7.5 Design Development Phase

7.5.1 Upon receipt of an Approval to proceed to the Design Development Phase, the Designer shall meet regularly and as necessary with the Owner, the OPM, and the Authority. This shall include meeting with the Owner and the OPM during this Phase in accordance with the agreed upon project work plan.

7.5.2 The Designer shall update and refine items submitted during the Schematic Design Phase, and shall submit to the Owner and the Authority, on or before the date specified in the Project Schedule, and on the basis of the approved Schematic Design Phase Documents, the following deliverables as they are defined in this Article 7.5.2 and as they are further defined in Articles 7.5.3, 7.5.4, 7.5.5, 7.5.6 and 7.5.7:

(a) a list of all filings and permits within Designer's scope of services and professional expertise required to implement the design, along with a schedule of target dates for the procurement of such permits, both of which shall be regularly updated during the term of this Contract;

(b) information and documentation within the technical expertise of the Designer and that is necessary for the Owner to file local basic zoning and environmental permits. The Designer, as Extra Services, shall provide information and documentation for the Owner to file Environmental Notification Forms, Environmental Impact Reports, and any other filings for permits that must be filed during the design development phase;

(c) soils exploration data, geotechnical and geoenvironmental reports, showings of exploratory locations relative to siting of proposed structures, based on a review of the existing conditions information provided in the surveys and studies described in Article 7 Basic Services and Article 8 Extra Services;

(d) complete design development drawings; outline specifications indicating any filed sub-bid sections and sub-sub trades based on the cost of the work and other documents necessary to specify the size and character of the Project, including siting, landscape, architectural, structural, fire protection, plumbing, heating, ventilating and air conditioning, electrical, ADA/MAAB, product requirements and other features;

(e) creation of a Building Information Model and quality control documentation demonstrating, without limitation, coordination of: ceiling clearances, mechanical room size, and shaft sizes; specifications and drawings; filed sub-bid work or sections; scheduling; equipment and power; existing and new construction; and phasing;

(f) design development drawings which the Designer shall submit for review to the local building official;

(g) a life cycle cost analysis to determine the most cost-effective design decisions related to all energy and water consuming devices, overall building operation, and maintenance [M.G.L. c. 149, s. 44M];

(h) a construction cost estimate for the design in accordance with Article 7.5.6.;

(i) a space measurement analysis for the design verifying that the sum of all program areas in the Project plus all other floor areas in the Project equals the gross floor

area of the Project;

(j) a written summary or summaries comparing the project design, as represented in the design development drawings, specifications and cost estimates with the Final Design Program requirements, and explaining any deviations in writing.

7.5.3 Design Development Drawing Requirements: The Design Development drawings shall illustrate and describe the refinement of the Project's design to a level of detail that is customary and standard. They shall establish the scope, relationships, forms, size, and appearance of the Project by means of plans, sections and elevations, typical construction details, and equipment layouts. The drawings shall delineate locations and elements of the Work that may be proposed for assignment to project construction phases and/or separate bidding packages. Documents shall include, but not be limited to, the following:

(a) Site and utility drawings showing:

1. Existing and proposed contours and locations of the proposed building or addition(s). Show entry level elevation and key exterior grades at perimeter. Indicate all retaining walls. Include benchmarks of site if survey is available.
2. All utilities existing and proposed, indicating location, elevation, composition and size e.g., manholes, sewers, hydrants, light standards, and geothermal wells. Include work by others, e.g., gas and electric utility providers.
3. Roads, laid-out parking areas, walks, recreation areas, terraces and other site improvements.
4. Building locations fixed and referenced from main survey baseline, if available.
5. Plant materials with a preliminary schedule.

(b) Building drawings and other graphic and written requirements with floor plans showing the following: (at a minimum scale of 1/8" = 1'0"):

1. building perimeter with exterior wall thicknesses and overall dimensions;
2. structural grid;
3. plan requirements of mechanical and electrical systems;
4. building core; elevators, stairs, shafts, and toilet rooms;
5. interior partitions; appropriate thicknesses and dimensions to fix basic organizations; indicate fire separations, ratings;
6. door swings;
7. floor elevations;
8. built-in furniture and equipment; and
9. furniture layout concept drawings.

(c) Roof plans showing:

1. proposed systems type;
2. pitch and drainage patterns;

3. roof drains, gutters and scuppers; and
4. skylights, stairs through roof, penthouses, major equipment, chimneys.

(d) Building sections: One transverse and one longitudinal section. Indicate floor to ceiling heights and floor-to-floor heights. Label all spaces;

(e) Building elevations showing:

1. full height elevations including roof structures, e.g., mechanical equipment, chimneys, and penthouses;
2. floor elevations, floor-to-floor heights, and overall height related to benchmarks on site plans;
3. all fenestration;
4. column centerlines;
5. principal finish materials indicating major control and expansion joints, and divisions of materials where required;
6. louver and equipment enclosure systems; and
7. exterior grades and topographical features in context.

(f) 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;

(g) Interior elevations: Major spaces, e.g. library, lobby, and all typical spaces, e.g. classrooms;

(h) Reflected ceiling plans: show prototypical structural, fire protection, mechanical and electrical information for classrooms and major spaces, including lighting layouts with ceiling heights and material changes;

(i) Colored interior elevations and perspectives of major and typical spaces

(j) Schedules:

1. finish schedule by room types;
2. door schedule by room;
3. window schedule;
4. equipment schedules, e.g., food service, instructional media.

(k) Structural Concepts;

1. Foundation plan showing sizes and locations of typical components.
2. Framing plans: typical floor framing, roof framing, special framing, show framing at major openings and sizes of members.
3. Column locations.
4. Preliminary details including floor and roof deck, statements as to methods of lateral bracing and how requirements of earthquake code will be met.
5. Details for special and/or incidental structural features, e.g. tunnels,

connecting bridges and unique architectural features.

6. Connection to existing buildings at foundation and at key points at existing structure if applicable.

(l) Fire Protection: floor plans indicating wet or dry type systems, hose racks or cabinets and fire department tie-ins. Indicate whether a fire pump will be required and, if so, show location within the building. Show typical sprinkler head layout;

(m) 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;

(n) Heating, Ventilating and Air Conditioning Systems:

1. Show locations and approximate sizes of piping systems, air handling systems, heat pumps, and principal items of equipment such as compressors or cooling towers.

2. Indicate space requirements of major equipment and their location in mechanical rooms and fan rooms. Major shafts.

(o) Electrical Systems;

1. All services including those for special purposes shall be located and indicated.

2. Lighting shall be indicated as to type, location and intensities in foot-candles for each special and typical space.

3. Switchgear and emergency generator.

4. Fire alarm system drawings showing all initiation and signaling devices, control panels, annunciator panels, etc.

5. Security system drawings.

6. Communications drawings showing chases, major equipment locations and any special distribution requirements.

7. CATV/CCTV drawings showing chases, major equipment locations and any special distribution requirements.

8. Information Technology drawings showing chases, major equipment locations and any special distribution requirements.

7.5.4 Other Consultant's Drawings and Other Graphic and Written Requirements: For special consultants, e.g., kitchen, elevator, library, media room, equipment where appropriate, provide drawings that locate and define the scope of the work. Coordinate with other disciplines. Provide cuts of all major pieces of equipment.

7.5.5 Project Manual Requirements (Specifications):

(a) Outline Specifications that are to accompany Design Development Drawings shall be prepared to a level of detail that is standard and customary and shall include, but not be limited to, a comprehensive description of the Project and the materials proposed for use in the work. Do not provide full-length, 3-part format specifications; however, the general scope shall be indicated by CSI

MasterFormat as applicable to proposed construction.

1. The Design Development Outline Specification shall also include a comprehensive "BASIS OF DESIGN." The "BASIS OF DESIGN" shall be a narrative description of the Project and shall include all applicable architectural, civil, structural, mechanical and electrical programs and/or systems. Identify all proposed filed sub-bid categories.
2. Project Manual shall include a statement to define "Work" which is proposed to be included in separate construction phases and/or bid packages.

(b) The following is a list of items that shall at a minimum be identified or outlined in this Phase:

1. Site work; clearing, drives, walks, parking areas, fences, excavation, backfill, planting, and geothermal wells.
2. Footings; on earth, rock, piles, caissons, proposed bearing pressures, and boring logs.
3. Foundation walls; type of concrete, reinforcing, type and extent of waterproofing.
4. Footing drains; type, disposal of drainage.
5. Exterior walls: superstructure, type, materials, brick type, alternate cladding, back-up materials, damp proofing material and extent, and special features.
6. Roofs; types, vapor barrier, insulation, flashings, and all materials.
7. Flashings; general types, all materials, weights, and where each type is to be used.
8. Sheet metal; gutters, leaders, and others uses, except flashings.
9. Windows; general types, materials, sub-frames, finish, glazing, and screens.
10. Doors, exterior and interior; types.
11. Steps, exterior; including platforms and landings' materials.
12. Stairs, interior; including platforms, landings, walls, materials and finishes.
13. Framing; wood, concrete or metal systems in accordance with general design.
14. Partition construction related to room type.
15. Cabinet and casework; types and materials.
16. Food Service Equipment; types and materials.
17. Furring; lathing, plastering, materials and locations.
18. Insulation thermal; types, thicknesses, methods of application and locations.
19. Acoustical treatments; types, thicknesses, methods of application and location.
20. Interior finishes; materials for floors, walls, bases, wainscots, trim, ceilings, and ceiling heights.
21. Fire Protection; standpipe systems, sprinkler systems, fire pumps and accessories.

22. Water supply; source, location of main to which connection will be made, type of pipe for service main, load requirements, load factors, and pressures.
23. Sanitary sewers; sewage disposal system, pipe, and other materials.
24. Storm sewers; storm drainage disposal system (institution or local facility), pipe and other materials.
25. Gas main; material, size, and location. Interface with utility company.
26. 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, and all special features.
27. Heating, ventilating and air conditioning; type of heating and refrigeration plants, type and capacity of boilers, heat pumps, 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.
28. 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, solar panels, special features, including Master TV, information retrieval and/or data processing system.
29. Elevators, dumbwaiters and platform lifts; capacities, speed, travel in feet, landings, operation, controls, platform sizes, machine type and location, car and entrance finishes, and signals.
30. Other built-in equipment, types, and materials.
31. Special features.

7.5.6 Construction Cost Estimate Requirements – The Designer shall provide a construction cost estimate in Uniformat II Level 3 and CSI Master Format 6-digit format to Level 3 and M.G.L. c. 149 § 44 (filed sub-bid) formats with aggregated unit rates and quantities supporting each item referenced in Article 7.5.5(b). The estimate cost shall be projected, to the mid-point of the construction period.

(a) The Designer shall review its construction cost estimate in comparison with the detailed construction cost estimate, and any updated cost estimates, provided by the OPM and shall work in good faith and in cooperation and coordination with the OPM to reconcile any differences between the construction cost estimates, to clarify assumptions upon which the cost estimates are based and to address any concerns or questions with the cost estimates that are raised by the Owner, the OPM, or the Authority. If the Designer is unable to reconcile all differences between the two construction cost estimates with the OPM, then the Designer shall provide a detailed explanation of the differences to the Owner. If, in any case, the agreed-upon, reconciled construction cost estimate exceeds the Project Construction Budget, the Designer shall cooperate with the Owner and the OPM

in identifying, specifying and recommending changes in, or additional specification of materials, equipment, component systems and types of construction, or other adjustments in the scope or quality of the Project, including contingencies or alternative bid items, so as to facilitate revision of the design of the Project to reduce the cost of construction so as to comply with the authorized Project Construction Budget.

(b) Cost estimate data shall be organized to identify elements of project work which may be proposed to be advanced under separate construction phases and/or separate bidding packages. When so proposed, estimates shall develop cost data relative to corresponding bidding and work execution dates established in project schedules.

7.5.7 Reports, drawings, specifications, cost estimates and other design development submittals shall be subject to the written approval of the Owner and the Authority. Unless a lesser number is requested by the Owner, the Designer shall submit to the Owner for approval four (4) copies of Design Development drawings, specifications, cost estimates, and other submittals. One (1) copy shall be submitted to the Authority by the Designer. The Designer shall also furnish to the Owner and the Authority electronic media copies of the foregoing drawings and documents in such form as may be required by the Authority.

7.5.8 The Designer shall present and explain the Design Development submittal to the Owner, the Authority, and at a local public meeting scheduled by the Owner, if any such meeting is scheduled or in conference.

7.5.9 The Designer and its Subconsultants shall collaborate with the Authority's Commissioning Consultant to develop design criteria which will support the purposes of building commissioning and energy/resources conservation concepts as commonly understood and as prescribed by the Commissioning Consultant.

7.6 Construction Documents Phase: In addition to the requirements specified in the RFS (Attachment B), upon receipt of an Approval to proceed with the Construction Documents Phase of the Project from the Owner, the Designer shall do the following:

7.6.1 The Designer shall meet regularly and as necessary with the Owner, the Authority, the OPM, and the Commissioning Consultant. This shall include meeting in accordance with the agreed upon project work plan with the Owner and the OPM during this Phase.

7.6.2 Based on the submittals approved in the Design Development Phase of the Project, the Designer shall update and refine the items previously submitted and shall submit the following on or before the date and time specified in the Project Schedule:

(a) Construction documents progress submittals as follows:

1. a 60% Construction Documents Submittal, with deliverables as defined in Article 7.6.3;
2. a 90% Construction Documents Submittal, with deliverables as defined in Article 7.6.4;
3. a Final Construction Documents Submittal, with deliverables as defined in

Article 7.6.5;

4. a Bid Documents Submittal, with deliverables as defined in Article 7.6.6

(b) As a part of each of the submittals required under Articles 7.6.3, 7.6.4, and 7.6.5, an updated work plan and recommended updates for incorporation into the Project Schedule by the OPM;

(c) As a part of each of the submittals required under Articles 7.6.3, 7.6.4, and 7.6.5, a report on the status of environmental, zoning, planning, building code, and ADA/MAAB approvals and permitting processes and a certified list of all required testing and all required permits identified in 7.5.2(a).

(d) All submittals by the Designer shall be subject to the written approval of the Owner, which approval shall not be unreasonably delayed, withheld, conditioned, or denied. Unless a lesser number is requested by the Owner or is specifically provided hereinafter, the Designer shall furnish to the Owner for approval four (4) sets of the drawings, specifications, construction cost estimates and all other submittals. Unless a lesser number is specifically provided hereinafter, the Designer shall furnish one (1) set of said drawings, specifications, construction cost estimates and all other submittals to the Authority. The Designer shall also furnish electronic media copies of the foregoing drawings and documents to the Owner and the Authority in such form as may be required by the Authority.

7.6.3 60 Percent Construction Documents Submittal:

(a) The Designer shall provide, on or before the date and time specified in the Project Schedule, a 60 % Construction Documents Submittal (60% CD Submittal), which shall include:

1. Construction Documents and other deliverables, as defined in this Article 7.6.3 and as further defined in Articles 7.6.2, 7.6.7, 7.6.8, and 7.6.9, advanced to a level of intermediate (60 percent) completion, and incorporating corrections to indicate compliance with Owner and Authority review comments related to prior submittals.

2. In instances where the Designer takes exception to the Authority's previous review comments on the Design Development submittal, a written statement explaining its position.

3. The Basis of Design that accompanied the Outline Specifications in the Design Development Phase shall be updated and expanded to include all proposed architectural, structural, fire protection, plumbing, mechanical, electrical, civil, and landscape design concepts for the Project.

4. A space summary, in the form and format prescribed by the Authority, that sets forth the current space calculations and totals and certifies that said space calculations and totals are in compliance with those previously authorized by the Authority in the Project Funding Agreement.

5. Keying of graphics shall be sufficient to navigate through the set easily .

6. A list of all drawings related to the Project.

7. A materials selection statement identifying typical interior and exterior surfaces and their materials.

8. A color theory statement indicating proposed paint colors and material selections for typical and special spaces, explaining why they have been selected and how these selections relate to surrounding materials and colors.

9. Large scale plans of all mechanical and electrical spaces with major equipment indicated.

10. Project Manual, in CSI Master Format (full-length, current version), including all sections to be included in final technical specifications, developed to include a list of all materials in the building with their manufacturers. Identify all specifications sections which need to be filed sub-bid.

11. Identify all proposed bid alternates by inclusion in a project manual section titled "Alternates." Alternates shall be listed in sequence as approved by the Owner. Work required under bid alternates shall be described and/or drawn, as appropriate, to clearly define the design criteria and extent of work involved for implementation of the bid alternate. In each instance, the existing conditions and/or new design criteria for base bid work shall also be described and indicated in documents.

12. Code analysis: Provide a building code analysis. Any deviation from methods of compliance described in earlier submittals shall be indicated. The Code analysis shall identify its preparer, code edition referenced, and include a comprehensive description of operative building code provisions, with floor plans showing fire separation types, area calculations, egress capacity for exits and exitways, and any special features required to comply.

(b) As a requirement of the 60% CD Submittal, and in accordance with Article 7.6.3 and Article 7.6.9, the Designer shall provide a construction cost estimate prepared using CSI MasterFormat 6-digit format to Level 3 and MGL c.149 §44F (filed sub-bid) format including quantities of all materials and unit prices of labor, equipment, and materials as well as a cost estimate for each item of work, for review by the Owner and the Authority. The estimated cost shall be projected to the mid-point of the construction period. The development of said construction cost estimate shall under no circumstances delay the timely submission of the remainder of the 60% CD Submittal.

7.6.4 <u>90 Percent Construction Documents Submittal</u>:

(a) The Designer shall provide, on or before the date and time specified in the Project Schedule, a 90 % Construction Documents Submittal (90% CD Submittal), which shall include:

1. Construction documents and other deliverables as defined in this Article 7.6.4 and as further defined in Articles 7.6.2, 7.6.7, 7.6.8, and 7.6.9, advanced to a level of substantial (90 percent) completion, and incorporating corrections to indicate compliance with Owner and Authority review comments related to prior submittals.

2. A space summary, in the form and format prescribed by the Authority, that sets forth the current space calculations and totals and certifies that said space calculations and totals are in compliance with those authorized by the Authority in the Project Funding Agreement.

3. Interior Materials Color Boards, including samples of principal interior materials, labeled and mounted to indicate locations.

4. Final structural and energy design calculations.

5. A statement confirming that the Owner has been provided with structural design drawings, specifications, and calculations sufficient to enable execution of an independent structural peer review process, as defined in the Massachusetts Building Code, as amended (this requirement applies to all school construction projects with a floor area exceeding 10,000 square feet). The Designer shall advise the Owner of this requirement, in writing, not less than sixty (60) days prior to delivery of the 90% CD Submittal allowing the Owner to arrange for the services of an Independent Structural Peer Reviewer. Upon reaching 90 percent completion of construction documents, the Designer's structural engineering consultant shall have reached a level of 100 percent completion of its construction documents to enable the advancement of the independent structural peer review.

6. The Designer and its consultants shall fully cooperate with the Independent Structural Peer Reviewer in the process. The Designer shall obtain a copy of the Independent Structural Engineering Review report and submit it to the Owner and the Authority upon completion of the remainder of the construction documents at the level of final completion.

7. In instances where the Designer takes exception to any of the Authority's 60% CD Submittal review comments, a written position statement explaining the Designer's position on its exceptions to said review comments.
8. Project Manual in CSI Master Format (full-length, current version), including all sections to be included in final technical specifications, developed to include a list of all materials in the building with their manufacturers. Identify all specifications sections which need to be filed sub-bid.
9. As a requirement of the 90% CD Submittal, and in accordance with the provisions of this paragraph and Article 7.6.9, the Designer shall provide a construction cost estimate prepared using the CSI Master Format 6-digit format to Level 3 and MGL c.149 §44F (filed sub-bid) format, including quantities of all materials and unit prices of labor, equipment, and materials,

as well as a cost estimate for each item of work, for review by the Owner and the Authority. The development of said construction cost estimate shall under no circumstances delay the timely submission of the remainder of the 90% CD Submittal.

7.6.5 Final Construction Documents Submittal:

(a) The Designer shall provide, on or before the date and time specified in the Project Schedule, a Final Construction Documents Submittal, which shall include:

1. Construction documents and other deliverables as defined in this Article 7.6.5 and as further defined in Articles 7.6.2, 7.6.7., 7.6.8, and 7.6.9, advanced to a level of final (100 percent) completion, and incorporating corrections to indicate compliance with Owner and Authority review comments related to prior submittals.

2. A final construction cost estimate, in accordance with the provisions of this paragraph and Article 7.6.9, based on the 90% Construction Documents, including cost estimates for general conditions, overhead and profit, insurance, bonds, and all other items expressed as percentage rates for design contingencies and construction contingencies and escalation to the mid-point of construction; and other mutually agreed upon contingencies. The final construction cost estimate shall be prepared the CSI MasterFormat to Level 3 and M.G.L. c.149,
§44F (filed sub-bid) format and shall be complete with a single line description for each item with the detailed unit rate or item cost buildup provided in each case.

3. Complete construction drawings and specifications, certified by the Designer as having satisfied the firm's quality control review process as previously confirmed with the Owner, in sufficient detail to permit fixed-price bids in open competition for construction of the Project when documents have been approved for issuance for bidding.

4. No later than at the 100% stage of completion of the final drawings and specifications, two sets of the final drawings and specifications that shall be provided to the local building official to be signed and stamped "Approved" by the local building official; two sets of plumbing drawings and specifications that shall be provided to the local plumbing inspector to be signed and stamped "Approved" by the local plumbing inspector; two sets of the fire protection, HVAC, and electrical construction documents that shall be provided to the local fire official to be signed and stamped "Approved" by the local fire official; two sets of the electrical construction documents that shall be provided to the local electrical inspector to be signed and stamped "Approved" by the local electrical inspector. Notwithstanding the foregoing, the Owner acknowledges that building officials, department inspectors, and fire officials have varying policies on approvals and submittal procedures, and the only obligation of the Designer in this regard is to promptly make the submittals described herein and assist the Owner in receiving the approvals to

the extent available.

5. At the 100 percent stage of completion of final drawings and specifications, a written summary comparing the final construction drawings and specifications and final estimated construction cost with the Final Design Program requirements and submittals made during the Design Development Phase and earlier in the Construction Documents Phase, explaining any significant deviations.

6. In instances where the Designer takes exception to any of the Authority's 90% CD Submittal review comments, a written position statement explaining the Designer's position on its exceptions to said review comments.

7. The Independent Structural Engineering Peer Review Report obtained from the Independent Structural Engineering Peer Reviewer referenced in Articles 7.6.4(5) and 7.6.4(6). The Designer shall include a certification statement from the project structural engineer designer of record to acknowledge receipt of the Report and to indicate response actions pursuant thereto. The Designer shall also forward a copy of said Report to the Building Inspector.

8. A certification that all applicable local, state and utility officials have been contacted by the Designer regarding each utility connection and that the persons responsible for permits or connection approval have agreed to the systems' use.

7.6.6 Bid Documents Submittal:

(a) The Designer shall provide, on or before the date and time specified in the Project Schedule, a Bid Documents Submittal which shall include:

1. Construction documents and other deliverables as defined in this Article 7.6.6 and as further defined in Articles 7.6.2, 7.6.7, and 7.6.8, incorporating corrections to indicate compliance with Owner and Authority review comments related to prior submittals.

2. From the construction drawings and specifications approved by the Owner, incorporating such changes as the Owner or the Authority requires, a set of reproducible black and white drawings and original specifications on high quality white bond paper, single-sided, properly packaged, suitable for reproduction, stamped and signed by all disciplines, that shall be prepared by the Designer and transmitted to the Owner; which documents shall become the property of the Owner as provided under Article 16. Other suitable reproducible media, having the same content shall be substituted, when so directed or authorized by the Owner.

3. Upon receipt of Owner authorization to advance to reproduction of the approved documents for distribution to bidders and, upon reproduction thereof, the Designer shall promptly submit complete sets of bid documents to the Owner (two sets) and the Authority (one set - half size for Drawings). Any subsequent addenda shall be promptly submitted to the Owner and the Authority.

4. Documents shall adhere to all requirements as set forth in M.G.L. c. 7C, §6, M.G.L. c. 7, §61, and associated guidance from the Supplier Diversity Office.

7.6.7 Drawing Requirements:

(a) The documents prepared during the Construction Documents Phase shall set forth the requirements for construction of the Project to a level of detail that is customary and standard and shall include, but not be limited to:

1. General information showing drawing index, symbols, abbreviations, notes, locations map.

2. Site drawings shall be complete to define the extent and detail of site work. Show the following:

   a. Layout and location of all proposed work including buildings, structures, retaining walls, geothermal wells, parking, walls and all other site improvements, with details.
   b. Existing and proposed grades and contours including floor elevations, existing structures and topography, survey base line, bench marks and boring locations.
   c. Landscaping and planting.
   d. All utility service lines, systems and structures for electricity, gas, oil, water, steam, telephone, CATV, fire alarm, sanitary and storm drainage including size, composition, grades and directions of flow.
   e. Contract Limit Line and Storage Area for construction materials.
   f. All existing foundations, obstructions and other physical characteristics of the site which may affect the construction work.
   g. Site survey.
   h. Cuts of benches, light standards.

3. Demolition drawings and temporary work required.

4. Architectural drawings shall include at a minimum:

   a. Floor plans of each floor, including basement and lofts or attic with room and corridor dimensions, wall thicknesses, column locations, floor elevations, mechanical and electrical openings, door and window designations, partition types, floor materials, built in furniture and equipment, keyed to other architectural drawings. All rooms numbered.
   b. Large scale floor plans, as required, to illustrate detailed requirements of rooms.
   c. Large scale plans showing key areas e.g. lobby, special spaces. Indicate surface materials. (minimum scale ¼” = 1’- 0”)
   d. Roof plans showing openings, drainage, slopes, expansion joints and all projections, including equipment.
   e. Key plans on all floor plans and section drawings, where appropriate.
   f. Building Sections as required to show spatial organization of the building but no less than one longitudinal and one transverse.

g. Building elevations. All building elevations shall be fully developed, and hidden elevations shall be shown. Elevations shall be shown in a sequence as unfolded from a certain point.
h. Full height wall sections indicating dimensions, flashing, anchorage, reinforcing, coursing, cladding, and all other conditions at wall, roof, foundation, and interior floors.
i. Exterior details, for roofing, flashing, expansion control, construction joints, waterstops and other details showing all conditions both vertical and horizontal, including schedules.
j. Door, window, entrance, and storefront, schedules, and details.
k. Vertical circulation plans, sections and details including stairs, elevators, conveyors, and dumbwaiters.
l. Interior elevations of all significant and typical spaces.
m. Interior details including casework, paneling surfacing and acoustical treatment.
n. Reflected ceiling plans coordinated with fire protection, mechanical and electrical drawings, and ceiling details.
o. Schedules (clearly define new or existing)
    i. Doors
    ii. Equipment, e.g. for services
    iii. Partitions
    iv. Finishes

5. Structural drawings shall indicate the following:

    a. Indicate or refer to location of geotechnical exploration data and reports related thereto.
    b. 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.
    c. 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.
    d. Complete foundation wall elevation and typical sections, with reinforcing indicating location, dimensions and grades for all footings, steps and wall openings.
    e. Complete details and sections with dimensions for all construction including expansion and construction joints, reinforcing and other embedded items.
    f. Schedules (with dimensions) for all lintels, beams, joists, and columns.
    g. Unless detailed on the Drawings, the following information shall appear in the general notes: 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; bendpoint, cutoff, and hook locations for all members, minimum beam and lintel bearing. Reinforcing steel fabrication shall be in accordance with most recent ACI, “Manual of

Standard Practice for Detailing Reinforced Concrete." Structural steel fabrication shall be in accordance with the AISC "Manual of Steel Construction."

6. Fire protection drawings shall indicate standpipe systems, sprinkler systems, suppression systems, access panels, fire pumps, accessories, and piping. All piping, equipment, fixtures and devices shall be located and sized. Design criteria shall be provided on the drawings in accordance with NFPA requirements.

    a. Fire protection work, other than site work, shall not be combined on the same sheets with the Plumbing, HVAC, Electrical, or other drawings except with the prior approval of the Owner.

7. Plumbing drawings shall indicate the following:

    a. All work done by the Plumbing Subcontractor, which includes all water, gas, air, vacuum, medical gases, sanitary and storm wastes, and accessories. Include foundation drain lines unless established as the work of the General Contractor and shall not be indicated on the Plumbing Drawings. Site utilities shall be indicated on the utility drawings.
    b. Plumbing work, other than site work, shall not be combined on the same sheets with the Fire Protection, HVAC, Electrical, or other drawings except with the prior approval of the Owner.
    c. Trapping and venting of all plumbing fixtures including floor drains.
    d. Water and gas supply sources, storm and sanitary discharge mains.
    e. All piping shall be carefully sized and all sizes shall be indicated on drawings and riser diagrams. Indicate all directions of flow and pitch on piping.
    f. All accessories, valves, and fixtures including all drinking fountains, grease traps for kitchen waste and all necessary panels, identified as to type and size.
    g. All piping and connections required for other trades (e.g., kitchen equipment, HVAC make-up water, etc.).
    h. Acid waste, vents and neutralization systems for laboratories.
    i. Plumbing Legend and/or graphical symbols on the first sheet of the Plumbing Drawings in accordance with the American National Standards Institute (ANSI).
    j. Plumbing riser diagrams for structures two or more stories in height above the ground level.
    k. Domestic water booster pumps, boiler feed water, meter location, hose bibbs, and wall hydrants.
    l. Domestic hot water: storage tanks, piping material, hanger details.
    m. All required access panels shall be indicated.
    n. Backflow preventors and cleanouts. Verify that access and clearance provisions for periodically inspected devices, including backflow prevention, are adequate to satisfy requirements of inspecting agencies.

8. Heating, Ventilating and Air Conditioning Drawings shall indicate the

following:

a. HVAC work, other than site work, shall not be combined on the same sheets with Fire Protection, Plumbing, Electrical, or other drawings except with the prior approval of the Owner.
b. All piping and ductwork systems shall be located and sized. All ductwork shall be shown double line.
c. All systems shall be sized at all reductions and riser diagrams of piping and duct systems shall be indicated.
d. All directions of flow and pitch on piping, and direction of flow, volumes for duct systems shall be indicated.
e. All equipment shall have sufficient servicing and/or replacement space indicated on drawings.
f. 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.
g. Cooling system pumps, chillers, cooling towers, air handling units, heat pumps, ductwork system and dampers, fan details, temperature control system, air and hydronic balancing equipment, and schedules shall be indicated.
h. 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.
i. All fire and smoke dampers, access panels and doors.
j. 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.

9. Electrical Drawings shall indicate the following:

a. Site utilities shall be indicated on separate electrical site drawings, unless ample space is available on common site for utility drawings.
b. Electrical work, other than site work, shall not be combined on the same sheets with Fire Protection, Plumbing, HVAC, or other drawings except with the prior approval of the Owner.
c. General arrangement: Outline layout of each floor. Typical sections through the structure shall be indicated when necessary to define requirements, floor and ceiling heights, elevations, and type construction, including concrete pads shall be indicated. Indicate interface with other systems. Identify any work by general contractor or other trades.

d. 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.
e. Power system: Locations, types and method of control for all motors, heaters, appliances, controllers, starters, branch circuits, feeder conductors, conduits, and solar panels. 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.
f. Fire Alarm, Data, Communications, CATV/CCTV Systems: Locations and types of all devices, outlets and equipment, service connections, wiring diagrams, and all other essential details.
g. 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.
h. 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.
i. Underground work: Shall include specifying (1) the size and locations of manholes, (2) types of cables, (3) number, sizes, and locations of ducts, (4) locations, sizes, and types of cable supports, fireproofing, duct line profile, and (5) one line diagram of connections.
j. Pole line work: If required as contract work, indicate 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.
k. Exterior lighting: Location, size, and type of transformers, luminary, poles, light standards, cables, ducts, and manholes, details of control equipment and connection diagrams.
l. Emergency system details including transfer switch, type of fuel.
m. 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.
n. Riser diagrams for all systems.

7.6.8 Project Manual Requirements:

(a) The format for the Project Manual, including its technical specifications, shall be in accordance with the current CSI MasterFormat with separate sections for each

of class of work required by M.G.L. c. 149 §44F.

(b) The following general information applies to the development of final specifications:

1. 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.
2. 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 M.G.L. c.30, § 39M.
3. Specify materials mined or manufactured in Massachusetts first and the United States of America second whenever possible.
4. Do not use general clauses intended to be all-inclusive in lieu of complete descriptions.
5. Do not duplicate standard requirements that are contained in the contract form.
6. Use consistency throughout. The word "will" shall be used to designate what the Owner, Authority, Owner's Project Manager, Commissioning Consultant, 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.
7. Use the same term throughout for the same subject and the term shall be the same as that used on the drawings.
8. Do not use the term "etc."
9. Avoid such terms as "to the satisfaction of the Designer," "as directed by the Designer," "as approved," and "as required".
10. Specify work in appropriate Sections according to local trade jurisdiction.
11. Avoid the use of the following symbols:

Symbol	Use Instead
#	number, no., or pounds
%	percent
"	inch or in.
x	by
'	feet or ft.
o	degree
/	per or at

12. 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 the like.

13. 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.
14. 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.
15. Do not specify that a product or system shall require prequalification or advance approval for use prior to bidding.
16. Established unit price items shall be used for work categories which cannot be ascertained for exact quantities in bid documents (e.g. earthwork removal and/or replacement items). In such cases, the Designer shall establish ranges of quantities with associated unit price values for each range. Unit price values shall be established for added work, for deleted work, and for base bid quantities when conditions so-suggest. Unit price values shall be ascertained through consultation with cost estimators, be current, equitable, and well defined as to elements of work, overhead, like issues to be encompassed. Established unit prices shall be published within the applicable technical specification sections and referenced from general conditions as being operative as the basis for determining values to be used for payment or recovery for change order work.
17. 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.
18. A final draft of Project Advertisement, Notice to Bidders, Instructions to Bidders, Contract Forms, General Conditions, Supplementary General Conditions, and other "front end" documents shall be included in the 90% construction documents submittal, along with a final version of all text to appear in Division 1, General Requirements. The Designer may defer insertion of final advertising / bid dates and wage rates, understanding that they are to be established and inserted immediately prior to release of documents for bidding.

7.6.9 Construction Cost Estimate Requirements

The Designer shall provide the construction cost estimates described in Articles 7.6.3, 7.6.4, and 7.6.5 in accordance with the following provisions:

(a) The Designer shall review its construction cost estimate in comparison with the detailed construction cost estimate, and any updated cost estimates, provided by the OPM and shall work in good faith and in cooperation and coordination with the OPM to reconcile any differences between the cost estimates, to clarify assumptions upon which the cost estimates are based and to address any concerns or questions with the cost estimates that are raised by the Owner, the OPM, or the Authority. If the Designer is unable to reconcile all differences between the two construction cost estimates with the OPM, then the Designer shall provide a detailed explanation of the differences to the Owner and the Authority. If, in any

case, the agreed-upon, reconciled construction cost estimate exceeds the Project Construction Budget, the Designer shall cooperate with the Owner and the OPM in identifying, specifying and recommending changes in materials, equipment, component systems and types of construction, or other adjustments in the scope or materials selections for the Project, including contingencies or alternative bid items, so as to facilitate revision of the design of the Project to reduce the cost of construction so as to comply with the Project Construction Budget.

(b) Cost estimate data shall be organized to identify elements of project work which may be proposed to be advanced under separate construction phases and/or separate bidding packages. When so proposed, estimates shall develop cost data relative to corresponding bidding and work execution dates established in project schedules.

(c) Cost estimates shall be projected to the mid-point of the construction period.

(d) The summary sheets 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 work cost (including all utilities).

8. The building cost (including fixed equipment).

9. The estimated construction cost of each Phase of the work, totaled.

7.6.10 The Designer shall participate in a final review of the Construction Documents with the Owner, the OPM, and the Commissioning Consultant, and the Designer shall incorporate such changes, as necessary, to satisfy the Owner's review comments.

7.7 Bidding Phase

7.7.1 The Designer shall, when authorized by the Owner, prepare for reproduction and distribution the construction bid documents, including advertisements, for receipt of proposals from construction contractors, and for execution of the Owner-Contractor Agreement. The Designer shall prepare all addenda (to include bidder questions and Designer responses), subject to the Approval of the Owner and the Authority. The Designer shall attend the pre-bid conference if one is scheduled, taking note of all questions asked. Relevant questions submitted in writing shall be answered by the

Designer by means of written addenda to the bid documents as required. The Designer shall attend each bid opening and, with the assistance of the Owner's Project Manager, conduct a review of the qualifications of the low filed sub-bidders and general bidder (and of other bidders if necessary) and shall, within five working days of the respective bid opening dates, advise the Owner in writing of the Designer's opinions as to the sub-bidders' bids and as to which general bidder is the responsible and eligible bidder that has submitted the lowest bid.

7.7.2 The Designer shall assist the Owner in the prequalification of prime contractors and subcontractors in the filed sub-bidder or trade contractor scopes of work pursuant to M.G.L. c. 149, §§44D½ and 44D¾ including participation as a member of the Owner's Prequalification Committee.

7.7.3 The Designer shall receive all inquiries relating to the bid documents and, when necessary, answer questions by preparing and issuing written addenda. The Owner shall review and approve all such addenda prior to issuance to bidders.

7.7.4 When sub-bids are required:

(a) Attend sub-bid openings.

(b) Assist in reviewing sub-bids with the Owner for completeness and accuracy.

(c) Assess sub-bid amounts relative to cost estimates.

(d) Assist in checking references of sub-bidders and make written recommendations as to their qualifications, only required for projects in which pre-qualification has not occurred.

(e) Issue a letter of recommendation to Owner upon acceptance of sub-bids, identify any categories to be re-bid and reason(s) therefor.

(f) Prepare and distribute the filed sub-bid tabulation to all prospective bidders. The tabulation shall be reviewed and approved by the Owner prior to its issuance to bidders.

7.7.5 Unless otherwise directed by the Owner, attend and conduct the general bid opening.

7.7.6 Review with the Owner and the Owner's Project Manager general bids for completeness and accuracy.

7.7.7 Review bidder responses for alternates and make written recommendations as to their acceptance.

7.7.8 If the Project must be re-bid because of a defect in the bid documents prepared by the Designer or in procedures proposed by the Designer, the Designer shall correct the defect and take the necessary actions for re-bidding the Project on proper bid documents without any additional compensation to the Designer.

7.7.9 If within three (3) months after approval of Construction Contract Documents, in final form, the bids of the lowest responsible and eligible bidders or negotiated proposals exceed the approved Project Construction Budget, the provisions of Article 4.10 shall apply.

7.7.10 If the Owner awards a construction contract for an amount that exceeds the amount established in the Project Construction Budget, such an award will not affect the Fee for Basic Services.

7.8 Construction Administration Phase - Obligations During Construction: Following the execution of the Owner-Contractor Agreement, the Designer shall undertake certain of the obligations of administering the Owner-Contractor Agreement on behalf of the Owner, provided that Designer shall not be subject to provisions of the Owner-Contractor Agreement that would have the effect of expanding Designer's responsibilities or liabilities under this Contract without Designer's written consent. Services during this phase include, but are not necessarily limited to:

7.8.1 Upon commencement of construction activities for the Work or early bid packages or at times established in Project schedules, the Designer shall:

(a) Furnish the General Contractor with information for establishing lines and grades and such supplemental drawings as are reasonably needed to implement the intent of the Construction Contract Documents;

(b) With reasonable promptness and in accordance with schedules agreed upon by the Designer and Contractor, observe testing when required under this Contract, and review and act upon samples, schedules, shop drawings and other submissions from the General Contractor;

(c) Prepare, maintain and update logs for all submittals;

(d) Visit the site at intervals appropriate to the stage of construction, weekly or as otherwise agreed to by the parties, and observe the progress of the Work, issue written progress reports, attend job meetings, and review and respond to meeting minutes prepared by the Owner's Project Manager, and to determine in general if the Work observed is being built in a manner indicating the Work when completed will be in accordance with approved Construction Contract Documents;

(e) Collaborate with the on-site Project Representative of the OPM to identify and monitor issues of concern relative to the progress of the Work, and establish communications processes to help assure that matters of mutual concern are exchanged on a timely basis with one another, the OPM, Commissioning Consultant, and Owner;

(f) On a weekly basis, make specific recommendations on rejection of any Work observed by the Designer that fails to conform to the Construction Contract Documents, and observe corrected Work;

(g) Require each Subconsultant engaged in accordance with Article 5 to make visits weekly or as otherwise agreed to by the parties during the progress of any work to which that Subconsultant 's services relate, and to report upon it in writing to the Designer;

(h) Recommend actions to be taken which may include condemnation or rejection of any work that the Designer determines fails to conform to the Owner-Contractor Agreement;

(i) Review and recommend appropriate action for proposed requests for changes and where required by the Owner, prepare documents associated with requests for a change in any Construction Contract Documents. Compensation for change order work by the Designer shall be determined in accordance with Article 10;

(j) Conduct semi-final and final inspections of the Project and report the results of

such inspections in writing to the Owner;

(k) In association with the Commissioning Consultant, review the report by such Commissioning Consultant on the balancing of air and water circulation systems;

(l) In association with the Commissioning Consultant, review the report by such Commissioning Consultant on the setting and adjustment of automatic controls;

(m) In a timely manner, decide all questions regarding interpretation of, or compliance with, the Construction Contract Documents, except as the Owner may in writing otherwise determine;

(n) In association with the Commissioning Consultant, review the recommendations of such Consultant for requirements upon operating and maintenance documents and building user training events and instructional media as established in the Construction Contract Documents; such Consultant or OPM shall coordinate involvement of contracting parties, the Designer, and Owner;

(o) Furnish the Record Drawings as submitted by the General Contractor in accordance with 7.8.3, and other required documents;

(p) Assist the Owner in providing the written Contractor Evaluations required of the Owner pursuant to M.G.L. c.149 §44D(7) at the completion of approximately 50% of the Construction Phase on forms prescribed by M.G.L. c.149 §44D(16);

(q) Perform inspections of the work as necessary to prepare a punch list identifying each incomplete or deficient Work item and performing re-inspections to authorize removal of satisfactorily completed Work items from the punch list, or to determine that the Project is complete. In association with the OPM, a cost shall be assigned to each incomplete or deficient Work item when it has been determined that the Project has reached Substantial Completion; and

(r) Receive from the General Contractor all maintenance and operating manuals, occupancy permits, guarantees and other similar relevant materials.

7.8.2 The Designer shall submit to the Owner's Project Manager within 48 hours all requisitions for payment submitted by the General Contractor in the form required by the Owner. The Designer may establish procedures with the Contractor for advance notification of requisition and/or draft version processing. With respect to each such requisition, the Designer shall certify to the best of its knowledge that the percentage of Work included in the requisition is accurate and that the work performed is in accordance with the Construction Contract Documents. In the event the Designer does not approve the requisition exactly as submitted by the General Contractor, the Designer shall forward it for payment to the Owner's Project Manager dated and signed with corrections and with an accompanying letter of explanation setting forth the Designer's objections and recommended changes. The Designer shall coordinate the required visits of its own staff and those of its Subconsultants, to the construction site so as to enable the Designer to submit to the Owner's Project Manager the General Contractor's monthly requisition for payment. Timely payments to the Contractor are required by M.G.L. c. 30, § 39K. Therefore, the Designer shall establish procedures to help assure either immediate mail or messenger delivery of the requisition for payment to the Owner's Project Manager, and shall process

requisitions for payment within five business days after receipt of the same, provided the Contractor has submitted a full and complete requisition for payment in the correct form.

7.8.3 Prior to issuance of the Certificate of Substantial Completion, the Designer shall obtain from the General Contractor as-built drawings, including drawings showing the actual installation of the site utilities, plumbing, heating, ventilating and electrical work under the Owner-Contractor Agreement, and recording all changes. The Designer shall ascertain that changes authorized by change orders are shown on the General Contractor's as-built drawings, but Designer shall be entitled to rely upon the accuracy and completeness of the Contractor's as-built information, and shall forward such to the Owner as Record Drawings.

7.8.4 Issue the Certificate of Substantial Completion of Construction.

7.8.5 The Designer shall meet with the Owner monthly during this Phase.

7.9 Completion Phase: Upon acceptance of the Certificate of Substantial Completion of Construction by the Owner, the Designer shall thereafter provide the following services:

7.9.1 With respect to a completed Project, preparing a Certificate of Final Completion.

7.9.2 With respect to a punch list, re-inspecting the work up to three times in order to determine that the punch list work is satisfactorily completed.

7.9.3 Reviewing and certifying the Contractor's Application(s) and Certificate(s) for Payment as necessary.

7.9.4 Attending meetings as reasonably necessary in the opinion of the Owner's Project Manager, unless such meetings involve continued discussions of incomplete or deficient work and the Basic Services punch list site visits have been expended. In such instance, the meetings shall be paid for as Extra Services.

7.9.5 Using the as-built information maintained by the General Contractor during construction referred to in Article 7.8.3, and revising the applicable original reproducible drawings and electronic media drawings on the basis of the as-built drawings, provided that Designer shall be entitled to rely upon the accuracy and completeness of the Contractor's as-built information. Upon completion of the required drafting and editing, provide one set of Record Drawing mylar reproducibles, two sets of Record Drawing prints and two electronic version Record Drawing copies to the Owner which shall become the property of the Owner. The cost for printing the mylar reproducibles and two sets of prints are Reimbursable Expenses. Upon completion of the required drafting and editing, provide one set of Record Drawing prints and one electronic version copy to the Authority.

7.9.6 Ten (10) months after the date of substantial completion, performing one (1) site inspection and preparing a list of construction warranty deficiencies. The Designer shall consult with the Commissioning Consultant upon the acceptability of warranty compliance requirements and response actions.

7.9.7 Informing the Owner in writing, through the Owner's Project Manager, of all such warranty deficiencies that should be addressed.

7.9.8 Performing one (1) site inspection within a further sixty (60) days to see that all such warranty deficiencies have been corrected.

7.9.9 Evaluation of Contractor: The Designer shall assist the Owner with providing the written Contractor Evaluations required of the Owner pursuant to M.G.L. c.149 § 44D(7) within 70 days of the date of Substantial Completion for construction, on forms prescribed by M.G.L. c.149 § 44D(16).

7.9.10 Two (2) suitably bound legible copies of all original design and quantity calculations including those pertinent to change orders and shop drawings if applicable shall be furnished by the Designer to the Owner at the conclusion of the Owner-Contractor Agreement.