600
Air Devices:				
DD - 1	13	EA	450.00	5,850
DD - 2	7	EA	575.00	4,025
DD - 3	14	EA	375.00	5,250
DD - 4	31	EA	310.00	9,610
DD - 5	41	EA	985.00	40,385
DD - 6	9	EA	450.00	4,050
DD - 7	4	EA	750.00	3,000
E - 1	65	EA	195.00	12,675
R - 2	6	EA	205.00	1,230
SA - 1	4	EA	220.00	880
Slot diffuser ( verify )	876	LF	45.00	39,420
VAV Box	156	EA	1,250.00	195,000
Volume Damper	46	EA	245.00	11,270
Auto Damper	16	EA	1,400.00	22,400
Fire damper	30	EA	550.00	16,500
Destratification fan	3	EA	8,500.00	25,500

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
AC Split System:				
Ductless Cooling Unit Systems:				
DCUe-1	1	EA	9,500.00	9,500
DCUe-2	1	EA	9,500.00	9,500
DCUe-3	1	EA	9,500.00	9,500
DCUe-4	1	EA	9,500.00	9,500
DCUe-5	1	EA	9,500.00	9,500
DCUe-6	1	EA	9,500.00	9,500
DCUe-7	1	EA	9,500.00	9,500
Condensate Pumps:				
CP-1 & Cond. Piping	7	EA	1,200.00	8,400
Hydraunic Heater:				
Cab heater	0	EA	2,650.00	0
Unit Heater	16	EA	1,100.00	17,600
Perimeter Radiant Heat Panel	2,057	LF	158.00	325,006
Fin Tube Radiation - aud.	126	LF	88.00	11,088
Fin Tube Radiation - gym	168	LF	88.00	14,784
Modulating Valve	100	EA	285.00	28,500
Isolation valve	200	EA	92.00	18,400
HVAC Pipe:				
Branch pipe 3/4" - 1 1/2"	5,566	LF	25.00	139,150
Main 2" - 6"	6,942	LF	72.00	499,824
Pipe Insulation:				
Branch pipe 3/4" - 1 1/2"	5,566	LF	7.75	43,137
Main 2" - 6"	6,942	LF	10.50	72,891
Mechanical Piping:				
AHU Valving	8	EA	3,500.00	28,000
Misc. Control Valve	8	EA	2,500.00	20,000
Temperature Control:				
AHU/ERV	8	EA	25,000.00	200,000
Chiller and Cooling Equipment	1	LS	30,000.00	30,000
Boiler and Heating	1	LS	20,000.00	20,000
Pump	6	EA	1,800.00	10,800
VAV	156	EA	1,500.00	234,000
Hydronic point	100	EA	1,000.00	100,000
Exhaust Fan	17	EA	1,500.00	25,500
CO2 Sensor	45	EA	1,250.00	56,250
Misc. temp control	1	LS	50,000.00	50,000
Seismic & vibrator control	1	LS	35,000.00	35,000
Test and balance	136,600	GSF	0.65	88,790
Staging and Lifts	1	LS	30,000.00	30,000
Commission coordination	1	LS	25,000.00	25,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
GC & misc.	1	LS	25,000.00	25,000
*excludes temporary heat and ventilation				-----
				7,500,106
<b>TOTAL D30 - HVAC</b>	<b>\$54.91</b>	<b>/sf</b>		<b>7,500,106</b>

## D40 - FIRE PROTECTION

## D4010 SPRINKLERS

210001 FIRE SUPPRESSION\*

6" BF Preventer	1	EA	7,450.00	7,450
Wet valve assembly	1	LS	3,500.00	3,500
Elec. bell	1	LS	1,500.00	1,500
Siamese fire dept connection	1	LS	1,350.00	1,350
Fire Dept. Connection:				
2 1/2" w/cabinet	9	EA	1,850.00	16,650
Siamese FD Connection	2	EA	1,235.00	2,470
FCVA - 4"	9	EA	1,050.00	9,450
Tamper sw	30	EA	225.00	6,750
Heads and Branch:				
Concealed head - typ.	946	EA	330.00	312,180
Concealed head - aud.	41	EA	750.00	30,750
Upright head	315	EA	329.00	103,635
Upright w/ cage	71	EA	360.00	25,560
Sidewall	144	EA	285.00	41,040
Window wash	12	EA	385.00	4,620
3" drain	220	LF	31.50	6,930
2 1/2" - 6"	5,100	LF	39.00	198,900
4" Shut off	4	EA	1,025.00	4,100
6" Shut off	4	EA	1,185.00	4,740
Misc. Valve	1	LS	10,000.00	10,000
Underground Fire Prot. Service:				
6"	10	LF	110.00	1,100
Coring and firesafing	1	LS	5,000.00	5,000
Staging and Lifts	1	LS	30,000.00	30,000
Test, as built	1	LS	40,000.00	40,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
				-----
				867,675
<b>TOTAL D40 - FIRE PROTECTION</b>	<b>\$6.35</b>	<b>/sf</b>		<b>867,675</b>

## D50 - ELECTRICAL

## D5010 ELECTRICAL SERVICE &amp; DISTRIBUTION

260001 ELECTRICAL\*

## Lighting Fixtures:

Exit	43	EA	324.20	13,941
G\$ - gym	80	EA	837.00	66,960
LC3 - classroom cove	1,927	LF	97.76	188,384
LK24	15	EA	267.00	4,005
LP4	6	EA	452.00	2,712
LP4S - aud	81	EA	775.00	62,775
LP8	6	EA	836.40	5,018
LR2 - typical	763	EA	402.00	306,726
LRD 5 - bathroom	12	EA	1,119.00	13,428
LRS - corridor	104	EA	783.60	81,494
LS2	2	EA	332.00	664
LS4	53	EA	362.00	19,186
LS8	17	EA	526.40	8,949
LWS - bathroom cove	647	LF	84.10	54,413
RC-1	92	EA	267.00	24,564
RSH	1	EA	282.00	282
SC - commons	40	EA	888.00	35,520
SL4 - exterior	19	EA	507.80	9,648
UC (as shown only)	66	LF	50.40	3,326
Branch Wiring	136,000	SF	1.25	170,000
Lighting Control System	136,000	SF	2.00	272,000

## Mechanical:

VAV 20A 1 frac	89	EA	182.20	16,216
WH 20A 1 1a	3	EA	182.20	547
WH 30A-3P-250v	1	EA	344.00	344
GB 30A-3P-250v	2	EA	611.00	1,222
J\$M	3	EA	182.20	547
Meters & flows & solen \$M WP	14	EA	182.20	2,551
MC-14/2 W/G	1,500	LF	1.69	2,529
MC-12/2 W/G	1,900	LF	1.71	3,241
MC-12/3 W/G	1,400	LF	2.14	2,996
MC-12/4 W/G	1,180	LF	2.56	3,026

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
MC-10/4 W/G	400	LF	4.56	1,825
UH	21	EA	182.20	3,826
EMT 3/4"C-3#12	2,800	LF	5.34	14,952
VFD FBO I&W	17	EA	216.00	3,672
25 - 100/100A/3/480v	4	EA	466.00	1,864
EMT-1 1/2"C-4#2 & 1#8	500	LF	15.76	7,880
GFI WP roof	22	EA	97.00	2,134
Roof stonco	10	EA	228.00	2,280
WP roof Switch	10	EA	87.00	870
EMT-3/"C-3#12 (roof)	3,450	LF	5.32	18,354
EMT-3/"C-4#12 (roof)	3,100	LF	5.80	17,980
CP-1	11	EA	182.20	2,004
MC-12/2 W/G	700	LF	1.71	1,194
JB 8x8x4	11	EA	68.20	750
480v 3 30A	11	EA	706.00	7,766
480v 3 40A	2	EA	938.00	1,876
EUH 250v 1 30A/2P	3	EA	416.00	1,248
ECU 208v 1 15A	11	EA	182.20	2,004
DCU J 208v 1 30A	11	EA	436.00	4,796
EMT-3/4"C-4#10	1,200	LF	6.38	7,656
ET 120v 1	8	EA	182.20	1,458
MAU-1 60/40A/3/480v	1	EA	391.00	391
EMT-1"C - 4#8 & 1#10	70	LF	7.14	500
Mechanical (cont):				
Boiler 20A - 1 30A/2P	3	EA	513.00	1,539
Boiler pumps 20A 2P 208v	3	EA	366.00	1,098
Chiller 480v 600/600A/3	2	EA	2,148.00	4,296
EMT-3"C - 3#250 mcm & 1#4	260	LF	32.56	8,466
EMT-3/4"C 4#8 & 1#10	140	LF	8.39	1,175
SEF 100/100A/3/480v	4	EA	650.00	2,600
#2 MI cable	1,600	LF	19.32	30,912
#2 MI terms (quick)	32	EA	116.00	3,712
RTU - 400/250A/3/3R	4	EA	971.00	3,884
RTU - 200/150A/3/3R	2	EA	613.00	1,226
RTU - 100/70A/3/3R	1	EA	486.00	486
RTU - 60/50A/3/3R	1	EA	391.00	391
EMT-3"C-4#250 & 1#4	520	LF	40.38	20,998
EMT-2"C-4#1/0 & 1#6	325	LF	21.96	7,137
EMT-1 1/4"C-4#4 & 1#8	150	LF	12.62	1,893
EMT-1"C-4#6 & 10	150	LF	10.25	1,538
Wiring Devices & Scoreboard Work:				
Duplex	388	EA	58.84	22,830



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
GFI duplex	109	EA	61.84	6,741
WP GFI	8	EA	94.00	752
Surf double duplex	37	EA	124.00	4,588
Switched rec w/IO module	24	EA	240.00	5,760
NEMA L14-20R	27	EA	107.00	2,889
LS limit switch	3	EA	107.00	321
CP cont pnl - wire only	8	EA	144.00	1,152
TML mtr conn	8	EA	83.80	670
J 4" sq w/cover	6	EA	41.00	246
ISO grd out shot clock	2	EA	87.00	174
Wire only scoreboard	1	EA	144.00	144
30/20A/3240v	2	EA	269.00	538
EMT-3/4"C-4#12	1,800	LF	5.79	10,422
Double duplex - color	216	EA	101.40	21,902
Tw loc @ tray	11	EA	102.00	1,122
Cable tray 24"c12'0"	6	EA	309.00	1,854
Poke thru	2	EA	666.00	1,332
Key sw	1	EA	64.00	64
MOM conn cw	6	EA	70.00	420
CP bleacher pwr	7	EA	366.00	2,562
MC-12/2 w/G	39,500	LF	1.71	67,387
MC-12/3 w/G	2,000	LF	2.14	4,280
EMT-3/4"C - 3#12	1,900	LF	5.32	10,108
Emergency Generator & ATS:				
300kw 277/480v Natural Gas Generator	1	EA	159,320.00	159,320
Enclosure	1	EA	432.00	432
400A/3P output c/b	1	EA	144.00	144
150A/3P output c/b	1	EA	144.00	144
Interior panel	1	EA	288.00	288
Receive rig & set	1	EA	11,152.00	11,152
Unit mtd EPO	1	EA	638.00	638
Bldg mtd EPO	1	EA	907.00	907
Annunciator	1	EA	576.00	576
ATS-OS 400A 4P	1	EA	432.00	432
ATS-LS 150A 4P	1	EA	576.00	576
PVC-1"C-4#10 & 1#10	150	LF	4.01	602
PVC-1"C-14#13	150	LF	5.60	840
EMT-3/4"C-2#14	280	LF	5.12	1,434
EMT-3/4"C-5#14	120	LF	6.09	731
MI - 4#1/0	140	LF	107.36	15,030
MI - quick terms	8	LF	133.20	1,066
WIC 4#500 & 1#3	130	LF	45.84	5,959
EMT-4"C-4#500 & 1#3	140	LF	67.24	9,414
EMT-2"C-4#10 & 1#6	150	LF	21.96	3,294
Fire Alarm System:				
Material	1	LS	219,942.00	219,942

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Bi-directional antenna sys	1	LS	4,752.00	4,752
Elevator shaft & machine rm fitout	1	LS	3,456.00	3,456
Floor plan under glass	3	LS	144.00	432
Sprinkler bell I&W only	1	LS	216.00	216
DK drill key switch	1	LS	72.00	72
FACP flush control pnl	1	LS	4,608.00	4,608
Red beacon	1	LS	216.00	216
As built cabinet	1	LS	144.00	144
FM flush master box	1	LS	360.00	360
K knox box	1	LS	216.00	216
W white strobe	1	LS	144.00	144
LOC local operator control pnl	1	LS	864.00	864
Smoke exhaust graphic plaque w/LED indicator of statud	1	EA	1,152.00	1,152
FATC term cabinet	3	EA	864.00	2,592
ANN annunciator	3	EA	432.00	1,296
VE voice evac pnl	1	EA	2,304.00	2,304
MNS ??	3	EA	288.00	864
LS limit sw	6	EA	72.00	432
BD beam det xmit/rcur	5	EA	180.00	900
MM monitor module	66	EA	72.00	4,752
CM control module	26	EA	72.00	1,872
IM isolation module	3	EA	72.00	216
CO2 det tie in	1	EA	144.00	144
Security tie in	2	EA	144.00	288
Refuge tie in	1	EA	144.00	144
BDA tie in	5	EA	144.00	720
CO MM CO2 det w/monitor mod	9	EA	144.00	1,296
Smoke w/base	89	EA	72.00	6,408
Smoke to control atrium smoke	115	EA	72.00	8,280
Strobe only	61	EA	108.00	6,588
A/V unit	0	EA	0.00	0
A/V unit w/ amber alert	270	EA	144.00	38,880
FS TS flow & tampers	42	EA	72.00	3,024
Fire Alarm System ( cont):				
F Pull station	29	EA	61.20	1,775
MAG door holders	6	EA	72.00	432
ST1 stopper II 6500	29	EA	36.00	1,044
J 4" oct j-box	218	EA	33.80	7,368
J 4" sq w/device ring	158	EA	42.00	6,636
BB back box	331	EA	53.20	17,609
Programming & pretest	1	EA	1,728.00	1,728
FFD testing & cert	1	EA	1,728.00	1,728
ir & smoke test	1	EA	576.00	576
Water flow testing	1	EA	576.00	576

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
EMT-3/4"C-4#14	1,200	LF	5.42	6,504
AFC-#4901-16/2 14/2	13,160	LF	4.46	58,694
MC-4/C#14 red jacket	13,240	LF	2.64	34,954
Induct smoke	40	EA	288.00	11,520
Rem test sat	40	EA	108.00	4,320
Relay modules	40	EA	72.00	2,880
Monitor modules	40	EA	72.00	2,880
Mass notif UL listed computer	1	LS	50,000.00	50,000
Kitchen Power & Conns:				
S clg speaker	9	EA	381.00	3,429
Wall clock	1	EA	247.00	247
Voice outlet	1	EA	225.00	225
Duplex	36	EA	59.84	2,154
J	36	EA	92.00	3,312
TML-3/4"C-3#12	46	EA	50.24	2,311
TML-3/4"C-4#12	2	EA	61.00	122
TML-3/4"C-5#12	3	EA	69.60	209
TML-3/4"C-4#10	2	EA	81.80	164
TML-1 1/4"C-4#4 & 1#0	2	EA	132.00	264
60/50/3/250v	2	EA	286.00	572
30/20/3/250v	1	EA	228.00	228
30/3P/250v	2	EA	208.00	416
30/2P/250v	4	EA	198.00	792
Ther sw w/OL	9	EA	150.00	1,350
EMT-3/4"C-3#12	2,000	LF	5.32	10,640
EMT-3/4"C-4#12	100	LF	5.78	578
EMT-3/4"C-5#12	160	LF	6.24	998
EMT-3/4"C-4#10	100	LF	6.38	638
EMT-1 1/4"C-4#4 & 1#10	100	LF	13.19	1,319
MC-12/2 w/G	1,500	LF	1.85	2,775
CO2 gas solenoid shutdown	1	LS	3,404.00	3,404
Hood/ansul/EP work	1	LS	6,206.00	6,206
Master Lightning Protector Systems & Theatre:				
Theatrical ltg Rough-in	1	LS	98,780.00	98,780
Heary Bros Lightning Preventer Systems	2	EA	13,820.00	27,640
Window shade installation	1	LS	10,760.00	10,760
Area of refuge system	1	LS	16,676.00	16,676

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Integrated Electronic Security:				
Material - Turnkey:	1	LS	342,000.00	342,000
Includes:				
DSC Main cont pnl	1	EA		
12v 7 AH batteries	2	EA		
Xfmrs	2	EA		
Key lock w/relay mod	1	EA		
8 Zone expansion mod	1	EA		
16 Zone expansion mod	1	EA		
Addr. point modules	12	EA		
Touchscreen keypad	4	EA		
Wireless panic statin	6	EA		
Wireless received mod	1	EA		
Wall motions	35	EA		
Clg motions	38	EA		
Interface printer	1	EA		
Fargo photo badging	1	EA		
Flush door contacts	50	EA		
OHD sentrol contacts	2	EA		
Cellular communicator	1	EA		
8 Reader controller	11	EA		
DSX proximity readers	18	EA		
Bosch rte motions	14	EA		
DSC lan module/software	1	EA		
160 TB Network video recorder	1	EA		
12MP camera	13	EA		
5 MP ext dome camera	2	EA		
Wall arms	2	EA		
5 MP Interior dome	27	EA		
5 MP indoor 360der dome	29	EA		
Rack w/receivers/mx mmtrs	1	EA		
Axis ect 360 deg camera	3	EA		
A1 phone master video	3	EA		
A1 phone IC-DF video door sta	4	EA		
Strong pole split 20'	3	EA		
43" Smart TV	2	EA		
55" Smart TV	2	EA		
Chief TV wall brkt	4	EA		
24 Port poe & sw	3	EA		
28 Port poe & sw	10	EA		
Programming	1	LS		
Accessories	1	LS		
Supervision & final conn	1	LS		
O&M manuals	1	LS		
Auto Cad dwgs	1	LS		
Owner training	1	LS		

Structured Cabling System:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Material - turnkey	1	LS	389,939.00	389,939
Includes:				
ACCU tech TS teacher sta	70	EA		
Programming	1	EA		
Supervision & final conn	1	EA		
O&M manuals w/closeout	1	EA		
Auto Cad drawings	1	EA		
Owner training	1	EA		
50 PR 66 blocks	6	EA		
25 PR 66 blocks	6	EA		
50 PR 110 blocks	6	EA		
Belden 2 post rack	8	EA		
Belden rack mt PDU	8	EA		
Belden 4 port face plate	150	EA		
Belden 2 port face plate	250	EA		
Belden F conn insert	70	EA		
Belden CAT6A green insert	400	EA		
Belden CAT6A blue insert	400	EA		
Belden 48 port patch pnl	12	EA		
Belden horiz cable mgr	40	EA		
Belden 10' patch cord	800	EA		
Belden CAT6A plenum blue	100	EA		
Belden CAT6A plenum green	100	EA		
Belden OS2 sm patch cord	100	EA		
Belden OM4 mm patch cord	100	EA		
Belden 4 cassettes hsg	8	EA		
Belden 6 fiber hsg	8	EA		
Belden 18 fiber hsg	8	EA		
Ground bars w/grd cable	1	LS	23,640.00	23,640
Conduit sleeves, cable tray and fiber backbone	1	LS	30,960.00	30,960
Intercom & Clock Systems:				
Material - turnkey	1	LS	119,970.00	119,970
Includes:				
Valcom 9 position back plane	1	EA		
Valcom main power supply	2	EA		
Valcom main VPV	1	EA		
Valcom Rack mount kit	1	EA		
Valcom dual 6A switching	1	EA		
Valcom 2x2 talkback spkr	240	EA		
Valcom call in pushbutton	66	EA		
Valcom GPS master clock	1	EA		
Valcom repeater	2	EA		
Valcom 12" round clocks	84	EA		
Valcom administrative teleph	1	EA		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Valcom 16" clocks/repeater	2	EA		
Valcom wire guard	2	EA		
Valcom power supply	1	EA		
Cowell rack equip	1	LS		
Atlas paging horns	21	EA		
Atlas flush enclosures	21	EA		
Atlas grills	21	EA		
Valcom retro blocks	3	EA		
Valcom power amps	3	EA		
Valcom rack mount kit	3	EA		
Valcom 24 pt talk back	3	EA		
Valcom admin gateway	1	EA		
Valcom volume control	21	EA		
Valcom network port/cards	1	EA		
Programming	1	LS		
Supervisions & final conn	1	LS		
O&M manuals & closeout	1	LS		
Auto cad swgs & submit	1	LS		
System testing	1	LS		
System owner training	1	LS		
A/V Systems:				
FSR	1	EA	951.40	951
Clg proj	1	EA	700.00	700
Duplex	41	EA	60.84	2,494
Data drop	43	EA	250.00	10,750
Hardwired AC pwr	2	EA	97.00	194
Chief PAC 526	3	EA	741.00	2,223
VI Wall proj IG deep	41	EA	44.00	1,804
SI Wall spkr 1G deep	82	EA	44.00	3,608
RI Rec pnl 2G deep	42	EA	57.80	2,428
BP ?? 2G deep	42	EA	57.80	2,428
J1 12'x12'x4" flush	2	EA	203.00	406
R2 2 gang deep	4	EA	74.00	296
R3 3 gang deep	4	EA	82.00	328
S2 clg loud spkr - b.box	10	EA	74.00	740
S3 clg loud spkr - b.box	8	EA	74.00	592
EMT-1 1/4"C- w/PS	480	LF	7.66	3,677
EMT-1 "C- w/PS	300	LF	6.19	1,857
EMT-3/4"C- w/PS	2,500	LF	4.63	11,575

Section 274100 A/V

Includes Systems for:

Classrooms

NIC

Auditorium

w/equipment

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Auditorium av Rough-in	1	EA	45,000.00	45,000
Switchgear Panels & Transformers:				
45 KVA xfmr	8	EA	5,232.00	41,856
75 KVA xfmr	6	EA	7,540.00	45,240
Xfmr ground	14	EA	394.00	5,516
100A/3P/480v	3	EA	304.00	912
200A/3P/480v	3	EA	372.00	1,116
SFD 2500A @ 480v	1	EA	1,788.00	1,788
SPD panel mounted	39	EA	422.00	16,458
SPD grounds	40	EA	172.00	6,880
Elev controller	1	EA	144.00	144
100/100A/3P/480v	1	EA	339.00	339
30/20A/3P/208v	1	EA	218.00	218
TML 40	1	EA	204.00	204
100A/3/250v	1	EA	274.00	274
UPS system 24 kw	1	EA	24,880.00	24,880
Rigging for UPS	1	EA	2,432.00	2,432
EPO power off setup	1	EA	274.00	274
ST1 6500 guard	1	EA	127.00	127
Main service grounding	1	EA	822.00	822
Meter socket	1	EA	544.00	544
Main swbrd 3000A @ 480v	1	EA	40,896.00	40,896
Feeders	136,000	EA	1.95	265,200
Dist pnl 4DP1B-800A @ 480v	1	EA	7,248.00	7,248
Dist pnl 2DP1C-400A @ 208v	1	EA	5,160.00	5,160
Double tub pnl @ 120/208v	10	EA	3,890.00	38,900
Single tub pnl @ 120/208v	12	EA	2,752.00	33,024
400A-480v pnl	3	EA	5,072.00	15,216
225A-480v pnl	3	EA	3,052.00	9,156
100A-480v pnl	8	EA	2,688.00	21,504
60% CD Adders/Deletes:				
Integrated Electronic Security - 60% Adders/Deducts:				
Turnkey - Includes:	1	EA	27,000.00	27,000
Reader controller - add	1	EA		
Elevator controller - add	3	EA		
CR REX DC DC PS - add	1	EA		
CR DC REX PS - add	3	EA		
Wall motions - add	9	EA		
Ext. wall camera - add	1	EA		
Int. dome camera - add	1	EA		
Int. 180 deg - add	30	EA		
Ext. 180 deg - add	14	EA		
Int. 360 deg - deduct	-29	EA		
Ext. 360 deg - deduct	-9	EA		
VES - add	1	EA		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
VMS - deduct	-2	EA		
OHD - DC - add	2	EA		
Structured Cabling - 60% Adders/Deducts:				
Turnkey - Includes:	1	LS	97,000.00	97,000
IDE closets - reduced	-1	EA		
Teachers station - add	1	EA		
TVE - add	4	EA		
AN - add	115	EA		
N2D - delete	-7	EA		
2 Data - add	39	EA		
TVS-48	3	EA		
TVC-96	1	EA		
CAT 6A ports	1,135	EA		
48 Port patch ppls	15	EA		
P.A. & Intercom - 60% CD Adders:				
Turnkey - Includes:	1	LS	20,000.00	20,000
Speakers - add	41	EA		
Volume control - add	6	EA		
12" Clocks - add	8	EA		
Ext. flush horn spkrs - add	2	EA		
#of classrooms - reduced	-9	EA		
IDF closets - reduced	-1	EA		
Fire Alarm & Gear - 60% Adders/Deducts:				
FA - A/V w/ amber alert	7	EA	419.00	2,933
S - smoke w/base	3	EA	162.00	486
W WP - A/V - WP	1	EA	271.00	271
BB backbox	7	EA	53.20	372
BB WP backbox WP	1	EA	63.40	63
J - 4" oct	3	EA	33.80	101
AFC - #4901 cable	300	LF	4.46	1,338
MC - 14/4C red jacket	50	LF	2.64	132
Dist. pnl 2 DP1A - 600A @ 480	1	EA	7,248.00	7,248
Dist. pnl 2 DP1B - 600A @ 480	1	EA	7,248.00	7,248
Upsize ATS-LS from 150 to 200A	1	EA	1,144.00	1,144
Upsize ATS-OS from 400 to 600A	1	EA	3,216.00	3,216
Upsize G/S from 250kw to 300 kw	1	EA	5,500.00	5,500
Upsize G/S output d/b from 400 to 600A	1	EA	2,000.00	2,000
ESL storm sw w/feeder tie	1	EA	6,830.00	6,830
Power Wiring Devices - 60% Adders/Deducts:				
Duplex	105	EA	58.84	6,178
GFI duplex	23	EA	62.84	1,445



DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
WP GFI duplex	18	EA	94.00	1,692
NEMA CIS 3OR	1	EA	107.00	107
20A GFI - color	28	EA	71.84	2,012
Double duplex	42	EA	113.20	4,754
MC-10/3	60	LF	2.83	170
\$MC	2	EA	70.00	140
\$DW disc sw - DW	1	EA	82.00	82
J - dishwasher	1	EA	96.20	96
J - fume hood	1	EA	117.00	117
EF	2	EA	182.20	364
SEF	2	EA	182.20	364
KEF	1	EA	344.00	344
FEF	1	EA	344.00	344
DCU	2	EA	436.00	872
CPJ - bleacher power	1	EA	366.00	366
Scoreboard powe & cont.	1	EA	463.00	463
Turnkey - area of refuge AKA 2 way communication	1	LS	14,953.00	14,953
OH&P - 10%	1	LS	448,472.04	448,472
DJE	1	LS	150,000.00	150,000
				-----
				5,083,192
<b>TOTAL D50 - ELECTRICAL</b>	<b>\$37.21 /sf</b>			<b>5,083,192</b>

E. EQUIPMENT & FURNISHINGS

E10 - EQUIPMENT

E1010 COMMERCIAL EQUIPMENT

114000 FOOD SERVICE EQUIPMENT

Kitchen equipment & casework 1 LS 415,270.00 415,270

\*Kitchen equipment & casework Quote 7/19/2019

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415,270

E1090 OTHER EQUIPMENT

113100 APPLIANCES

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Custodian Storage Rm #1216: Stack washer/dryer	1	EA	2,500.00	2,500
Custodian Office/Break Rm (1 EA): Refrigerator -full size	1	EA	1,400.00	1,400
Staff Dinning Rm ( 1 ea): Refrigerator -full size Microwave	1	EA NIC	1,400.00	1,400
Medical Suite: Refrigerator -full size Microwave	1	EA NIC	1,400.00	1,400
SPED Classroom 1260 (12/A410): Range Refrigerator Washer Range hood Dryer Dishwasher	1 1 1	EA EA EA NIC NIC NIC	750.00 1,400.00 1,500.00	750 1,400 1,500
Kitchen washer and dryer				W / Kitchen Equipment
Science rm appliance				W / Science Equipment

### 116600 ATHLETIC & SPORTS EQUIPMENT

Main Gym: Basketball backstops - electric Wall padding Motor op divider curtain (51'x24')-allow Volley ball court equip. Scoreboard (2 EA Spec 116643) Wall Mtd Motor op Bleacher (qty noted) Batting cage RFI #16 - allow	6 861 1,224 2 650 1	EA SF SF PR SEAT EA	9,500.00 17.00 16.00 700.00 85.00 10,000.00	57,000 14,637 19,584 1,400 55,250 10,000
		W / Electrical		

\*Includes Sections 116623 - 116653

### 116143 THEATRICAL EQUIPMENT(No Spec)

Auditorium (6/28/2019 Quote 420 Seat)- Allow: Theatrical Rigging Theatrical Draperies Theatrical Lighting Instruments & Access. Theatrical Lighting Control System	1 1 1 1	LS LS LS LS	158,300.00 33,854.00 129,018.00 95,749.00	158,300 33,854 129,018 95,749
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Techonolgy and Local Sound:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Gym	1	EA	120,000.00	120,000
Café	1	LS	50,000.00	50,000
Aud Audio Visual System	1	LS	200,000.00	200,000
Band and Chorus Class	1	LS	60,000.00	60,000
Drama Class	1	LS	20,000.00	20,000
<u>129000 MISC FURNISHINGS</u>				
Auditorium fixed seat	321	EA	295.00	94,695
Removable auditorium seat	46	EA	125.00	5,750
Stackable auditorium seat	48	EA	125.00	6,000
*Includes Section 126100				
<u>115213 PROJECTION SCREENS</u>				
Projection Screen - Elec Op. - Allow:				
18' auditorium (spec)	1	EA	15,000.00	15,000
18' Café/Learning commons (clg plan)	1	EA	15,000.00	15,000
18' Gym (A453)	1	EA	15,000.00	15,000
Media center (spec)	2	EA	10,000.00	20,000
<u>119000 MISC. EQUIPMENT</u>				
Allow -Science Lab Classroom Equipment ( 6 EA):				
Safety glasses monitor case	6	EA	1,000.00	6,000
Glassware pegboards ( 1/RM) - allow	6	EA	350.00	2,100
Sgl sided fume hood #2210	1	EA	7,200.00	7,200
Dbl sided fume hood #2214	1	EA	9,500.00	9,500
First aid kit - allow	6	EA	300.00	1,800
OH track - equip support - allow		NIC		
Safety SHW		w/ plumbing		
Fire blanket	6	EA	500.00	3,000
Fire ext & cab ( 1/RM)	6	EA	425.00	2,550
Misc equipment	6	RM	500.00	3,000
Science Shared Prep Room Equipment ( 3 EA):				
Refrigerator - full size	3	EA	750.00	2,250
Dishwasher undercounter -allow	3	EA	1,100.00	3,300
Glassware pegboards (1 RM) - allow	1	EA	350.00	350
Misc equipment	3	RM	500.00	1,500
*Includes Sections 115300 - 115313				
Allow:				
Loading dock bumpers	1	LS	3,500.00	3,500
Kiln (11.38)	1	EA	4,000.00	4,000
Metal storage shelving		NIC		
Library equipment		NIC		
Power op changing table- Hoyer lift		NIC		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Vocational shop equipment(spec 115700) A420 Exhaust hood Tech Lab *Includes Sections 113100 & 115700	1	LS	25,000.00	25,000
				-----
				1,281,637
<b>TOTAL E10 - EQUIPMENT</b>				<b>1,696,907</b>

## E20 - FURNISHINGS

## E 2010 FIXED FURNISHINGS

122413 WINDOW TREATMENT

Allow:

Exterior Manual op Window Shade	15,166	SF	8.00	121,328
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Exterior Motor Op Shade-Allow:

Aud	362	SF	28.00	10,136
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Gym	844	SF	28.00	23,632
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Interior Roller Shade (4/A690):

Teacher prep rm	3,304	SF	6.50	21,476
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Door Manuel Shade

Single Door	111	EA	150.00	16,650
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Double Door	9	EA	300.00	2,700
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Interior Specialty Shade corr window(7'w x 8' Hx2"):

(10/A600)MDF bifold panel w/ writable surface	43	EA	1,500.00	64,500
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A312 Int panel grilles (Rulon)

W / B2020

\*Includes Sections 122400 - 122414

123550 CASEWORK

Utility & closet shelving	1	LS	10,000.00	10,000
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11" Typ Window sill (p lam w/ wd trim)		LF		0
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Solid surface lav ctr	243	LF	265.00	64,395
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Display Case ( 6/A401)	18	LF	1,000.00	18,000
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Art recess corridor #2000	1	LS	15,000.00	15,000
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Classroom Entry:

Corridor custom built-in bench (10/A621 5'w - 43 EA)	215	LF	400.00	86,000
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DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Corridor Locker Enclosure (nic mtl locker) - allow (7/A650):				
Freestanding	315	LF	320.00	100,800
Freestanding -guardrail	735	LF	320.00	235,200
Main Office 2nd Floor:				
Radial Reception counters	20	LF	650.00	13,000
Radial work island /work table	38	SF	165.00	6,270
Reception work ctr	10	LF	325.00	3,250
Tall storage unit 4'	3	EA	1,650.00	4,950
Mail unit wall cab	16	LF	750.00	12,000
Mail area work ctr	16	LF	250.00	4,000
Mobile storage cab (36"x27"h)	4	EA	1,200.00	4,800
Copier area work ctr	16	LF	250.00	4,000
Large conf base cab w/ctr	15	LF	450.00	6,750
Work space work ctr	16	LF	250.00	4,000
Library / Media Center (1 EA):				
Circulation desk - radial	11	LF	1,200.00	13,200
Book shelving sys - free standing		NIC		
8'6" Book shelving sys-perim fixed unit	55	LF	500.00	27,500
P. lam work ctr	27	LF	175.00	4,725
Mobile storage cab (36"x27"h)	6	EA	750.00	4,500
Science Lab Classroom ( 6 EA):				
Sink			w/ plumbing	
24" Epoxy ctr (no base cab (48.5LF/RM)	291	LF	295.00	85,845
24"H Epoxy backsplash ( 48.5 LF/RM)	582	SF	95.00	55,290
Mobile storage cab (36"wx27"h 8/RM)	48	EA	1,200.00	57,600
P lam Wall cab (10 LF/RM)	60	LF	210.00	12,600
Teachers demo table		NIC		
Student table		NIC		
Science Shared Prep Room ( 3 EA):				
Sink			w/ plumbing	
24" Epoxy ctr (no base cab )	54	LF	295.00	15,930
24"H Epoxy backsplash	109	SF	95.00	10,355
P lam Wall cab	30	LF	210.00	6,300
Mobile storage cab (36"wx27"h)	8	EA	1,200.00	9,600
Tech-Makerspace ( 1 EA):				
P. lam counter w/backsplash(no base cab)	39.5	LF	230.00	9,085
Mobile storage cab (36"x27"h)	7	EA	1,200.00	8,400
12" Adj. wall shelving	74	LF	42.00	3,108
Fab-lab ( 1 EA):				
P.lam Counter	40	LF	230.00	9,200
Mobile storage cab (36"x27"h)	6	EA	1,200.00	7,200
4 Tier shelving unit	10	LF	400.00	4,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
(6.81) Shadow relief 3D GFRG	4	EA	1,200.00	4,800
Art Class Room ( 1 EA):				
3' Tall storage cab	4	EA	1,550.00	6,200
Epoxy ctr (no base cab)	20.5	LF	295.00	6,048
24"H Epoxy backsplash	41	SF	95.00	3,895
Mobile storage cab (36"wx27"h)	1	EA	1,200.00	1,200
Class Closet ( 34 EA):				
12" MDO lowest Shelf w/ framing (4'6"/LOC)	153	LF	45.00	6,885
12" Shelving (4 tier- 18'/loc)	612	LF	42.00	25,704
Teacher Prep Room (24 EA):				
P Lam ctr w/ wd edge ( 11'/loc)	264	LF	230.00	60,720
12" MDO lowest Shelf w/ framing (9' LOC)	216	LF	45.00	9,720
12" Shelving (4 tier- 36'/loc)	864	LF	42.00	36,288
Typ, SPED & ELL Classroom (32 EA - A410):				
30" P Lam ctr w/ wd edge ( 12' 6"/loc)	400	LF	275.00	110,000
30" P Lam flip top ctr w/ wd edge ( 3'/loc)	96	LF	325.00	31,200
Mobile storage cab (36"wx27"h 3/RM)	96	EA	1,200.00	115,200
4 tier shelving unit (10' /loc)	320	LF	400.00	128,000
(6.81) Shadow relief 3D GFRG (3/rm)	96	EA	1,200.00	115,200
Music Classroom ( 2 EA):				
30" P Lam ctr w/ wd edge (16'/loc)	32	LF	275.00	8,800
Mobile storage cab (36"wx27"h 2/RM)	4	EA	1,200.00	4,800
Ext wall 4 tier shelving unit 8'6" - (1/loc)	17	LF	400.00	6,800
(6.81) Shadow relief 3D GFRG (2/rm)	4	EA	1,200.00	4,800
Drama Classroom ( 1 EA):				
30" P Lam ctr w/ wd edge	15	LF	275.00	4,125
24" P.lam backsplash	30	LF	250.00	7,500
Mobile storage cab (36"wx27"h)	2	EA	1,200.00	2,400
SPED Classroom #1260 ( Additional casework 1 EA):				
Sink ctr w/skirt	6	LF	300.00	1,800
24" P.lam backsplash	17	SF	25.00	425
SPED Classroom #2260 ( Additional casework 1 EA):				
42" Wall cab	15	LF	225.00	3,375
Sink ctr w/skirt	15	LF	300.00	4,500
20" P.lam backsplash	25	SF	25.00	625
Staff Lunch Room ( 1 EA):				
Base cab w/p.lam ctr	7.5	LF	425.00	3,188
Custodian Office (1 EA):				

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Work ctr	9	LF	165.00	1,485
Medical Suite (A425):				
Work ctr	15	LF	165.00	2,475
Wall cab	8	LF	200.00	1,600
Open wall cab	7	LF	225.00	1,575
Microwave shelf	3	LF	225.00	675
Aud Dressing room (2 EA):				
P.lam counter w/ backsplash(no base cab)	38	LF	225.00	8,550
Auditorium:				
P.lam AV ctr	8.5	LF	165.00	1,403
P.lam projector support	1	LOC	1,500.00	1,500
P lam low wall @ seating complete	89	LF	475.00	42,275
Guidance Suite (3 Loc):				
Base cab w/ctr	8	LF	350.00	2,625
Wall cab	15	LF	210.00	3,150
Misc. Casework Allowance:				
Misc Display Cases (19/A621)	1	LS	20,000.00	20,000
Trash/ recycle ctr	1	EA	10,000.00	10,000
Custom P lam radial bench - Corr #2000	38	SF	100.00	3,800
Cafeteria /Learning Commons - bench casework		NIC		
Common cohort - bench casework		NIC		
Music Practice rooms		NIC		
Music storage Lobby #1311		NIC		
Gymnasium		NIC		
3W Servery counter (6.45)		W/Kitchen Equipment & Casework		
SPED suite (3 loc)		NIC		
Breakout room		NIC		
Mobile Student table		NIC		
*Counter tops include manufactures wall brackets				
<u>129000 MISCELLANEOUS FURNISHING</u>				
Choral classroom risers		W/FFE		
Band classroom risers		W/FFE		
Stage risers		W/FFE		
				-----
				2,012,585
E2020 MOVABLE FURNISHINGS		NIC		

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
				----- 0
<b>TOTAL E20 - FURNISHINGS</b>				<b>2,012,585</b>

F. SPECIAL CONSTRUCTION & DEMOLITION

F10 - SPECIAL CONSTRUCTION

F1010 SPECIAL STRUCTURES		N/A		----- 0
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<b>TOTAL F10 - SPECIAL CONSTRUCTION</b>				<b>0</b>
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F20 - SELECTIVE BUILDING DEMOLITION

F2010 BUILDING ELEMENTS DEMOLITION		See Grand Summary		----- 0
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F2020 HAZARDOUS COMPONENTS ABATEMENT		See Grand Summary		----- 0
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<b>TOTAL F20 - SELECTIVE BUILDING DEMOLITION</b>				<b>0</b>
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G. BUILDING SITEWORK

G10 - SITE PREPARATION

G1010 SITE CLEARING

311000 SITE PREPARATION & CLEARING		w/ Early Site Package #1		----- 0
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DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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G1020 SITE DEMOLITION & RELOCATIONS

Building Removal SEE GRAND SUMMARY

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0

G1030 SITE EARTHWORK

310000 EARTHWORK

12" Soil @ plant bed ( 9,400 sf )	348	CY	52.00	18,096
3" Planting bed mulch	88	CY	60.00	5,280
6" Loam - Lawn ( 289,233 sf )	5,356	CY	53.00	283,868
8" Loam - Athletic Field ( 261,628 sf )	2,460	CY	53.00	130,380
Credit to amend existing soil	-5,900	CY	35.00	-206,500

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231,124

G1040 HAZARDOUS WASTE REMEDIATION

NIC

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0

<b>TOTAL G10 - SITE PREPARATION</b>				<b>231,124</b>
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G20 - SITE IMPROVEMENTS

G2010 ROADWAYS

321000 PAVING AND CURBING

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0

G2020 PARKING LOTS

\*Included with G2010

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0

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
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## G2030 PEDESTRIAN PAVING

033000 CAST IN PLACE CONCRETE

## Site Pavement:

Entry Stoop	200	SF	22.00	4,400
Concrete sidewalk	23,634	SF	8.30	196,162
Plaza Paving	2,879	SF	20.00	57,580

321000 PAVING AND CURBING

## Site Pavement:

8" Gravel Base	655	CY	34.00	22,270
HC tactile paver	10	EA	365.00	3,650

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284,062

## G2040 SITE DEVELOPMENT

033000 CAST IN PLACE CONCRETE

## Amphitheater Seating:

Amphitheater stair foundation	10	CY	1,100.00	11,000
Amphitheater stair tread	192	LF	135.00	25,920

## Ramp and Planter Walls:

Wall Footing	22	CY	475.00	10,450
12" Foundation Wall	75	CY	1,100.00	82,500
Ramp Slab	325	SF	12.00	3,900

## Site Stair:

Site stair foundation	25	CY	1,100.00	27,500
Site stair tread	296	LF	110.00	32,560

Bike Conc Pad	426	SF	25.00	10,650
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050001 MISCELLANEOUS & ORNAMENTAL IRON\*

## Amphitheater Seating:

Amphitheater stair rail	16	LF	300.00	4,800
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## Ramp and Planter Walls:

Railings	171	LF	250.00	42,750
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DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Site Stair:				
Site stair railing	86	LF	250.00	21,500
Decorative bollard - Entry #6/L3.0	42	EA	2,200.00	92,400
<u>323100 SITE IMPROVEMENTS</u>				
Gateway and Bandstand	carried w/ building cost			
<u>323100 SITE IMPROVEMENTS</u>				
Amphitheater Seating:				
Amphitheater earthwork	1	LS	15,000.00	15,000
Site Benches:				
Precast bench - wood top	40	LF	550.00	22,000
Ramp and Planter Walls:				
Ramp planter earthwork	1	LS	30,000.00	30,000
Bike loop	20	EA	675.00	13,500
8" Gravel Base	11	CY	45.00	495
Versa loc Block - avg 10' high ??	3,500	SF	42.00	147,000
Gravel Fill	350	CY	45.00	15,750
Filter Fabric	8,500	SF	1.10	9,350
Footing drain	360	LF	36.00	12,960
Allowance:				
Trash/recycle receptacle	10	EA	2,000.00	20,000
Entry sign	1	LS	30,000.00	30,000
Electronic school zone signals		NIC		
Parking/traffic signage	1	LS	7,500.00	7,500
Flag pole w/base	1	EA	7,200.00	7,200
				-----
				696,685

## G2050 LANDSCAPING

329000 PLANTING

Trees:

Sheet L2.0:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
AL Allegheny Serviceberry (2.5-3" cal)	12	EA	775.00	9,300
CK American Yellowwood (3-3.5" cal)	19	EA	900.00	17,100
FG American Beech (3-3.5" cal)	11	EA	900.00	9,900
NS Black Tupelo (3-3.5" cal)	8	EA	900.00	7,200
OA Sourwood (2.5-3" cal)	3	EA	775.00	2,325
PA London Plane Tree (3-3.5" cal)	24	EA	900.00	21,600
QP Pin Oak (3-3.5" cal)	7	EA	900.00	6,300
QR Red Oak (3-3.5" cal)	7	EA	900.00	6,300
Sheet L2.1:				
AC Shadblow Serviceberry (2.5-3" cal)	1	EA	775.00	775
AR Red Maple (3-3.5" cal)	6	EA	900.00	5,400
CK American Yellowwood (3-3.5" cal)	9	EA	900.00	8,100
LT Tulip Tree (3-3.5" cal)	8	EA	900.00	7,200
NS Black Tupelo (3-3.5" cal)	8	EA	900.00	7,200
Shrubs:				
CA Sweet Pepperbush (3.5-4' ht)	28	EA	215.00	6,020
HQ Oak Leaf Hydrangea (3-3.5' ht)	48	EA	200.00	9,600
HV Witch Hazel (7-8' B&B)	3	EA	450.00	1,350
IG Inkberry (4-4.5' ht)	62	EA	265.00	16,430
IV Winterberry (2.2.5' ht)	58	EA	185.00	10,730
JC Common Juniper (24" spd)	7	EA	85.00	595
JH Creeping Juniper (15-24" spd)	69	EA	50.00	3,450
JV Easter Red Cedar (7-8' ht)	26	EA	450.00	11,700
MG Sweetgale (3.5-4' ht)	40	EA	215.00	8,600
PF Pink Beauty Potentilla (24" spd)	13	EA	65.00	845
RA Grow Low Sumac (2-2.5' spd)	63	EA	80.00	5,040
RT Staghorn Sumac (3 gal)	13	EA	135.00	1,755
RV Virginia Rose (2.5-3' spd)	14	EA	80.00	1,120
VA Lowbush Blueberry (15-24" spd)	31	EA	50.00	1,550
VD Arrowwood (4-4.5' ht)	31	EA	265.00	8,215
VT Dwarf Cranberry Bush (3-3.5' ht)	12	EA	265.00	3,180
Groundcover:				
Sheet L2.0:				
CP Sweet Fern (1 gal)	1,402	EA	36.00	50,472
Sheet L2.1:				
CP Sweet Fern (1 gal)	970	EA	36.00	34,920
Rake , Seed, Fertilze New Lawns:				
Lawn	120,996	SF	0.26	31,459
Meadow Mix	143,741	SF	0.28	40,247
Pea Stone drip edge	996	SF	12.00	11,952
Sod	24,496	SF	1.10	26,946
Sports field	261,628	SF	0.30	78,488
Stone Dust - verify if used??	647	SF	4.00	2,588
Irrigate amphitheater lawn	23,074	SF	2.00	46,148

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Irrigation System- Repair/Replace	82,800	SF	1.00	82,800
				----- 604,900
<b>TOTAL G20 - SITE IMPROVEMENTS</b>				<b>1,585,648</b>

G30 - SITE MECHANICAL UTILITIES

G3010 WATER SUPPLY

330000 UTILITIES

w/ early site package #1

-----  
0

G3020 SANITARY SEWER

330000 UTILITIES

w/ early site package #1

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0

G3030 STORM SEWER

330000 UTILITIES

w/ early site package #1

-----  
0

G3060 FUEL DISTRIBUTION

330000 UTILITIES

w/ early site package #1

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0

G3090 OTHER SITE MECHANICAL UTILITIES

N/A

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0

<b>TOTAL G30 - SITE MECHANICAL UTILITIES</b>				<b>0</b>
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DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
G40 - SITE ELECTRICAL UTILITIES				
G4010 ELECTRICAL DISTRIBUTION				
Generator Pad	200	SF	25.00	5,000
Transformer pad	200	SF	25.00	5,000
<u>260001 ELECTRICAL*</u>				
Sitework:				
PRI manhole dressing	1	EA	1,576.00	1,576
Utility pole PRI & FA dressing	1	EA	1,364.00	1,364
Utility pole commun. dressing	1	EA	1,076.00	1,076
Gen/set pad grndg	1	EA	982.00	982
Xfmr pad grndg	1	EA	1,376.00	1,376
Gen/set pad 90 deg. & sleeves	1	EA	566.00	566
Xfmr pad 90 deg. & sleeves	1	EA	688.00	688
Duct Bank CC:				
PVC-4"C - w/PS (120')	600	LF	4.38	2,628
PVC-1"C- w/4#12	480	LF	3.62	1,738
Duct Bank AA:				
PVC-4"C - w/PS (270')	540	LF	4.38	2,365
Duct Bank BB:				
PVC-4"C - w/PS (110')	770	LF	4.38	3,373
Duct Bank FF:				
PVC-4"C - w/PS (120')	240	LF	4.38	1,051
Duct Bank Fire Alarm:				
PVC-2"C - w/PS (300')	300	LF	2.06	618
IMSA 20-5 cable	350	LF	3.44	1,204
Duct Bank DD (230'):				
PVC-4"C - w/PS	920	LF	4.38	4,030
Inner duct 1 1/4"C- w/PS	690	LF	2.64	1,822
Ext camera on 20' pole	3	EA	5,470.00	16,410
Fiber optic w/PVC	1,000	LF	5.88	5,880
Pole foundation	3	EA	1,326.00	3,978
Electrical Manhole	2	EA	8,500.00	17,000
OH&P - 10%	1	LS	6,972.38	6,972

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
DJE	1	LS	20,000.00	20,000
				-----
				106,696
G4020 SITE LIGHTING				
<u>330000 UTILITIES</u>				
Site light trenching	10,500	LF	18.50	194,250
Trench, Backfill and Concrete: Electric Ductbank	1,150	LF	76.00	87,400
<u>260001 ELECTRICAL*</u>				
Lighting Fixtures:				
SL1 - 20' pole	37	EA	2,676.00	99,012
SL3 - poulsen bollard	9	EA	1,812.00	16,308
SL4 - egress perimeter ltg	21	EA	616.00	12,936
SL5 - in ground bega	16	EA	791.00	12,656
SL6 - bega flood w/remote driver	0	EA	0.00	0
SL10 - mini flood	0	EA	0.00	0
SL1A - 20' pole	4	EA	2,676.00	10,704
SL3 - wall mtd area lt - MV	4	EA	544.00	2,176
HH 12x12x12"d in gr p.box	3	EA	638.00	1,914
PB 17"x30"x12"d	12	EA	648.00	7,776
PB-24"x36"x24"d w/divider	2	EA	788.00	1,576
EV charging station - level 2	3	EA	3,754.00	11,262
J 8x8x4 inter j-box	3	EA	74.00	222
T/C 7 dy w/batt pack	1	EA	666.00	666
Pipe into & wire to exist pnl	1	EA	144.00	144
Demo exist pole w/fixt	4	EA	576.00	2,304
Penetrate m bay gym	1	EA	338.00	338
Relocated emer call box	2	EA	926.00	1,852
Call box base setup	2	EA	241.00	482
MC-12/2 w/G-fished	540	EA	1.99	1,077
PVC-1"C-3#8	9,320	EA	3.99	37,187
Pole base anchor bolts	48	EA	54.00	2,592
Pole base grounding	48	EA	162.00	7,776
Pole base sleeves & 90 deg	48	EA	137.00	6,576
Bollard base setups	42	EA	122.00	5,124
In ground hsg setups	16	EA	112.00	1,792
PVC-2 1/2"C-w/PS	1,500	EA	3.33	4,989
PVC-2"C-w/PS	620	EA	2.77	1,717
WP pedestal mtd Wayne Tyler CB box	5	EA	1,926.00	9,630

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Site - 60% Deducts:				
SL5 - Bega - in ground - delete	-11	EA	791.00	-8,701
SL4 - ext. pak - delete	-6	EA	616.00	-3,696
J WP - wall back box -WP- delete	-6	EA	43.00	-258
SL3 - poulson (bollard ) - delete	-18	EA	1,812.00	-32,616
PVC-1"C-3#8 - delete	-1,080	EA	3.99	-4,309
Bollard base setups - delete	-18	EA	122.00	-2,196
SL10 - in grade tree ltg - add	12	EA	816.00	9,792
Exist. ltg pole to demo - delete	-4	EA	576.00	-2,304
SL1 - 20' pole - delete	-10	EA	2,676.00	-26,760
SL1A - 20' pole - delete	-4	EA	2,676.00	-10,704
SL3 - wall mtd area lt- delete	-4	EA	616.00	-2,464
MC-12/2 - fished - delete	-540	EA	1.99	-1,077
8"x8"x4" interior j.box - delete	-3	EA	74.00	-222
T/C - 7 day w/batt pak - delete	-1	EA	666.00	-666
Penetrate M bay gym - delete	-1	EA	338.00	-338
PVC-1"C-3#8 - delete	-1,400	EA	3.99	-5,586
Pole base anchor bolts - delete	-14	EA	54.00	-756
Pole base grounding - delete	-14	EA	162.00	-2,268
Pole base sleeves & 90 degs - delete	-14	EA	137.00	-1,918
OH&P - 10%	1	LS	26,078.80	26,079
				-----
				471,470
<b>TOTAL G40 - SITE ELECTRICAL UTILITIES</b>				<b>578,166</b>



PROJECT: Fuller Middle School  
 LOCATION: Framingham, MA  
 CLIENT: SMMA Architects  
 DATE: 26-Jul-19

**EARLY SITE PACKAGE**

No.: 16056

**SUMMARY**

	<u>TOTAL</u>	<u>PERCENT OF PROJECT</u>
A. SUBSTRUCTURE		
A10 - FOUNDATIONS		
A1010 STANDARD FOUNDATIONS	1,304,941	15%
A1030 SLAB ON GRADE	80,648	1%
G. BUILDING SITEWORK		
G10 - SITE PREPARATION		
G1010 SITE CLEARING	756,447	9%
G1020 SITE DEMOLITION & RELOCATIONS	0	0%
G1030 SITE EARTHWORK	4,028,360	46%
G1040 HAZARDOUS WASTE REMEDIATION	0	0%
G20 - SITE IMPROVEMENTS		
G2010 ROADWAYS	1,397,932	16%
G2020 PARKING LOTS	0	0%
G2030 PEDESTRIAN PAVING	86,263	1%
G2040 SITE DEVELOPMENT	40,950	0%
G2050 LANDSCAPING	0	0%
G30 - SITE MECHANICAL UTILITIES		
G3010 WATER SUPPLY	136,110	2%
G3020 SANITARY SEWER	95,780	1%
G3030 STORM SEWER	640,443	7%
G3040 HEATING DISTRIBUTION	0	0%
G3050 COOLING DISTRIBUTION	0	0%
G3060 FUEL DISTRIBUTION	17,428	0%
G3090 OTHER SITE MECHANICAL UTILITIES	0	0%
G40 - SITE ELECTRICAL UTILITIES		
G4010 ELECTRICAL DISTRIBUTION	125,750	1%
G4020 SITE LIGHTING	0	0%
G4030 SITE COMMUNICATIONS & SECURITY	0	0%
G4090 OTHER SITE ELECTRICAL UTILITIES	0	0%
G90 - OTHER SITE CONSTRUCTION		
G9010 SERVICE AND PEDESTRIAN TUNNELS	0	0%
G9090 OTHER SITE SYSTEMS	0	0%
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TOTAL DIRECT COST	8,711,050	100%

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<u>A. SUBSTRUCTURE</u>				
A10 - FOUNDATIONS				
A1010 STANDARD FOUNDATIONS				
<u>310000 EARTHWORK</u>				
Ground Improvements:				
Geopiers	74,000	FTP	10.50	777,000
Rigid Inclusion towards RB - 1 and RB - 2	1	LS	50,000.00	50,000
Foundation Earthwork:				
Surcharge Bldg Footprint	1	LS	300,000.00	300,000
Excavate Footings	3,000	CY	15.00	45,000
Backfill Foundation	1,400	CY	15.00	21,000
Slab Fill	2,000	CY	28.00	56,000
Dewatering	1	LS	25,000.00	25,000
Foundation drain (1/S300)	120	LF	38.00	4,560
<u>072100 INSULATION</u>				
2" Rigid found. insul - ret. wall	1,360	SF	3.20	4,352
2" Rigid found. insul - frost wall	6,884	SF	3.20	22,029
				-----
				1,304,941
A1030 SLAB ON GRADE				
<u>310000 EARTHWORK</u>				
12" Gravel base - SOG	2,372	CY	34.00	80,648
				-----
				80,648

G. BUILDING SITEWORK

G10 - SITE PREPARATION

G1010 SITE CLEARING

311000 SITE PREPARATION & CLEARING

Phase One:

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Jersey barriers	1,533	LF	75.00	114,975
Temp pavement	98,683	SF	1.50	148,025
Phase 1 - Grading & Drainage				
Erosion control	701	LF	7.50	5,258
Site prep	101,316	SF	0.20	20,263
Phase 2 - Grading & Drainage:				
Temp erosion basin Eroison control	307	LF	15.00	4,605
Construction entrance	1	EA	7,500.00	7,500
Construction fence	3,200	LF	12.00	38,400
Erosion control	2,500	LF	6.00	15,000
Drain inlet protection	25	EA	50.00	1,250
Erosion control maintenance	1	LS	15,000.00	15,000
Strip & stack top soil - 6"	5,900	CY	9.25	54,575
Selective Clear and Grub	1	LS	20,000.00	20,000
Saw cut walk	25	LF	5.00	125
Saw cut drive	25	LF	5.00	125
Site - Remove Existing:				
Cut and Cap	1	LS	5,000.00	5,000
Sanitary and Drain pipe	1,435	LF	35.00	50,225
Water Line	900	LF	31.00	27,900
Utility structures	10	EA	425.00	4,250
Wood guardrail	300	LF	15.00	4,500
Bit walk	201,786	SF	0.85	171,518
Conc. walk	14,967	SF	1.00	14,967
Bit Walkway	8,874	SF	0.90	7,987
Misc. site demolition	1	LS	25,000.00	25,000
				-----
				756,447

G1020 SITE DEMOLITION & RELOCATIONS

311000 SITE DEMOLITION AND REMOVAL

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0

G1030 SITE EARTHWORK

310000 EARTHWORK

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Phase 1/2:				
Site Cut	2,847	CY	12.00	34,164
Stockpile cut	2,847	CY	10.00	28,470
Site Fill - supply	15,810	CY	18.00	284,580
Phase 3:				
Site Cut	21,721	CY	10.25	222,640
Site Fill - reuse mat'l	21,721	CY	11.00	238,931
Site Fill - supply	18,000	CY	18.00	324,000
Site Rough Grading	101,781	SY	2.30	234,096
Layout, Mobilization, Supervision	1	LS	250,000.00	250,000
Temp Drainage		N/A		
Dust Control	1	LS	10,000.00	10,000
Street Sweeping	1	LS	10,000.00	10,000
Surcharge Amphitheater	1	LS	200,000.00	200,000
Soils	1	LS	2,118,778.00	2,118,778
Soil Management:				
Dispose of contaminated soil - less than RCS - 1	2,550	TONS	14.00	35,700
Dispose of contaminated soil - unlined	850	TONS	40.00	34,000
Add New Site Fill	4,000	CY	0.75	3,000
				-----
				4,028,360
G1040 HAZARDOUS WASTE REMEDIATION				
		NIC		-----
				0
<b>TOTAL G10 - SITE PREPARATION</b>				<b>4,784,806</b>

G20 - SITE IMPROVEMENTS

G2010 ROADWAYS

Phase 1:				
Bit pavement - parking and drive	8,147	SY	27.50	224,043
Raised Road Pavement w/ stamped finish	10,500	SF	15.00	157,500
12" Gravel base	2,715	SY	32.00	86,880
PCC- RAD	320	LF	32.00	10,240
PCC - straight	1,130	LF	26.00	29,380

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SGC - straight	189	LF	39.50	7,466
VGC - RAD	79	LF	46.00	3,634
VGC - straight	365	LF	42.00	15,330
Line Painting	1	LS	5,000.00	5,000
Phase 2:				
Bit pavement	182	SF	30.00	5,460
12" Gravel base	61	SY	35.00	2,135
Base:				
Bit firelane pavement	1,685	SY	27.00	45,495
Bit pavement	14,204	SY	27.00	383,508
12" Gravel base	5,296	CY	32.00	169,472
VGC radial	1,646	LF	46.00	75,716
VGC straight	2,297	LF	42.00	96,474
Line Painting	1	LS	7,500.00	7,500
Street Patch at New Curb	1,154	LF	50.00	57,700
Pavement patch @ utilities	1	LS	15,000.00	15,000
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				1,397,932

G2020 PARKING LOTS

\*Included with G2010

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0

G2030 PEDESTRIAN PAVING

321000 PAVING AND CURBING

Phase 1:				
Bit sidewalk	5,718	SF	2.90	16,582
8" Gravel Base	141	CY	34.00	4,794
Base:				
Bit sidewalk	1,056	SY	26.10	27,562
Bit conc sidewalk	9,752	SF	2.90	28,281
8" Gravel Base	266	CY	34.00	9,044
				-----
				86,263

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
<b>G2040 SITE DEVELOPMENT</b>				
Vehicular guardrail	420	LF	65.00	27,300
Utility Bollard	13	EA	1,050.00	13,650
				-----
				40,950
<b>G2050 LANDSCAPING</b>				
				-----
				0
<b>TOTAL G20 - SITE IMPROVEMENTS</b>				<b>1,525,145</b>

**G30 - SITE MECHANICAL UTILITIES**

**G3010 WATER SUPPLY**

**330000 UTILITIES**

**Phase 1 - Grading & Drainage**

2" Water	21	LF	70.00	1,470
6" Water	168	LF	92.00	15,456
CTE water	5	EA	3,000.00	15,000
Fire hydrant	3	EA	2,250.00	6,750
6" Gate Valve	4	EA	1,400.00	5600
Misc Valves	4	EA	1,400.00	5600

**Phase 2 - Grading & Drainage:**

2" Water line	147	LF	62.50	9,188
6" Water line	717	LF	88.00	63,096
Fire hydrant	1	EA	2,250.00	2,250
6" Gate Valve	1	EA	1,400.00	1400
Misc Valves	2	EA	1,400.00	2800
Site Connection	1	LOC	7,500.00	7,500

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136,110

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
G3020 SANITARY SEWER				
330000 UTILITIES				
Phase 2 - Grading & Drainage:				
8" PVC san	606	LF	80.00	48,480
Sewer manhole	3	EA	4,100.00	12,300
EGI-1	1	EA	12,500.00	12,500
Acid Waste tank	1	LS	15,000.00	15,000
Exist. sanitary manhole - site conn.	1	EA	7,500.00	7,500
				-----
				95,780
G3030 STORM SEWER				
330000 UTILITIES				
Phase 1 - Grading & Drainage				
12" HDPE	33	LF	76.00	2,508
18" HDPE	531	LF	94.00	49,914
24" HDPE	63	LF	145.00	9,135
30" HDPE	10	LF	210.00	2,100
6" PVC	45	LF	62.50	2,813
Catch Basin	6	EA	2,100.00	12,600
CTE drainage	1	EA	4,000.00	4,000
Cut & patch existing parking lot	431	LF	50.00	21,550
Drain man hole	3	EA	4,100.00	12,300
Head wall	1	LS	6,500.00	6,500
STC 6000	1	EA	60,000.00	60,000
STC 3600	1	EA	30,000.00	30,000
STC 450i	2	EA	11,500.00	23,000
Phase 2 - Grading & Drainage:				
12" HDPE	154	LF	76.00	11,704
Catch Basin	2	EA	4,100.00	8,200
Temp drain line	282	LF	100.00	28,200
Phase 3 ( per revised plane 4 /17/19):				
12" HDPE	262	LF	76.00	19,912
15" HDPE	665	LF	84.00	55,860
18" HDPE	152	LF	94.00	14,288
24" HDPE	305	LF	145.00	44,225
30" HDPE	537	LF	182.00	97,734
Catch Basin	10	EA	4,100.00	41,000

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
CB Conversion	1	EA	1,200.00	1,200
Drain Manhole	9	EA	4,100.00	36,900
Head Wall	1	EA	7,500.00	7,500
Outfall wier construction	1	LS	5,000.00	5,000
Infiltration field	1,292	SF	25.00	32,300
*EXCLUDES WORK SOUTH OF FLAGG DRIVE				-----
				640,443

G3060 FUEL DISTRIBUTION

330000 UTILITIES

Phase 2 - Grading & Drainage:

Gas trench	311	LF	48.00	14,928
Gas Pipe		By utility		
Service Meter Pad	1	EA	2,500.00	2,500
				-----
				17,428

<b>TOTAL G30 - SITE MECHANICAL UTILITIES</b>				<b>889,760</b>
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G40 - SITE ELECTRICAL UTILITIES

G4010 ELECTRICAL DISTRIBUTION

330000 UTILITIES

330000 UTILITIES

Light Pole base - 12' Precast	37	EA	1,350.00	49,950
Temporary Electrical Service	1	LS	75,800.00	75,800
				-----
				125,750