District: Town of XXX
School: XXX
Submittal: 60% Construction Documents
Submittal Date: **XXX**
Review Date: **XXX**
Reviewed by: **XX**

MSBA REVIEW COMMENTS:

The following comments[1] for the Construction Documents submittal are issued pursuant to a review of the project submittal document dated DATE, for renovation / replacement of SCHOOL, and presented as 60% Construction Documents submission, as produced by DESIGNER and its consultants. Certain supplemental components from the Owner's Project Manager
(OPM) – OPM, are included. Documents received at MSBA on DATE.

I. Summary Comments:

a. Comments here:
   - Bullet points here

b. More comments here:
   - Bullet points here

II. OPM deliverables :

a. Project scope, schedule & budget:
   - Independent construction cost estimates pursuant to Section 8.1.2.2 of the Contract for Project Management Services, for comparison with the Designer's cost estimate, based upon 60 percent progress documents.
   - Value Engineering recommendations
   - Updated project budget
   - Updated project schedule

b. Construction documents review for:
   - Constructability

[1] The written comments provided by the MSBA are solely for purposes of determining whether the proposed plans and specifications, 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 plans and specifications meet any other 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 plans and specifications and any other design documents submitted for MSBA review meet any applicable professional standard of care or any other standard of care. . Project designers are obligated to implement detailed technical review procedures to effect coordination of design criteria, buildability, and technical adequacy of construction documents. Each city, town and regional school district shall be solely responsible for ensuring that its plans and specifications comply with all applicable provisions of federal, state, and local law, including, but not limited to, all procurement laws. The MSBA recommends that each city, town and regional school district have its legal counsel review its plans and specifications 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 plans and specifications.

- Operability
- Bid-ability
- Clarity
- Coordination
- Site access during construction

c. Commissioning consultants' review coordination:
    - Incorporate Cx recommendations

III. Designer deliverables :

1. General requirements:

a. Submit updated work plan
b. Submit updated environmental permitting assessment, building code analysis, ADA/MAAB analysis, and list of all required testing and permits. Provide a certification that all applicable local, state and utility officials have been contacted by the designer regarding each basic design, and utility connection.
c. Submit a written summary comparing the 60 percent progress CD drawings and specifications and final ECC with the Final Design Program requirements made during the DD phase.
d. Construction cost estimate using the Uniformat II Classification to Level 3, The CSI MasterFormat 6-digit format to Level 3 and MGL c.149 s 44F (filed sub-bid) format.
e. Updated and expanded Basis of Design narrative description
f. Interior Materials Color Boards with a legend identifying areas and their materials
g. Colored interior elevations and perspectives of major and typical spaces
h. Updated code analysis

2. Drawing Requirements (to 60 percent progress level):

- Cover sheet showing a list of all drawings, symbols, abbreviations, notes, locations map.
- Site drawings showing the following:
    1. Layout and location of all proposed work with details.
    2. Existing and proposed contours including floor elevations, bench marks and boring locations.
    3. Landscaping and planting.
    4. All utility service lines, systems and structures for electricity, gas, oil, water, steam, telephone, CATV, fire alarm, sanitary and storm drainage.
    5. Contract Limit Line and Storage Area for construction materials.
    6. All existing foundations, obstructions and other physical characteristics of the site.
    7. Site survey.
- Demolition drawings and temporary work required.
- Architectural drawings shall include:

1. 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.
2. Large scale floor plans where required.
3. Roof plans including equipment.
4. Key plans.
5. Building Sections.
6. Building elevations. All building elevations, including hidden elevations, fully developed.
7. Wall sections indicating dimensions, flashing, anchorage, reinforcing, coursing, cladding, and all other conditions at wall, roof, foundation, interior floors.
8. Exterior details, for roofing, flashing, expansion control and construction joints, waterstops and other details showing all conditions.
9. Door, window, entrance, and storefront, schedules, and details.
10. Vertical circulation plans, sections and details including stairs, elevators, conveyors, dumbwaiters.
11. Interior elevations of all significant and typical spaces.
12. Interior details including casework, paneling surfacing and acoustical treatment.
13. Reflected ceiling plans coordinated with fire protection, mechanical and electrical drawings, and ceiling details.
14. Schedules (clearly define new or existing)
    i. Doors
    ii. Equipment, e.g. for services
    iii. Partitions
    iv. Finishes

- Structural drawings shall indicate the following:
    1. Soils exploration plans with dates, and water elevation level.
    2. 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.
    3. Floor and roof plans of structural systems including framing, grades of finished floors and depressed areas, with locations and dimensions for all openings. Also indicate design floor loads.
    4. Complete foundation wall elevation and typical sections, with reinforcing indicating location, dimensions and grades for all footings, steps and wall openings.
    5. Complete details and section with dimensions for all construction including expansion and construction joints, reinforcing and other embedded items.
    6. Schedules (with dimensions) for all lintels, beams, joists, and columns.
    7. 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.

- Fire protection drawings shall indicate the following:
  1. Standpipe systems, sprinkler systems, suppression systems, access panels, fire pumps, accessories, and piping.
  2. All piping, equipment, fixtures and devices shall be located and sized.
  3. Design criteria shall be provided on the drawings in accordance with NFPA requirements.
- Plumbing drawings shall indicate the following:
  1. All work done by the Plumbing Subcontractor, which includes all water, gas, air, vacuum, medical gases, sanitary and storm wastes, and accessories.
  2. Trapping and venting of all plumbing fixtures including floor drains.
  3. Water and gas supply sources, storm and sanitary discharge mains.
  4. All piping sizes shall be indicated on drawings and riser diagrams. Indicate all directions of flow and pitch on piping.
  5. All accessories, valves, fixtures including all drinking fountains, grease traps for kitchen waste and all necessary panels, identified as to type and size.
  6. All piping and connections required for other trades (e.g., kitchen equipment, HVAC make-up water, etc.)
  7. Acid waste, vents and neutralization systems for laboratories.
  8. Plumbing Legend and/or graphical symbols on the first sheet of the Plumbing Drawings.
  9. Plumbing riser diagrams.
  10. Domestic water booster pumps, boiler feed water, meter location, hose bibbs.
  11. Domestic hot water: storage tanks, piping material, hanger details.
  12. All required access panels.
  13. Backflow preventors, and cleanouts.
- Heating, Ventilating and Air Conditioning Drawings shall indicate the following:
  1. Large scale plans of all mechanical & electrical spaces showing equipment to scale.
  2. All piping and ductwork systems shall be located and sized. All ductwork shall be shown double line.
  3. All systems shall be sized at all reductions and riser diagrams of piping and duct systems shall be indicated.
  4. All directions of flow and pitch on piping, and direction of flow, volumes for duct systems shall be indicated.
  5. All equipment shall have sufficient servicing and/or replacement space indicated on drawings.

6. All equipment, accessories, valves and dampers with all necessary access panels, identified as to type and size. Access panels, where required for access to valves and dampers shall be indicated on drawings.
7. 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.
8. Cooling tower design 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.
9. All fire and smoke dampers, access panels and doors.
10. Mechanical room designs:
    i. Vent pipes for safety valves, relief valves, back pressure valves and tanks shall be extended above flat roofs in accordance with all governing authorities.
    ii. In all designs for boiler and refrigeration plants, include a complete floor plan indicating location of all major mechanical equipment and sufficient service space.
    iii. 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 shall indicate the following:
  1. General arrangement: Outline layout of each floor. Typical sections through the structure, 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.
  2. 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.
  3. 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.

4. Fire Alarm, Data, Communications, CATV/CCTV Systems: Locations and types of all devices, outlets and equipment, service connections, wiring diagrams, all other essential details.
5. 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.
6. 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.
7. 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.
8. 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.
9. Exterior lighting: Location, size, and type of transformers, luminary, poles, light standards, cables, ducts, and manholes, details of control equipment and connection diagrams.
10. Emergency system details including transfer switch, type of fuel.
11. 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.
12. Riser diagrams for all systems.

3. Project Manual Requirements (to 60 percent progress level):

1. The format for the technical specifications shall be CSI Master format (2004 version) with separate sections for each of class of work required by M.G.L. c. 149 §44F.
2. List all required filed sub-bids specification sections
3. Provide a list identifying all 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. 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.

4. 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.
5. Allowances are prohibited pursuant to M.G.L. c. 149, § 44G(A).
6. Unit price items, if permitted or ordered by the Owner, shall be properly described in the Specifications.
7. Staging, scaffolding cutting and patching, refuse collection and disposal, demolition work and cleaning task, allocation policy and proposed language shall be carefully assigned to avoid duplication or omission.
8. 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.
9. Specify materials mined or manufactured in Massachusetts first and the United States of America second whenever possible.
10. Do not use general clauses intended to be all-inclusive in lieu of complete descriptions.
11. Do not duplicate standard requirements that are contained in the contract form.
12. 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.
13. Use the same term throughout for the same subject and the term shall be the same as that used on the drawings.
14. Do not use the term “etc.”
15. Avoid such terms as “to the satisfaction of the Designer”, “as directed by the Designer”, “as approved” and “as required”.
16. Specify work in appropriate Sections according to local trade jurisdiction.
17. Avoid the use of symbols
18. 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.
19. 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.

20. 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.
21. Do not specify that a product or system shall require prequalification for use prior to bidding.

4. Estimate and Analysis of Construction Cost:

a. Estimate and Analysis of Construction Cost
b. The Designer shall furnish a construction cost estimate, based on and current as of a date no earlier than 60% 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 bid date; and other mutually agreed upon contingencies. The construction cost estimate shall be prepared in Uniformat II Elemental Classification to Level 3 (Sections A-G inclusive), the CSI MasterSpec format to Level 3 and M.G.L. c.149, §44F (filed sub-bid) format and shall be complete with 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.
c. The date of the estimate shall be a date no earlier than 10 working days following the date of 60% Construction Documents. The detailed estimate cost shall be projected, to the mid point of the construction period.
d. The summary sheets shall be developed, which shall contain the following:
    1) The date that the estimate was prepared. (Value Date).
    2) The anticipated bid date.
    3) The project and contract number.
    4) The title and location of the project.
    5) The name of the Designer.
    6) The name of the Estimator.
    7) The site cost (including all utilities).
    8) The building cost (including fixed equipment).
    9) The estimated construction cost of each Phase of the work, totaled.
    10) The costs of Item 1 and Item 2 work, as distinguished in the General Contractor's bid forms, shall be individually totaled.

5. Additional Findings / Comments:

a. Start comments here:
    i. Bullet points here
b. More comments here:
    i. Bullet points here

END