APPENDIX 6A
MODULE 6 – DESIGN DEVELOPMENT REVIEW COMMENTS

District: Town/City of XXX
School: XXX
Owner's Project Manager: Name
Designer Firm: Name
Submittal Received Date: Month XX, Year
Review Date: Month XX, Year *(Date Sent to Consultant for Review – Date Ready for MP Review)*
Reviewed by: First initial & last name *(Consultant, MSBA Architectural Reviewer(s), MSBA CP PM, MSBA Sr PM and Peer Reviewers)*

MSBA REVIEW COMMENTS

The following comments[1] on the Design Development submittal are issued pursuant to a review of the project submittal document for the [new construction] [addition/renovation] of the proposed project and presented as a Design Development submission in accordance with the MSBA Module 6 Guidelines.

6A.1 Summary Comments

- Basic Project Information:
  - List enrollment
  - PFA GSF
  - project type
  - delivery method
- Comments here:
  - Bullet points here
- Additional comments here:
  - Bullet points here
  - Repeat any items from review that require special note or response within sooner time than standard comments

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

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
  - Approve partially; reject remainder
  - Reject the submission
  - Provide additional supporting information
- 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

6A.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
            - EIR - Environmental Impact Report
        - Article 97 Land Disposition Policy approval by Energy & Environmental Affairs
    - MA DEP - Massachusetts Department of Environmental Protection
    - MA DOT - Massachusetts Department of Transportation
    - MA DPH - Massachusetts Department of Public Health
    - 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
- Indicate all required state reviews or permits on the milestone schedule including actual or planned dates of approval which are required in order to maintain the planned bidding and construction schedule and milestones indicated therein. For required state reviews or permits which have not been obtained on schedule, provide a separate (subnetwork) schedule depicting recovery actions to obtain required approvals in order to maintain the bidding and construction schedule.
- The schedule is to be updated and submitted to MSBA with each OPM monthly report and 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 shall reflect any variances in the updated schedule relative to the baseline project schedule included with the Project Scope and Budget Agreement.

- Indicate the date for submission to MSBA of the Design Development, and proposed dates for submission of the 60% and 90% Construction Documents submittals. 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.

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.
  - 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
    - For any Value Engineering recommendations which have been accepted, provide a copy of the Committee vote

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
- Basis of Design narrative description for all disciplines
- Building code analysis

- 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

Boxes; and provisions for building plans to be delivered to local fire and response agencies

- 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

6A.3.2 Space Summary

- Updated space summary and signed certification that reflects the current design

MSBA REVIEWER WILL INSERT SPACE SUMMARY CHART HERE

- 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
    - *[MSBA accepts this variation to the approved project with no further action required].*
    - *[Prior to MSBA accepting this variation to the project, the design team must describe in detail the reason for the change].*
  - The MSBA considers that deviations include changes in the size of a specific space, the total nsf of a program area (e.g. general classrooms, voc tech, dining etc.), the location of a space, the surrounding adjacencies of a space and or the intended purpose of the room;
  - The submittal must clearly call out deviations to location and surrounding adjacencies through the use of redlines or "clouding"
  - The explanation should clearly identify the basis of the change identifying both architectural and/or programmatic reasons
  - 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
  - Regarding DESE approved SPED spaces;
    - 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

- 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

- Regarding DESE approved Public Day Education spaces;
  - If the District wishes to submit a change to its DESE approved submittal, it must a) confirm that all changes to Public Day Education 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 Public Day Education Spaces.
  - 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
- Regarding DESE pre-approved Chapter 74 Program spaces;
  - If the District wishes to submit a change to its DESE approved submittal, it must a) confirm that all changes to Chapter 74 Program 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 the Chapter 74 Programming.
  - 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

6A.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. For each agency approval required for this project, indicate the date when approval was received. All required approvals should

have an associated approval date indicated as part of the 90% CD submission and prior to advertising for bids.

- 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
    - EIR - Environmental Impact Report
  - Article 97 Land Disposition Policy approval by Energy & Environmental Affairs
- MA DEP - Massachusetts Department of Environmental Protection
- MA DOT - Massachusetts Department of Transportation
- MA DPH - Massachusetts Department of Public Health
- 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

- 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. 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
- For any required state reviews or permits for which approval has not been obtained as of the Design Development submission date, provide a status update including actions taken to date and actions planned to obtain the required state reviews and permit approval(s) in order to comply with PFA Section 4.12 and maintain the projected schedule milestones listed in OPM Deliverables
- 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

6A.3.4 Cost Estimates

- Construction cost estimate using the Uniformat II Classification to Level 3, Showing unit rates and quantities; projected to mid-point of construction AND
- Construction cost estimate using the CSI MasterFormat 6-digit format to Level 3 and MGL c.149 s 44F (filed sub-bid) format. Showing unit rates and quantities; projected to mid-point of construction

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)
- Site and utility drawings showing the following:
  - Existing and proposed contours and locations of the proposed building or addition(s). Show entry level elevations and key exterior grades at perimeter showing drainage away from the building. Indicate all retaining walls. Include benchmarks of site if survey is available
  - All utilities existing and proposed, indicating location, elevation, composition and size e.g., gas and electric utility providers
  - Roads, laid out parking areas, walks, recreation areas, terraces and other site improvements
  - Building locations fixed and referenced from main survey baseline, if available
  - Plant materials with preliminary schedule
- Architectural drawings showing the following:
  - Demolition drawings and temporary work required
  - Floor plans (minimum 1/8" = 1'0")
  - Key plans / overall plans where required
  - Building perimeter with exterior wall thicknesses and overall dimensions
  - Structural grid
  - Plan requirements of mechanical and electrical systems
  - Building core; elevators, stairs, shafts, public toilets, with dimensions
  - Internal partitions; appropriate thicknesses and dimensions to fix basic organizations; indicate fire rated partitions and smoke partitions
  - Door swings
  - Finish floor elevations coordinated with exterior grade elevations at all interior exterior transitions.
  - Built-in furniture and equipment
  - Furniture layout concept drawings
  - Modular 4”, 8”, or 1’ unit modular dimensions on Masonry
- Large scale plans showing key areas e.g. lobby, special spaces. Indicate floor surface materials. (minimum scale 1/4" = 1'0")
- Roof plans showing the following:
  - Proposed systems type
  - Pitch and drainage pattern
  - Roof drain, gutters and scuppers
  - Skylights, stair halls through roof, penthouses, major equipment, chimneys
- Building sections - One transverse and one longitudinal section. Indicate floor to ceiling heights and floor-to-floor heights. Label all spaces
- Building sections updated and coordinated with plans and elevations

- Building elevations showing the following:
  - Full height elevations including roof structures, e.g., mechanical equipment, chimneys, and penthouses
  - Floor elevations, floor-to-floor height, and overall height related to benchmarks on site plans
  - Windows, storefront & curtain wall systems
  - All columns located on a centerline and coordinated with the structural drawings.
  - Materials indicating major control and expansion joints, and divisions of materials where required
  - Louver locations coordinated between building elevations, floor plans, mechanical equipment, project manual etc.
  - Exterior grades and topographical features in context
- 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
- Interior elevations: Show at all spaces, e.g. library, lobby, and all typical spaces, e.g. classroom
- 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
- Schedules:
  - Finish schedule by room types
  - Door schedule by room types
  - Window schedule
  - Equipment schedules; e.g., food service, instructional media
- Structural Concepts:
  - Framing plans; typical floor framing, roof framing, special framing, show framing at major openings and sizes of members
  - Foundation plan showing sizes and locations of typical components
  - All columns and beams are identified and listed in the column and beam schedule
  - Preliminary details including floor and roof deck
  - Details for special and/or incidental structural features; e.g. tunnels, connecting bridges and unique architectural features
  - Connection to existing buildings at foundation and at key points at existing structure if applicable
  - All construction joint and expansion joint locations coordinated with structural drawings
- 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.

- Plumbing and sanitary systems; floor plans indicating locations of all plumbing fixtures and special features, and approximate location and size of all piping systems and principal items of equipment
- Heating, Ventilating and Air Conditioning Systems:
  - Show locations and approximate sizes of piping systems, air handling systems and principal items of equipment such as compressors or cooling towers
  - Indicate space requirements of major equipments and their location in mechanical rooms and fan rooms. Indicate shaft requirements
  - Adequate ceiling heights exists at worst-case duct intersection
  - Ceiling diffusers/registers match mechanical drawings, including all soffit and vent locations.
- Electrical Systems:
  - All services including those for special purposes shall be located and indicated
  - Light fixtures on electrical drawings match reflected ceiling plans
  - Switchgear and emergency generator
  - Electrical equipment locations are coordinated with site paving and grading
  - All motorized equipment is coordinated with electrical drawings
  - All power equipment has electrical connections
  - Fire alarm system drawings showing all initiation and signaling devices, control panels, annunciator panels, etc.
  - Security system drawings
  - Communications drawings showing chases, major equipment locations and any special distribution requirements

6A.3.5.1 Project Coordination

- 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
- 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
- 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

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

- 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
- Outline Specifications in the current version of CSI Master spec divisions including:
  - Site work: clearing, drives, walks, parking areas, fences, excavation, backfill, planting, footings on earth, rock, piles, caissons, proposed bearing pressures, boring logs
  - Foundation walls; type of concrete, reinforcing, type and extent of waterproofing
  - Footing drains; type, disposal of drainage
  - Exterior walls: superstructure, type, materials, brick type, alternate cladding, back-up materials, damp proofing material and extent, special features
  - Roofs; type, vapor barrier, insulation, flashings, all materials
  - Flashings; general types, all materials, weights, where each type is to be used
  - Sheet metal; gutters, leaders, others uses, except flashing
  - Windows; general types, materials, sub-frames, finish, glazing, screens
  - Rough openings for all doors and windows coordinated
  - Doors, exterior and interior; types and thicknesses and fire rating identified if applicable.
  - Steps, exterior; including platforms and landings' materials
  - Stairs, interior; including platforms, landings, walls, materials and finishes
  - Framing; wood, concrete or metal systems in accordance with general design
  - Partitions; materials, thicknesses, finishes
  - Cabinet and casework; types and materials
  - Food Service Equipment; list of equipment to be provided
  - Furring; lathing, plastering, materials and locations
  - Insulation thermal; types, thicknesses, methods of application and locations
  - Acoustical treatments; types, thicknesses, methods of application and locations
  - Interior finishes; materials for floors, walls, bases, wainscots, trim, ceilings, ceiling heights
  - Fire protection; standpipe systems, sprinkler systems, fire pumps and accessories

- Water supply; source; location of main to which connection will be made; type of pipe for service main; load requirements; load factors and pressures
- Sanitary sewers; sewage disposal system, pipe and other materials.
- Storm sewers; storm drainage disposal system (institution or local facility), pipe and other materials
- Gas main; material, size, location. Interface with utility company.
- Plumbing; systems such as wastes, vents, hot water, cold water, gas, air, oxygen, vacuum, main source of supply, materials for each, water heaters, pumps, thermal insulation fixture quality, all special features.
- Heating, ventilating and air conditioning; type of heating and refrigeration plants, type and capacity of boilers and cooling equipment, fuel, type of burners, fuel storage, heaters, feed water pumps and heaters, thermal insulation, type of heating medium, supply and return piping, radiation, unit heaters, radiant heating, principal air conditioning equipment types, special features, supply, return and exhaust ductwork
- 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
- Elevators, dumbwaiters and platform lifts; capacities, speed, travel in feet, landings, operation, controls, platform sizes, machine type and location, car and entrance finishes, signals
- Other built-in equipment, types and materials
- All “Work by others” specifications coordinated
- The sub-contractor identified for the installation of all equipment supports and anchors for walls, floor and ceilings
- Special features