



# Massachusetts School Building Authority

**Deborah B. Goldberg**  
*Chairman, State Treasurer*

**James A. MacDonald**  
*Chief Executive Officer*

**John K. McCarthy**  
*Executive Director / Deputy CEO*

September 27, 2019

Ms. Alicia Cannon  
Northbridge Board of Selectmen  
Northbridge Town Hall  
7 Main Street  
Whitinsville, MA 01588

Re: Town of Northbridge, W. Edward Balmer Elementary School

Dear Ms. Cannon:

The Massachusetts School Building Authority (the "MSBA") is forwarding review comments of the 90% Construction Documents submission for the W. Edward Balmer Elementary School Project in the Town of Northbridge, received by the MSBA on September 6, 2019.

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

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

Sincerely,



Karl Brown, AIA  
Design Director

Attachment: 90% Construction Documents Review Comments

Cc: Legislative Delegation  
Adam Gaudette, Northbridge Town Manager  
James J. Athanas, Chair, Northbridge Board of Selectmen  
Michael LeBrasseur, Chair, Northbridge School Committee  
Amy McKinstry, Superintendent, Northbridge Public Schools  
Melissa Walker, Director of Business and Finance, Northbridge Public Schools

Page 2

September 27, 2019

Northbridge 90% Submission Review Comments

Joseph Strazzula, Chair, Northbridge School Building Committee

Joel G. Seeley, Owner's Project Manager, Symmes Maini & McKee Associates, Inc.

Lee P. Dore, Designer, Dore & Whitter Architects, Inc.

File: 10.2 Letters (Region 2)

## **APPENDIX 6C**

### **MODULE 6 – 90% CONSTRUCTION DOCUMENTS REVIEW COMMENTS**

**District:** Town of Northbridge

**School:** West Balmer Elementary School

**Owner's Project Manager:** SMMA

**Designer Firm:** Dore & Whittier Architects, Inc.

**Submittal Received Date:** September 6, 2019

**Review Date:** September 9–27, 2019

**Reviewed by:** Gienapp Architects, K. Brown, K. Sullivan, R. Hudson

---

#### **MSBA REVIEW COMMENTS**

The following comments<sup>1</sup> on the 90% construction documents submittal are issued pursuant to a review of the project submittal document for the new construction of the proposed project and presented as a 90% construction documents submission in accordance with the MSBA Module 6 Guidelines.

##### **6C.1 Summary Comments**

- Basic Project Information.
  - *Enrollment: Grades K-5 with an enrollment of 1,030 students, plus Pre-K (90 students)*
  - *PFA GSF: 167,352*
  - *Project Type: New construction*
  - *Construction Delivery Method: Construction Manager at Risk (Fontaine Brothers Inc.)*
- Budget comments:
  - *The total project budget per the PFA is \$100,968,194, and the information provided in the 90% CD Updated Total Project Budget indicates \$100,968,194.*
  - *The construction cost estimates are \$79,401,426 (CMR's estimate by Fontaine Bros., Inc.) and \$79,181,034 (Designer's estimate by PM&C).*
  - *The construction budget per the PFA is \$79,492,663, and the information provided in the Updated Total Project Budget confirms that the construction cost of \$79,401,426 is within budget.*

---

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

- Additional comments:
  - *The technical attributes of the exterior wall sections and details require additional Designer review. These are noted in the specification and drawing notes below. The concerns are primarily related to potential breaches in the continuity of insulation, the limitations in the workability of materials (e.g. rigid insulation and mineral wool) and the limited construction tolerances accommodated by the details. The details should be reviewed and consideration should be given to a final quality control review and updating of the details before being issued to bid to avoid the necessity to issue revisions during construction.*

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

#### **6C.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.
- Coordinate design; include written recommendations to the Owner.
  - Technical accuracy, coordination & clarity.
  - Efficiency & cost effectiveness.
  - Operability.
  - Constructability.
  - Phasing.
  - Bid-ability.
  - Site access during construction.
- Coordinate the commissioning consultant's review.
  - Include Cx review & District response.
  - Incorporate Cx recommendations.
- Coordinate the District response to MSBA comments of previous submittal.
  - Include MSBA review & District response.
  - Comments addressed / comment resolution outstanding.

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

Update project schedule: As a minimum, the schedule update should provide the same level of detail as was included in Exhibit C of the Project Funding Agreement, expanded and updated to include milestones for Design Development, Bidding, Construction, and Closeout. The updated schedule should include proposed critical path and construction milestone information. In addition to the construction milestones, the schedule must also include the following information as listed in MSBA Module 7, Schedule Activities:

- Punch list start and end dates.
- Date of Project Registration with the US Green Building Council ("USGBC") or Collaboration for High Performance Schools ("CHPS").

- Provisional/Design package submittal date to USGBC or CHPS.
- Submittal date of 50% DCAMM Notification and 100% DCAMM Notification.
- General Contractor/Construction Manager request for final payment.
- Commissioning Consultant inspection (substantial completion plus approximately 10 months).
- Submittal date of Final Commissioning Report to MSBA.
- Submittal date of Final Construction package including but not limited to Final Commissioning Report to USGBC or CHPS.
- Anticipated issuance date of final Green School Program Certification letter from USGBC or CHPS.
- Submittal date to MSBA of Commissioning Certificate of Completion
- Submittal date to MSBA of final reimbursement request.
- Indicate submission dates for the following approvals. In addition, provide dates for any other state or federal approval not listed below (the following list is not a comprehensive itemization of required state approvals; other requirements may apply, and some of the items listed below may not be applicable to this project). Indicate "Not Applicable" where appropriate:
  - 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.
  - Executive Office of Energy and Environmental Affairs / EEA:
    - MEPA - MA Environmental Policy Act by Energy & Environmental Affairs:
      - ENF - Environmental Notification Form. *The submission indicates this is not applicable.*
      - EIR - Environmental Impact Report. *The submission indicates this is not applicable.*
    - Article 97 Land Disposition Policy approval by Energy & Environmental Affairs. *The submission indicates this is not applicable.*
  - MA DEP - Massachusetts Department of Environmental Protection. *The submission indicates this is not applicable.*
  - MA DOT - Massachusetts Department of Transportation. *The submission indicates this is not applicable.*
  - MA DPH - Massachusetts Department of Public Health. *The submission indicates this is not applicable.*
  - EPA –NPDES National Pollutant Discharge Elimination System Notice of Intent approval by the US Environmental Protection Agency.
  - MAAB – Accessibility variances by MA Architectural Access Board. *The submission indicates this is not applicable.*

- Any state reviews or approvals which remain incomplete at the time of the 90% CD submission render the submission out of compliance with Section 4.12 of the PFA, and may result in suspension of reimbursement requests to the District until such time as all required state reviews or approvals are obtained.
- If there are outstanding reviews or approvals, provide revisions to the construction bid schedule.
- The schedule is to be updated and submitted to MSBA as often as is required to reflect any changes, including any changes to milestone dates, but must be submitted with each design submittal (DD, 60% CD, 90% CD).
- The schedule is to incorporate 21 calendar day required duration for MSBA review of each submission, and a minimum of 14 calendar days for project team incorporation of MSBA review comments as well as all others into the project documents prior to the due date of the next submission or finalizing project documents for bidding. 35 calendar days for each submission is the minimum acceptable duration; if the project team believes additional time is required for any or all of the submissions the durations for these activities are to be increased accordingly.

### **6C.2.3 Scope and Budget**

- Update 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. *Included, however, the comparison spreadsheet does not include escalation to mid-point of construction. This should be reviewed, updated, and provided with the response to these comments.*
  - CMR (if applicable).
    - If Owner has not yet contracted with a Construction Manager (CM), the OPM must develop a construction cost estimate for comparison with the Designer's cost estimate.
    - If the Owner has given the CM a Notice to Proceed, the OPM must review cost estimates provided by the Designer and CM and provide a detailed line by line reconciliation of the Designer's and CM's construction cost estimates.
  - 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.
  - Value Engineering recommendations. *The submission indicates these are not required.*

- For any Value Engineering recommendations which have been accepted, provide a copy of the Committee vote. *See previous note.*
- Provide a letter confirming that prequalification requirements for the General Contractor and subcontractors have been completed.

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

#### **6C.3.1 General Requirements**

- Submit updated work plan. *The work plan is dated June 18, 2019, so it is unclear whether it is the most current/updated iteration. Clarify in the response to these comments.*
- Updated and expanded Basis of Design narrative description for all disciplines. *Included, however, the majority of narratives do not have dates, making it difficult to verify how current they may be. The Architectural Narrative is dated August 15, 2019, and is labelled "draft." Please clarify if the version provided to MSBA is indeed the most current Basis of Design narrative, and if not, provide the most recent version.*
- Updated building code analysis. *Included, however, the code analysis is not dated and thus it is unclear how recent it is. Please clarify if the version provided to MSBA is indeed the most current code analysis, and if not, provide the most recent version.*
- Provide an final list identifying all proposed proprietary items (if any) with an affidavit which shall indicate that an elected body of the district (school committee, city or town council, or selectmen, -but not 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 it is in the public interest to do so. Provide MSBA with a certified copy of the vote of the elected body.
- Updated 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.
- Updated independent structural design review in compliance with the current edition of The Massachusetts State Building Code (an MSBA requirement for all projects with new construction over 10,000 sf). MSBA requires submission of a structural engineering peer review as part of the Final (100%) Construction Documents submission, to include documentation of resolution of any issues identified by the Peer Reviewer. Confirm that scheduling was arranged to allow final structural design drawings and calculations to be submitted to the peer reviewer at the time of completion of the 90% Construction Documents submittal, in order to incorporate structural peer review comments and response action reporting in the final construction documents in order to avoid delays. *The submission indicates that a peer*

*review was completed by RSV Associates on July 16, 2019, and that the review comments were incorporated into the project's Early Release Package #2. Confirm in the response to this review and provide a copy of the peer review as part of the response to these review comments.*

- Updated quality Control documents demonstrating:
  - Ceiling clearances.
  - Mechanical room and shaft sizes.
  - Coordinate specifications and drawings.
  - Filed sub-bid work.
  - Scheduling.
  - Equipment and power.
  - Existing and new construction.
  - Phasing.

### 6C.3.2 Space Summary

- Updated space summary and signed certification that reflects the current design. *Based on the space summary provided, the MSBA notes the following:*

<u>Spaces</u>	<u>PFA Space Summary</u>	<u>DD Space Summary</u>	<u>60% CD Space Summary</u>	<u>90% CD Space Summary</u>	<u>Difference to PFA</u>	<u>Comments</u>
Core Academic Spaces	62,850	62,850	62,850	62,850	-	This category has not changed since the PFA.
Special Education	13,530	13,530	13,530	13,530	-	This category has not changed since the PFA.
Art and Music	5,150	5,150	5,150	5,150	-	This category has not changed since the PFA.
Health and Physical Education	6,298	6,298	6,298	6,298	-	This category has not changed since the PFA.
Media Center	5,305	5,305	5,305	5,305	-	This category has not changed since the PFA.
Dining and Food Service	11,955	11,955	11,955	11,955	-	This category has not changed since the PFA.
Medical	810	810	810	810	-	This category has not changed since the PFA.
Administration and Guidance	3,040	3,040	3,040	3,040	-	This category has not changed since the PFA.
Custodial and Maintenance	2,630	2,630	2,630	2,630	-	This category has not changed since the PFA.
Other					-	



<b>Total Building Net</b>	<b>111,568</b>	<b>111,568</b>	<b>111,568</b>	<b>111,568</b>	<b>-</b>	<b>This category has not changed since the PFA.</b>
<b>Non Programmed</b>						
Other Occupied Rooms						
IT Office/Repair	150	150	338	150		This category aligns with the PFA.
Unoccupied MEP/FP	2,125	2,008	1,824	2,006	(119)	This category has decreased by 119 nsf since the PFA.
Unoccupied Closets, Supply Rooms & Storage	641	646	625	629	(12)	This category has decreased by 12 nsf since the PFA.
Toilet Rooms	3,955	3,937	3,943	3,991	36	This category has increased by 36 nsf since the PFA.
Circulation	29,396	31,893	30,580	31,421	2,025	This category has increased by 2,025 nsf since the PFA.
Remaining	19,517	17,150	18,474	17,587	(1,930)	This category has decreased by 1,930 nsf since the PFA.
<b>Total Gross</b>	<b>167,352</b>	<b>167,352</b>	<b>167,352</b>	<b>167,352</b>	<b>-</b>	
<b>Grossing Factor</b>	<b>1.50</b>	<b>1.50</b>	<b>1.50</b>	<b>1.50</b>	<b>-</b>	

- 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.
  - Regarding DESE approved SPED spaces – *No changes to DESE approved SPED spaces are proposed.*
  - Regarding DESE approved Public Day Education spaces; *Not Applicable per the submission.*
  - Regarding DESE pre-approved Chapter 74 Program spaces; *Not Applicable per the submission.*

### 6C.3.3 Project Approvals

- Describe the status of the following approvals. In addition, provide the status of any other state or federal approval not listed below (the following list is not a comprehensive itemization of required state approvals; other requirements may apply, and some of the items listed below may not be applicable to this project). Provide a copy of the appropriate application forms and/or approval letters where applicable. Indicate "Not Applicable" where appropriate:
  - DESE - Special Education approval by Department of Elementary and Secondary Education. *The submission indicates that this approval has been obtained. However, no approval letter or application form is*

- included in the submission. This should be provided with the response to these comments.*
- MHC – Project Notification Form and approvals by MA Historical Commission. *The submission indicates that this approval has been obtained. However, no approval letter or application form is included in the submission. This should be provided with the response to these comments.*
  - OIG - Construction Manager at Risk approval by the Office of Inspector General. *The submission indicates that this approval has been obtained. However, no approval letter or application form is included in the submission. This should be provided with the response to these comments.*
  - Executive Office of Energy and Environmental Affairs / EEA:
    - MEPA - MA Environmental Policy Act by Energy & Environmental Affairs:
      - ENF - Environmental Notification Form. *The submission indicates this is not applicable.*
      - EIR - Environmental Impact Report. *The submission indicates this is not applicable.*
    - Article 97 Land Disposition Policy approval by Energy & Environmental Affairs. *The submission indicates this is not applicable.*
  - MA DEP - Massachusetts Department of Environmental Protection. *The submission indicates this is not applicable.*
  - MA DOT - Massachusetts Department of Transportation. *The submission indicates this is not applicable.*
  - MA DPH - Massachusetts Department of Public Health. *The submission indicates this is not applicable.*
  - EPA –NPDES National Pollutant Discharge Elimination System Notice of Intent approval by the US Environmental Protection Agency. *The submission indicates that this approval has been obtained. However, no approval letter or application form is included in the submission. This should be provided with the response to these comments.*
  - MAAB - Accessibility variances by MA Architectural Access Board. *The submission indicates this is not applicable.*
  - Confirmation that the Project has undergone review and obtained all necessary approvals by any departments or agencies of the Commonwealth required by law to review the Project, including but not limited to the approvals listed above. Attach such letter of documentation evidencing such reviews and approvals. *Confirmed, however, no documentation letter is provided for relevant reviews and approvals. This should be provided with the response to these comments.*
  - In accordance with Section 4.12 of the Project Funding Agreement (the “PFA”), the District must obtain such reviews or approvals prior to the solicitation of construction bids. Any state reviews or approvals which remain incomplete at the time of the 90% CD submission render the submission out of compliance with Section 4.12 of the PFA, and may result in suspension of

reimbursement requests to the District until such time as all required state reviews or approvals are obtained.

- List and target dates for all local zoning approvals, testing and permits.
- Provide a certification that all applicable utility officials have been contacted by the Designer regarding each basic design, and utility connections. *The submission states that the Designer has contacted gas and electric utilities, but no further confirmation is provided. Confirmation that other utilities have been contacted should be provided with the response to these comments.*

### **6C.3.4 Cost Estimate**

- Provide a final construction cost estimate, based on the 90% Construction Documents, including cost estimates for general conditions, overhead and profit, insurance, bonds, and all other items; and allowances expressed as percentage rates for construction contingencies and escalation to the mid-point of the construction period; and other mutually agreed upon contingencies. Prepare the construction cost estimate in the CSI MasterSpec format to Level 3 and M.G.L. c.149, §44F (filed sub-bid) format including a single line outline specification description for each item with the detailed unit rate or item cost buildup provided as a backup in each case. *The Designer's final cost estimate does not include escalation to the mid-point of construction. This should be updated and provided with the response to these comments.*
- The date of the estimate should be no earlier than the date of 90% Construction Documents. *The cost estimates are dated prior to the 90% Construction Documents September 4, 2019 date. Confirm the estimate is based on the design as submitted to the MSBA.*
- Provide a summary sheet including the following: *Provide an updated summary sheet that includes the following missing dates:*
  - Date that the estimate was prepared (value date). *Included; however, see comment above.*
  - Anticipated bid date. *Not included.*
  - Project and contract number. *Not included.*
  - Title and location of the project.
  - Name of the Designer.
  - Name of the Estimator.
  - Site cost (including all utilities).
  - Building cost (including fixed equipment).
  - Estimated construction cost of each Phase of the work, totaled. *Not included.*
  - Costs of Item 1 and Item 2 work, as distinguished in the General Contractor's bid forms, individually totaled. *Not included.*

### **6C.3.5 Drawings** (developed to 90% CD 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 symbols and abbreviations are not included on the cover sheet; however, they are included elsewhere in the set. The legends do not appear to be all inclusive. For example, the material legend on AG0.01 does not include mineral wool insulation. On some details, it is clearly identified; however, it is not clearly identified on others and may be mistaken as rigid insulation. This should be reviewed and clarified and updated, as needed, in the bid documents.*

- Site drawings showing the following:
  - Layout and location of all proposed work with details.
  - Existing and proposed contours including floor elevations showing drainage away from the building.
  - Bench marks and boring locations.
  - Landscaping and planting.
  - All utility service lines, systems and structures for electricity, gas, oil, water, steam, telephone, CATV, fire alarm, sanitary and storm drainage.
  - Contract limit line and storage area for construction materials. *The drawings do not identify a construction materials storage area. Please review and update, as needed, in the bid documents.*
  - Site survey which includes, but is not limited to, all existing foundations, obstructions and other physical characteristics of the site.
  - Coordinate light pole bases, concrete pads & landscape enclosure walls with other disciplines. *There is no light pole bases detail. Please review and update, as needed, in the bid documents.*
  - Verify accessibility compliance at paved areas and building approaches.
  - Coordinate landscape patching with civil utility & plumbing work.
  - Exterior benches, flag poles, signage. *There are no bench details or flag poles. Please review and update, as needed, in the bid documents.*
- Demolition drawings and temporary work required. *There are no existing building demolition drawings. Please address the demolition of the existing building, as needed, in the bid documents.*
- Architectural drawings showing the following:
  - Phasing, temporary trailers, storage & fences, gates & parking.
  - Floor plans of each floor, with dimensions, column locations, floor elevations, door and window designations, partition types, built in furniture and equipment, keyed to other architectural drawings. *The floor elevations are not included in the plans. Please review and update, as needed, in the bid documents.*
  - Large scale floor plans where required. *The Pre-K to grade 3 students accessibility requirements are not included. Please review and update, as needed, in the bid documents.*
  - Knox box & fire alarm control panel locations. *Knox Box and FACP locations have not been identified on the plans. Please review and update, as needed, in the bid documents.*
  - Roof plans including equipment, coordinated with MEP/FP drawings.
  - Roof ladders, hatches, pads, PV support, and lightning protection.
  - Coordinate downspout leader locations with civil & plumbing drawings.

- Key plans / overall plans where required.
- Project sign (verify content).
- Building Sections.
- Building elevations. All building elevations, including hidden elevations, fully developed including MEP/FP and security systems, showing context and relation to exterior sloping grade around the building.
- Wall sections indicating dimensions, flashing, anchorage, reinforcing, coursing, cladding, and all other conditions at wall, roof, foundation, interior floors. *Included; however, it does not appear that they are fully coordinated. See comments under Exterior Details below for more information.*
- Coordinated wall sections with grade elevations. *The finish grades are not included in the wall sections. Please review and update, as needed, in the bid documents.*
- Exterior details, for roofing, flashing and other details showing all conditions. *Included; however, it does not appear that they are fully coordinated.*

*The weatherability at the water table transition from the phenolic panel such as shown in detail T22 should be reviewed. This detail is dependent upon an accurate and consistent mitered cut of rigid insulation, a very rigid flashing (which would need to be an extrusion) and very tight tolerances of the location of the precast profile. At a minimum the flashing should be sealed on the underside. The detail is more questionable when the distance from the precast to the backup is increased such as in detail N27/A6.60 Mid-wall Brick to MCM Panel. This detail should be reviewed and updated, as needed, in the bid documents. Please comment in the response to this review.*

*There are several exterior details, such as G22/A6.60 Mid-wall Storefront Wall that seem to depend on unrealistic craftsmanship and workability of materials. In this detail, rigid insulation is shown to be tightly cut to varying and thin dimensions around blocking. The enlarged detail R18/A8.80 further illustrates the condition and appears to also show an outer bead of sealant that will prevent the storefront from weeping at the subsill and flashing. In addition, there does not appear to be a sound method to attach blocking in this configuration; it may be necessary to provide bolts through the lower blocking.*

*All exterior details should be reviewed for constructability and updated as needed in the bid documents. Please comment in the response to this review.*

- Interior and exterior expansion joints, control joints, construction joints, and waterstops, detailed and coordinated with structural drawings.
- Doors, windows, entrances, and storefront; schedules and details.
- Vertical circulation plans, sections and details including ramps, stairs, lifts and elevators.
- Elevator venting, hoist beam, thresholds, ladder, sump, wall penetrations, waterproofing.
- Guardrails and handrails including details.

- Interior elevations of all significant and typical spaces.
- Interior details including casework, paneling surfacing and acoustical treatment.
- Flooring & wall material patterns.
- Interior glazing elevations and details. *There are no elevations or details of interior glazing included. Please review and update, as needed, in the bid documents.*
- Reflected ceiling plans coordinated with fire protection, mechanical and electrical drawings.
- Ceiling details.
- Access panels, where required for access, shall be indicated on the drawings and coordinated with the MEP/FP requirements. *Access panels are not included. Please review and update, as needed, in the bid documents.*
- Schedules (clearly define new or existing):
  - Doors.
  - Equipment, e.g. for services.
  - Partitions.
  - Finishes.
- Structural drawings showing the following:
  - Legend and/or graphical symbols on the first sheet of the structural drawings. *A symbols legend is not included on the first sheet; however, various items are included on different structural sheets. Confirm that this is acceptable.*
  - Foundation plans with bottom grades showing layout of all footings, walls, slabs on grade including reinforcing, grade beams, and columns; include design soil bearing pressures and live loads for each area. *The bottom grades of the footings are not included in the plans. Please review and update, as needed, in the bid documents.*
  - Floor and roof plans of structural systems including framing, grades of finished floors and depressed areas, with locations and dimensions for all openings. *The finish floors grades are not included. Please review and update, as needed, in the bid documents.*
  - Complete foundation wall elevation and typical sections, with reinforcing indicating location, dimensions and grades for all footings, steps and wall openings.
  - Complete details and section with dimensions for all construction including expansion and construction joints, reinforcing and other embedded items. Coordinate construction and expansion joint details with specified materials including caulking and sealant. *Expansion joints details are not included in the structural drawings. Please review and update, as needed, in the bid documents.*
  - Schedules (with dimensions) for all lintels, beams, joists, and columns. Coordinate dimensions of all elements listed in the schedules with dimensions depicted on the plans. *There are no schedules for the beams*

*and joists; however, this information appears to be provided in other ways. Confirm that this is acceptable for bidding and construction.*

- All structural supports required for mechanical equipment.
- General notes including the following information: class and 28-day strength of concrete for each portion, structural steel and concrete reinforcing design stresses for each type of structural member, concrete cover for each type of structural member, shrinkage and temperature steel requirements, reinforcing laps for main reinforcing and temperature steel; bend point, cutoff, and hook locations for all members, minimum beam and lintel bearing. *The minimum reinforcing laps, and minimum beam bearing are not included in the general notes. Please review and update, as needed, in the bid documents.*
- Fire protection drawings showing the following:
  - Legend and/or graphical symbols on the first sheet of the fire protection drawings.
  - Standpipe systems, sprinkler systems, suppression systems, fire pumps, accessories, and piping.
  - All piping, equipment, fixtures, valves and devices shall be located and sized.
  - Design criteria shall be provided on the drawings in accordance with NFPA requirements.
  - All required access panel locations and sizes coordinated with the architectural drawings. *Access panels are not included. Please review and update, as needed, in the bid documents.*
- Plumbing drawings showing the following:
  - Legend and/or graphical symbols on the first sheet of the plumbing drawings.
  - All work done by the plumbing subcontractor, which includes all water, gas, air, vacuum, medical gases, sanitary and storm wastes, and accessories.
  - Accessibility requirements for PK- grade 3 fixtures (where required). *The Pre-K to grade 3 students accessibility requirements are not included. Please review and update, as needed, in the bid documents.*
  - Trapping and venting of all plumbing fixtures including floor drains. Provide location dimensions for floor drains in coordination with the structural plans. *There is no detail showing the floor drains trapping. Please review and update, as needed, in the bid documents.*
  - Water and gas supply sources, storm and sanitary discharge mains.
  - All piping sizes shall be indicated on drawings and riser diagrams. Indicate all directions of flow and pitch on piping. *The flow direction is not included on the pipes. Please review and update, as needed, in the bid documents.*
  - All accessories, valves, fixtures including all drinking fountains and grease traps for kitchen waste.
  - All piping and connections required for other trades (e.g., kitchen equipment, HVAC make-up water, etc.). *The plumbing plans do not show*

*the make-up lines going to the boilers. Please review and update, as needed, in the bid documents.*

- Acid waste (where required), vents and neutralization systems for laboratories.
- Plumbing riser diagrams.
- Domestic water booster pumps, boiler feed water, meter location, hose bibs. *The boiler feed water is not shown on the plumbing plans. Please review and update, as needed, in the bid documents.*
- Domestic hot water: storage tanks, piping material, hanger details. *Please review, and update the hanger detail as needed in the bid documents.*
- All required access panel locations and sizes coordinated with the architectural drawings. *There are no access panels included. Please review and update, as needed, in the bid documents.*
- Backflow preventers and cleanouts.
- Heating, ventilating and air conditioning drawings showing the following:
  - Legend and/or graphical symbols on the first sheet of the mechanical drawings.
  - Large scale plans of all mechanical & electrical spaces showing equipment to scale. *There is no large-scale plan of the electrical rooms in the HVAC drawings. Please review and update, as needed, in the bid documents.*
  - All piping and ductwork systems shall be located and sized. All ductwork shall be shown double line and drawn to scale.
  - All systems shall be sized at all reductions and riser diagrams of piping and duct systems shall be indicated.
  - All directions of flow and pitch on piping, and direction of flow, volumes for duct systems shall be indicated. *The flow direction has not been included on the pipes. Please review and update, as needed, in the bid documents.*
  - All equipment shall have sufficient servicing and/or replacement space indicated on drawings. *The replacement space has not been indicated on the drawings. Please review and update, as needed, in the bid documents.*
  - All equipment, accessories, valves and dampers.
  - All required access panel locations and sizes coordinated with the architectural drawings. *Access panels not included. Please review and update, as needed, in the bid documents.*
  - Cooling system pumps, chillers, cooling towers, air handling units, ductwork system and dampers, fan details, temperature control system, air and hydronic balancing equipment, and schedules shall be indicated.
  - Cooling tower (where required) shall be indicated on the drawings showing site location, elevations and floor plan of equipment layout and typical flow diagram as related to the total HVAC system. *Not applicable.*
  - All fire and smoke dampers.
  - Mechanical room designs:



- Vent pipes for safety valves, relief valves, back pressure valves and tanks shall be extended above flat roofs in accordance with all governing authorities.
  - In all designs for boiler and refrigeration plants, include a complete floor plan indicating location of all major mechanical equipment and sufficient service space.
  - In designs of new and/or replacement boiler and refrigeration plants, provide a flow diagram detailing steam or hot water distribution systems, return systems, including all existing equipment and their function, as well as any proposed expansions with all necessary instrumentation and controls.
- Electrical Drawings showing the following:
  - Legend and/or graphical symbols on the first sheet of the electrical drawings.
  - General arrangement: Outline layout of each floor, floor and ceiling heights and elevations, and type construction, including concrete pads shall be indicated. Indicate interface with other systems. Identify any work by general contractor or other trades. *The floor and ceiling heights are not included on the plans. Please review and update, as needed, in the bid documents.*
  - Interior lighting system: Light fixture schedules, circuiting location and mounting heights of all fixtures, receptacle and switch outlets, sizes and types of all lamps, conduits, all other accessories and riser diagrams shall be indicated on drawings. Indicate details and method of supporting electrical fixtures and conduits. Designer shall specify that all electrical lighting fixtures be supported from the building structure, and shall be independent of ducts, pipes, ceilings and their supporting members. Comply with seismic design criteria. *Fixture mounting heights are not indicated. Please review and update, as needed, in the bid documents.*
  - Power system: Locations, types and method of control for all motors, heaters, appliances, controllers, starters, branch circuits, feeder conductors and conduits. Indicate riser diagrams. Show details and indicate method of supporting electrical conduit. For larger projects, thermostats and control wiring are normally covered under the HVAC sub-contract, assure coordination.
  - Fire Alarm, Data, Communications, CATV/CCTV Systems: Locations and types of all devices, outlets and equipment, service connections, wiring diagrams, all other essential details.
  - Services: Location and details of all services, whether overhead or underground, feeder sizes, plans and elevations of switchgear and transformers, metering and service switchboard arrangements, wiring and ground fault diagram and bus ducts.
  - General and sub-stations: Location, size, method of connection and protection of all generators, transformers, exciters, motor generators, switch gear, and associated equipment, current characteristics and equipment capacities. Indicate equipment connections by means of one line and/on wiring diagrams and schedule all major items of equipment and all instruments.

- Underground work: The size and locations of manholes and types of cables, number, size, and location of ducts, locations, sizes and types of cable supports, fireproofing, duct line profile, and one-line diagram of connections.
- Pole line work: Location, length, treatment and class of poles, guying, cross arms, insulators, circuiting, transformers, protective and switching devices, lightning arresters, special structures, diagrams, current characteristics and grounding.
- Exterior lighting: Location, size, and type of transformers, luminary, poles, light standards, cables, ducts, and manholes, details of control equipment and connection diagrams.
- Emergency system (where provided) details including transfer switch, type of fuel.
- One-line diagram indicating load KVA, and available short circuit amperes at each transformer, switchboard, distribution panel board, branch circuit panel board, and at major pieces of equipment.
- Riser diagrams for all systems.

#### **6C.3.6 Project Manual** (developed to 90% CD progress level)

- The format for the technical specifications shall be CSI Master Format (current version) with separate sections for each of class of work required by M.G.L. c. 149 §44F.
- For each item of material or equipment, the specifications shall provide for a minimum of three named brands of material or equipment and the words "or equal" or a description of material or equipment which can be met by a minimum of three manufacturers or producers, and the words "or equal". Proprietary products shall not be specified except as provided by M.G.L. c. 30, § 39M; however, when they are specified, proprietary specifications are subject to the "or equal" provisions of c. 30, § 39M. *Some specification sections comply; however, many specification sections do not identify three manufacturers. For example, some of these sections, such as 10 2800 Toilet, Bath and Laundry Accessories, describe performance characteristics and identify one manufacturer and state 'or equal'. A full performance specification is required, and the Designer needs to confirm three manufacturers can meet the specification. Fire Protection 210000, for instance, only identifies one brand for many component parts (e.g. 2.08.E, Upright and pendant sprinkler heads; 2.11.A.4 Fire Department Valve Cabinet) and some do not indicate 'or equal' for many items (e.g. 2.08.L specifies a specific product for flexible sprinkler heads and states no substitution is allowed for this item, however, it does not appear to be approved as a proprietary product). The Plumbing section 220010 is written similar to Fire Protection and does not provide the required three products or the full description. All sections should be reviewed and updated as needed to satisfy the requirements before being issued to bid.*
- Do not specify that a product or system shall require prequalification for use prior to bidding.

- Include a copy of the geotechnical report, including locations and dates of test boring holes and results of soil investigation, including water levels, allowable solid bearing pressure and bottom grades of footing and slabs.
- List all required filed sub-bids specification sections.
- Each filed sub-bid section shall detail all labor and materials required by the particular sub-trade and list, by number, those drawings (and only those drawings) indicating work of that sub-trade. In addition, list drawings indicating work of a particular trade that appears on drawings that are not customarily included in the work of the trade, when applicable. *The drawings list is not provided for all sections, (e.g. 040001, Masonry Trade Bid Summary; 080001 Metal Windows Trade Bid Summary). Please review all filed sub-bid sections and update, as needed, in the bid documents.*
- Staging, scaffolding, coring, drilling, cutting, patching, refuse collection and disposal, demolition work and cleaning task, allocation policy and proposed language shall be carefully assigned to avoid duplication or omission, and coordinated with all filed sub-bid sections. *This appears to be generally coordinated and is written to require each trade to perform all cutting and coring required for their work. There are instances, such as 260010 Electrical, 3.12.E that appear to be edited from earlier text/copy that required coring be coordinated or performed by others. As it is left in its edited state it does not appear to be clear, as Part 1 requires all coring by the trade section. This should be reviewed and updated, as needed, in the bid documents.*
- Describe the extent of the work, the materials and workmanship, and include the work under the proper section. If any portion of the work included in a section of the specifications is to be performed by a trade covered by another section, there shall be clear and distinct cross-referencing between the sections. Merely to state "by others" is not acceptable. *Appears to generally comply. It appears the intent is that concrete paving is provided by 323116 Concrete Paving. However, as 033000 Cast-in-Place Concrete 1.01.A is currently written it also would include exterior concrete paving. Review all sections and update as needed in the bid documents. Many wall section details, such as those on A6.60, indicate Pre-finished Through-Wall Flashing. Although it is not stated, it appears it is intended this be provided by 076200 Sheet Metal Flashing and Trim. However, a through-wall flashing is not specified in that section (Roof Edge Flashings are specified. There is also a stainless steel sheet material specified but it is not stated any fabrication of this item or its proposed use.). Review and confirm if this flashing is specified in a section and clarify in the response to these review comments which section is to provide it.*  
Specify work in appropriate sections according to local trade jurisdiction.
- In sections for which filed sub-bids are required, refrain from using such terms as "the contractor," the "heating contractor," or "the plumbing contractor," but where necessary for clarity refer to the "HVAC subcontractor," the "general contractor" and so on.
- Alternates, if approved in writing by the owner, shall be properly described and cross-referenced in the project manual and drawings. An alternate proposal sheet shall be prepared by the Designer for insertion into the contract form. *No alternate section is included in the specification. If any*

*Alternates are intended one needs to be provided. There are spaces on the bid form, which is typical, even if not required. Coordinate as required.*

- Allowances are prohibited pursuant to M.G.L. c. 149, § 44G (A).
- Unit price items, if permitted or ordered by the Owner, shall be properly described in the Specifications.
- Indicate goals for compliance with USGBC LEED-s or NE-CHPS standards.
- Do not use general clauses intended to be all-inclusive in lieu of complete descriptions.
- Do not duplicate standard requirements that are contained in the contract form.
- Use consistency throughout. The word "will" shall be used to designate what the owner, authority, owner's project manager, or the Designer can be expected to do, and the word "shall" shall be used to designate what is mandatory for the contractor or subcontractors to do.
- Use the same term throughout for the same subject and the term shall be the same as that used on the drawings. *The terms used for fill materials are not consistent between the specifications and drawings. Section 312300 Excavation and Fill for Utilities and Pavement specifies many different materials with specific names. However, the terms used on some of the civil details, such as C7.04 Site Drainage Details are vague (e.g. Setting Bed) that cannot be matched to the specifications. This should be reviewed and coordinated before being issued to bid.*  
*In a similar way, the terms used in 312000 Earthmoving cannot be directly related to the structural details, such as on S0.02 Typical Details. Many of the structural details state to refer to the architectural details. Based on the details on A6.50 Base of Wall Details and Wall Section Details, it appears this coordination/correction may have been at least somewhat addressed by Revision 5. However, there are additional details, including on A6.51 where there are not materials indicated. Review and confirm the materials are clear; this may have been addressed in early release packages.*
- Do not use the term "etc."
- Avoid such terms as "to the satisfaction of the Designer", "as directed by the Designer", "as approved" and "as required."
- Avoid the use of symbols.
- Do not give numbers both in words and figures. Numbers less than 10 shall be written in words, 10 and higher numbers shall be written in figures. In expressing dimensions, figures such as 2 in., 16 in., 7 ft., 6 in., shall be used.
- Specify materials mined or manufactured in Massachusetts first and the United States of America second whenever possible. *This does not appear to be included in the specifications and should be added before being issued to bid.*
- *The 321726 Tactile Warning Surfacing footer is incorrect.*

### **6C.3.7 Project Coordination**

- Verify all details are accurately cross-referenced to the correct plan sheet.  
*The details are not cross referenced to the plans. Please review and update, as needed, in the bid documents.*
- Verify that the structural, mechanical, or other disciplines, do not conflict with architectural plans or specifications.
- Structural dimensions match architectural drawings.
- Column orientation matches architectural drawings.
- Column grid lines match architectural drawings.
- Column and bearing wall locations match architectural drawings.
- Column locations coordinated with all other disciplines.
- Seismic detailing coordinates with architectural drawings. *There are conflicts between the brace frames and doors and windows. Please review and update, as needed, in the bid documents.*
- Beams and columns protruding horizontally and vertically into stairwells, and other interior spaces.
- The finish grade elevations coordinated between all disciplines.
- Mechanical equipment power requirements and physical locations, including special information as to who mounts, connects, tests, etc.
- Verification of potential spatial conflicts in mechanical equipment.
- Room wall/floor/ceiling construction coordinated with the finish schedule.  
*There are walls with ceramic tile in the finish schedule, but there are no partition types with backer board and tile among the partition types. Please review and update, as needed, in the bid documents.*
- Civil earthwork grading and excavation plans are coordinated with architectural and landscape plans.
- All room numbers are coordinated between all disciplines.
- Equipment plan coordinates with architectural plans.
- All kitchen equipment connected to utility systems.