

DCAMM

Designer Guidelines and Procedures

March 2023



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Introduction

The Division of Capital Asset Management and Maintenance's ("DCAMM") Designer Guidelines and Procedures document provides direction and guidance to Designers who work on DCAMM Projects. The Designer Guidelines and Procedures document may also be used by Awarding Authorities other than DCAMM who hold contracts with Designers and in that case, Authorities shall customize this document for their use and "DCAMM" should be replaced by "Awarding Authority."

The Designer Guidance and Procedures document replaces the August 2008 Designers Procedures Manual and incorporates the Guidelines for the Preparation of Studies for Building Projects dated October 2000. The Designer Guidelines and Procedures applies to all DCAMM design contracts executed on or after the date that appears on the cover page.

Key updates include:

- New Executive Orders
- Goals for Design Excellence (Design, Value, Stewardship)
- Best Practices including requirements for Quality Control and Cost Management
- Updated Designer Activities during Study and Design Phases
- Goals for Carbon Reduction, Resilience, and Sustainability
- Re-commitment to Diversity, Equity, and Inclusion
- Study Certification follows completion of Schematic Design
- Project Evaluation at Close-Out
- Study and Design Phase Work Plan templates
- Checklists for major submissions

The Designer Guidelines and Procedures sets clear expectations, improve productivity, enhance communication, and ensure consistency to help Designers translate DCAMM requirements more efficiently into successful design solutions. Hyperlinks are provided to access key resources; however, Designers are responsible for ensuring links are the most up to date.

The Designer Guidelines and Procedures provides a general overview of POTENTIAL tasks and deliverables that a Designer MAY BE required to complete, primarily for projects subject to Chapters 149 or 149A of the Massachusetts General Laws. Individual project details and scopes of work will be defined in the Designer Selection Board's advertisement for design services and in the detailed Work Plan developed by the Designer and DCAMM following project initiation. The tasks, deliverables, and templates included in this document should be used by the Designer and DCAMM's Project Manager to develop the Study and Design Work Plans.

The Designer Guidelines and Procedures references general requirements included in DCAMM's Contract for Study, Final Design, and Construction Administration Services (the "DCAMM Contract"). **If there are discrepancies between the Designer Guidelines and Procedures document, including any periodic updates, and the DCAMM Contract, the DCAMM Contract shall control.** DCAMM is committed to a fair and equitable relationship with the Designer and expects that the Designer will adhere to the guidelines in this document as well as relevant codes and standards and will provide a high level of service.

Intended to be a "Living Document," the Designer Guidelines and Procedures will undergo periodic updates as DCAMM's goals and procedures evolve.

1. Division of Capital Asset Management and Maintenance

The Division of Capital Asset Management and Maintenance (DCAMM) is an agency within the Executive Office for Administration and Finance secretariat and is responsible for capital planning, major public building construction, facilities management, and real estate services for the Commonwealth of Massachusetts. DCAMM works closely with secretariats and agencies to create and manage forward-thinking, sustainable buildings that meet the needs of the citizens we serve. DCAMM provides services for a wide variety of agencies including institutions of higher education, health and human services, judiciary, public safety, and many others.

Created by the Massachusetts Legislature in 1980 to promote quality and integrity in the management and construction of the Commonwealth's capital facilities and real estate assets, DCAMM strives to achieve the best solutions for the many stakeholders while meeting the Commonwealth's goals.

1.1 DCAMM Mission

DCAMM is committed to meeting our User Agencies' needs by providing facility solutions that are strategic and demonstrate design excellence. We rely on our Designers to help us achieve these commitments. As noted on DCAMM's website:

- We are stewards of the Commonwealth's assets. We care for the people of our state and the future of our planet.
- We work with state agencies to create and manage forward-thinking, sustainable buildings to meet the needs of the Commonwealth's citizens and help achieve a zero-carbon future.
- We are partners with fellow agencies to help them meet their strategic needs with fiscally responsible building and real estate solutions.
- We support the growth of the Commonwealth's economy and actively engage with private sector partners to make it easier to do business with the Commonwealth.
- We work to expand access, opportunity, and equity to create more inclusive services, planning and outcomes for all the citizens of the Commonwealth.

1.2 Statutory Requirements

DCAMM's work and the work of the Designers and Contractors to assist in these projects are governed by statute. Massachusetts General Law ("M.G.L.") [Chapter 7C](#) governs the requirements for studies and design, and it also governs the requirements for construction, reconstruction, installation, demolition, maintenance, or repair of any public building with a design fee of over \$30,000 and an estimated construction cost of over \$300,000.

The Office of the Inspector General has developed a [Manual for Designing and Constructing Public Facilities](#) which references the legal and procedural requirements of the procurement laws that apply to public design and construction contracts in Massachusetts. Designers must comply with [Conduct of Public Officials and Employees \(M.G.L. 268A\)](#)

as they are considered "State employees" as that term is defined in M.G.L. Chapter 268A § 1. Designers are persons "performing services for or holding an office, position, employment, or membership in a state agency, whether by election, appointment, contract of hire or engagement, whether serving with or without compensation, on a full, regular, part-time, intermittent or consultant basis . . .".

Massachusetts General Laws for Studies

Chapter 7C, Section 59	Requirement for Studies Studies must be prepared for all building projects of state agencies and building authorities for projects under Designer Selection Board jurisdiction (greater than \$30,000 design cost AND \$300,000 construction cost)
Chapter 7C, Section 60	Study Certification Study certification is required for projects with design fee > \$30,000 AND construction ECC > \$300,000 Before DCAMM can enter a contract for final design services, studies must be certified by the DCAMM Commissioner and the User Agency. After certification, no substantial changes can be made to the extents of improvements during the implementation process. In subsequent phases, the gross square footage may not change by more than 10% of the number specified in the study or the study will need to be recertified.
Chapter 7C, Section 44-61	Designer Selection Procedures that public agencies must use for the selection of design firms for all public building construction projects that are estimated to have \$30,000 of design work AND \$300,000 ECC. Competitive procurement process based on Qualification-Based Selection. Firms are first qualified, and sometimes ranked according to their qualifications without regard to design fees.

Massachusetts General Laws for Design and Construction

Chapter 149, Section 44A-1	Design-Bid-Build (DBB) Traditional public bidding method (Design-Bid-Build) with contractor awarded to the lowest responsible and eligible bidder after completion of design. Public buildings with ECC > \$150,000 for construction, reconstruction, demolition, maintenance, or repair of any building including modular buildings Areas of work required if value > \$25,000 that must be bid separately, as file sub-bids. 18 filed sub-bid trades (per Section 44F), but could include another class of work an awarding authority deems necessary
Chapter 149A	Construction Management at Risk (CMAR) Optional for public buildings with ECC > \$5m Trade bids > \$25,000 Qualified CM selected through a quality-based selection process and negotiate a price (GMP) prior to the completion of the design. CM assumes the risk of bids coming in higher as they are contractually bound to deliver the project per the plans and specifications and any additional allowances defined in the GMP. DCAMM Certification required of primes/CM in one of the 28 categories, usually General Building Construction DCAMM Certification required in any of the 18 filed Trade Bids when ECC > \$25,000.
Chapter 25A	Energy Performance Contracts Provides streamlined procurement pathways to contract for energy management services

	including energy audits, energy conservation measures, energy conservation, and building maintenance and financing services.
	Solicitations issued pursuant to Ch. 25A fall under the jurisdiction of the Dept. of Energy Resources (DOER).
Chapter 30, Section 39M	Horizontal construction
	For public horizontal, non-building construction contracts for site improvement projects such as parking lot/roadway paving, underground utilities, etc.
	ECC > \$25,000
	No study certification required unless vertical work > \$150,000
Chapter 149, Section 26-27D	Prevailing Wage
	Project specific wage rates set by Dept. of Labor Standards on a project-by-project basis for all public construction projects
	Must be included in bid and contract documents by awarding authority
	Must be paid by contractor/sub-contractor on all public construction project of any dollar value to all workers working onsite
	Weekly certification payroll reporting required

1.3 Federal and State Codes and Regulations

All applicable federal and state codes and regulations will govern the design, selection of materials, construction, renovation, repairs, and/or demolition. This includes, but is not limited to the [International Building Code \(IBC\)](#) the [Massachusetts State Building Code](#), the [Massachusetts Electrical Code](#), the [Massachusetts Plumbing Code](#), as well as the Massachusetts Architectural Access Board Rules and Regulations (521 CMR), and the Americans with Disabilities Act which are discussed further in the section below.

Accessibility Compliance

The Design team is expected to understand, reflect, and comply with the minimum requirements of the [Rules and Regulations of the Massachusetts Architectural Access Board \(521 CMR 1.00-47.00\)](#) and the [2010 ADA Standards](#), and is professionally and contractually responsible for ensuring that the most stringent regulations are met in DCAMM projects.

The ADA is federal civil rights law. The Design team is expected to understand and reflect in its design the civil rights obligations of the Commonwealth under [Title II of the Americans with Disabilities Act](#) which requires that the Commonwealth provide equal access to public programs, services, and activities. All new construction and renovations must adhere to the scoping requirements set forth within 28 CFR § 35.151: New construction and alterations. When state and federal requirements differ, the Design team shall comply with the one that provides the greater degree of accessibility. The ADA also provides guidance on [Alterations to a Primary Function Area](#)

Institutions typically have an accessibility coordinator who the Designers should engage with at the start of a project. DCAMM may use its accessibility consultants to provide technical assistance and oversight for accessibility compliance during the study, design, and construction administration process. Consultant services may include accessibility audits of existing buildings, participation in planning meetings and workshops, and review of code reports and design documents.

If a DCAMM accessibility consultant is assigned, the Designer must review and incorporate the work of the accessibility consultant into their construction documents. The accessibility consultant will not provide design services or construction administration services. While DCAMM or its consultant may assist with the scoping and review of accessible elements, the architect of record holds responsibility to ensure all applicable accessibility requirements have been met on a project.

DCAMM's Statewide Accessibility Initiative (SAI) serves as a secondary review to increase the technical rigor on accessibility and assist the Designer. Refer to the [DCAMM Statewide Accessibility Initiative \(SAI\) website](#) for additional information on accessibility requirements for Commonwealth projects.

1.4 Executive Orders (EO)

Executive Orders are directives that Massachusetts Governors have enacted with which all Executive Branch agencies must comply. The following Executive Orders include provisions and requirements that apply to DCAMM (and other agency) projects.

[Executive Order 565](#) reaffirms and expands the Massachusetts Supplier Diversity Program to promote opportunities for all certified entities to compete for business throughout the Commonwealth.

[Executive Order 569](#) lays out a comprehensive approach to further reduce greenhouse gas emissions, safeguard residents, municipalities, and businesses from the impacts of climate change, and build a more resilient Commonwealth.

[Executive Order 592](#) advances Workforce Diversity, Inclusion, Equal Opportunity, Non-Discrimination, and Affirmative Action.

[Executive Order 594](#) sets goals and requirements that will accelerate the decarbonization of fuels used to heat and cool state facilities, help to demonstrate new technologies and strategies necessary to meet the Commonwealth's energy goals, and quicken the shift to electric heating and vehicles. By leading by example in these and other areas, state government can help guide the Commonwealth toward a cleaner future.

Design teams are expected to establish project goals to meet these Executive Orders and provide updates on meeting these goals at key project milestones.

1.5 Affirmative Marketing and Diversity, Equity, Inclusion

Per M.G.L. Ch. 7C, § 6, an Affirmative Marketing Program is "a program of race and gender conscious goals to promote equality in, and to encourage the participation of, minority-owned business enterprises (MBE) and women-owned business enterprises (WBE) in contracts for capital facility projects and state assisted building projects."

DCAMM has established an Affirmative Marketing Program (AMP) to ensure fair participation of minority and women owned businesses. The Annual Report summarizes performance against program goals, as well as workforce utilization data compiled for FY2021 from firms working on DCAMM construction and design projects.

DCAMM establishes annual MBE/WBE participation goals for the agency (refer to <https://www.mass.gov/service-details/dcamm-contract-compliance> for the most up to date goals); however, individual project goals will be reviewed by DCAMM's Compliance Office and may be adjusted based on relevant factors.

- Participation goals for each Contract/project are for the overall value of the study and final design contracts.
- Applicants must utilize both MBE and WBE firms whose participation meet these separate participation goals set for the Contract.
- MBE and WBE firms providing extra services, such as surveying or testing, can also contribute to the MBE and WBE participation of the project.
- Individual Project Goal Setting for projects advertised after July 2020 is based on information from the Disparity Study, availability of relevant trades/disciplines and project specific factors.
- Goals are based upon broadest and most inclusive pool of available MBE and WBE businesses performing design and construction services.
- Firms must be certified by the Massachusetts Supplier Diversity Office as MBE or WBE to be credited toward meeting project MBE or WBE goals.
- Prime Designers are required to submit monthly workforce reports.

Veteran Owned Business Participation Benchmark and Executive Order 565

The Commonwealth encourages the participation of Service-Disabled Veteran-Owned Business Enterprises (SDVOBE) and Veteran-Owned Business Enterprises (VBE) on its design projects. The benchmark for combined SDVOBE and VBE participation on DCAMM and other Executive Branch agencies design projects is 3% of the contract price as set forth in the standard DCAMM Contract for House Doctor Services referenced herein.

In addition, the Commonwealth encourages the participation of Disability-Owned Business Enterprises (DOBEs) and Lesbian, Gay, Bisexual, and Transgender Business Enterprises (LGBTBEs) firms on its design projects (see Executive Order 565).

Diversity, Equity, Inclusion (DEI)

The Commonwealth is committed to helping address the disparity in the participation of minorities and women in design. Along with the MBE and WBE participation goals which reflect ownership status, DCAMM encourages the Designer's commitment to enhance diversity, equity, and inclusion in its Human Resources policy, in how they assemble their project teams, and in their approach to design.

To increase opportunities for diversity, equity and inclusion, Designers are encouraged to:

- be creative in assembling their teams by considering dividing the work of a particular discipline, when appropriate, including work typically provided in-house.
- partner with qualified firms who have not previously worked on public projects.
- have diverse personnel, even though Disadvantaged Business Enterprise (DBE) status is measured solely at the partner level.
- have office policies supporting personnel (mentoring, educational opportunities,

- opportunities for new parents, etc.).
- expand the definition of diversity beyond the simplistic definition of gender and race (ethnicity, culture, ability, first-generation college graduate, stage in life (age/experience), etc.).

Designers can continue to expect to see DEI as an evaluation factor in DSB ads and will be required to include in their application a Diversity Focus Statement directly addressing their approach to enhancing diversity in assembling project teams. The DSB strongly encourages teams composed of firms that expand the overall breadth of different firms working on DCAMM projects.

Additional resources are listed below:

[Supplier Diversity Office website](#)

[DCAMM Supplier Diversity Annual Report \(2021\)](#)

[DCAMM Disparity Study \(2017\)](#)

[Design for Freedom](#)

[AIA Materials Pledge](#)

1.6 Roles and Responsibilities

Clarity of the organizational, leadership and decision-making structure for a project will facilitate a productive dialogue that will lead to a high-quality outcome in a timely manner.

DCAMM is responsible for capital planning and public building construction for the Commonwealth. DCAMM is the Designer’s “client” and has statutory authority to direct the Designer’s scope of work. The DCAMM Project Manager (PM) serves as the primary contact for all parties to ensure clear communication and answer questions or contact individuals who have answers to questions as they arise. The PM manages the project scope, schedule, and budget from the User Agency’s perspective and will facilitate all interaction with the User Agency. All communication must go through DCAMM, and all project direction to the Designer must come from DCAMM.

User Agency representatives will assure the project is aligned with their respective Agency missions and goals and will make recommendations on programmatic and operational matters as they affect the design and implementation of the project.

The **Design Team** is responsible for architectural, engineering and all related professional services required for the completion of the project and are held to the Standard of Care. The Designer’s contractual obligations are to DCAMM who is responsible for all project direction and matters related to the project scope of work. The Design Team will operate in accordance with instructions provided by DCAMM, regulatory requirements, and all professional standards. The Designer is responsible for conducting the activities of the overall project, technical accuracy, coordination of all work by the Designer’s staff, and any consultants who may be employed.

All three main project participants (DCAMM, User Agency, and Designer) share many of the same responsibilities – engaging in clear and open communication, providing feedback, and reviewing


material and documents in a timely manner. There are also external parties who have important roles in the project, including the General Contractor (GC) on Chapter 149 projects, Construction Manager (CM) on Chapter 149A projects, and State and local Building Inspectors, to name a few.

1.7 Project Overview and Roadmap

There are several project implementation methods that DCAMM may follow depending on the project scope.

- Ch. 149: Traditional Design/Bid/Build (D/B/B)
- Ch. 149A: CM at Risk (CMAR)
- Ch.25A: Energy/Decarbonization projects
- Ch.30: Horizontal construction

Major capital projects typically include study services initially, with the intent to continue into schematic design (and study certification, if required), design development, construction documentation and construction administration services for the recommended option identified by the study.

	TYPICAL CH.149 PROJECT ROADMAP *note: this is reflective of new construction projects \$30m - \$40m				
PHASE (TBD for each project)	STUDY (Study 6 mos +/-) (SD 4 mos +/-)	DESIGN (DD 4 mos +/-) (CD 5 mos +/-)	BIDDING (3 mos +/-)	CONSTRUCTION ADMIN (TBD)	CLOSE OUT (TBD)
TASKS	Programming	Design Development	Pre-bid conference	Site visits	Punch List
	Existing conditions	Cost estimating	Issue addenda	Clarification drawings	Commissioning
	Alternatives	Project schedule	Attend bid openings	Change orders	Close out submittals
	Preferred option	Construction Documents	Bid Review	As-Builts	Final Inspection
	Cost estimating	Permitting		Contractor payments	Cert. of Occupancy
	Project schedule			Submittal logs & changes to contract	Cert. of Final Inspection
	Schematic Design				Project Evaluation
	*for CMAR: CM procurement occurs in SD				
MILESTONE	Study Certification	Bid Package	Bid Award	Project Complete	Close out
PURPOSE	Determine project goals, scope & budget	Design the project	Determine the contractor & price	Implement the project	Ensure smooth turnover &

1.8 DCAMM Standard Documents

Designers should become familiar with the following standard DCAMM documents:

[Contract for Study, Final Design and Construction Administration Services](#)

[Contract for House Doctor Services](#)

[Attachment G: Design Phase Amendment](#)

[Cost Estimating Manual](#)

[CAD Standards Manual](#)
[BIM Guidelines for Design and Construction](#)
[Common Acronyms](#)
[Deferred Maintenance Resources for Non-Certified Projects](#)
[Facilities Management and Maintenance Standards](#)
[Manual for Leasing and State Office Planning](#)

2.1 Overview

As stewards of the buildings serving the citizens of the Commonwealth, DCAMM places a high value on achieving design excellence. **A holistic approach is essential to designing buildings that not only meet the needs of the User Agency but are high quality, high performance, and cost-effective while being completed on time and on budget.**

The key guiding principles (or core values) that all projects should strive to achieve to provide Design Excellence includes:

- Design Quality (DESIGN)
- Sound Capital Investment (VALUE)
- Responsible Stewardship (STEWARDSHIP)

A thoughtful discussion shall be led by the Designer at the onset of the project with DCAMM and the User Agency to discuss what Design Excellence means to them so that the Designer can set realistic expectations and goals for achieving these core values within the project budget and schedule. Typically, at least two workshops shall be organized (the first at the Alternatives task of the Study Phase, the second in Design Development) to discuss how Design Excellence goals are being met.

DESIGN EXCELLENCE		
DESIGN	VALUE	STEWARDSHIP
Achieve a built solution in form and function that is aesthetically pleasing, is useful, and complements its surroundings	Provide responsible allocation, planning, management, and oversight of capital funds to maximize a building's long-term value	Develop design solutions that embrace sustainability, maintainability, wellness, safety, equity, and security
Meet Programmatic Needs	Sound Capital Investment	Maintainable, Durable, Safe
Design Aesthetics	On Budget	Carbon Conscious
Inclusive	Appropriate	High Performance
Efficient, Flexible, Functional	Right Sized	Sustainable and Healthy
Minimal Complexity & Customization	Low Operating & Maintenance Costs	Resilient

2.2 Design

Meet Programmatic Needs

DCAMM projects reflect an understanding of the User Agency's functional and space requirements and must balance meeting these needs with potential budget constraints. Because of this it is critical that the Design Team:

- establishes strong communication with DCAMM and User Agency to understand the needs;
- documents and responds to User Agency comments throughout the duration of the project to ensure that all comments are promptly addressed;
- structures the Programming process to account for potential budget constraints. This may include prioritizing the desired program or maximizing efficiencies to maintain project budget.

Design Aesthetics

The Designer shall strive to create visually pleasing spaces and/or structures.

- Consider the building's context and place in the surrounding community.
- Consider the combined effects of shape, proportion, visual appeal, balance, color, and texture.
- Consider the experience of building users and convene a discussion on the design vision and goals early in the project. Methodologies for engagement on design can include, but should not be limited to, vision boards, (collage images and words representing the overall design aesthetics), surveys regarding spaces that work and spaces that don't, workshops with diverse stakeholder groups, etc.

Inclusive Design

Designers shall provide an integrated design process and building solution that respects and values all users. Design solutions are expected to meet the diverse and changing needs of users across age, gender, ability, language, ethnicity, and economic circumstance. The Commonwealth welcomes innovative design strategies that are usable by the widest range of people operating in the widest range of situations without the need for special or separate design.

The Designer is expected to follow these Inclusive Design strategies:

- **Diversity, Equity, and Inclusion (DEI)** – Provide an inclusive design process that embraces diversity by removing barriers and promoting inclusion and equal opportunities for all users. To achieve this, Designers must learn about the wide range of people they are designing for by leveraging the institution's DEI organizations and organizing workshops to engage diverse user groups.
- **Consider Universal Design Principles and set Universal Design Goals** early in the planning of projects to create intuitive and equitable spaces that serve the needs of diverse users. Examples include designing barrier free entrances to welcome people of all abilities and installing single user toilet rooms that work for anyone. It is DCAMM policy to provide at least one of these rooms in new buildings and renovations wherever feasible. For guidance on applying Universal Design solutions to a project visit <https://idea.ap.buffalo.edu/about/universal-design/>.
- **Consider diverse functional limitations.** Accessibility codes and standards do not account for the majority of functional limitations. Functional limitations can include variation in learning styles, brain conditions, sensory perception, and medical needs. Consider each design decision with a broad user group in mind, especially the environmental conditions of light, noise, haptics, and vibration. Designs should provide users with agency, customization, and flexibility.
- **Provide inclusive A/V technology** – Technology solutions should ensure an equitable experience for building users with sight, hearing, or speech limitations so they can communicate with others, and to meet the Commonwealth's responsibility to ensure "Effective Communication" as required by the ADA.

Efficient, Flexible, Functional

Designing buildings that are flexible allows the structures to adapt to a variety of uses and evolving needs and as a result maximize the use of space and resources.

- Avoid inefficient space use, excessive and grandiose features that provide little or no value, but add to operating costs for heating, lighting, and maintenance.
- Size individual rooms to meet the space requirements for other program areas (e.g., an office repurposed as a small meeting space or patient room).
- Create multi-purpose spaces to allow occupants to rearrange and split up the space as needed.
- Place “soft spaces” such as offices next to capital-intensive departments, such as operating rooms or courtrooms to allow the “hard spaces” to expand into the surrounding “soft spaces” as needed.
- Size structural bays so they can be retrofitted for other uses later without column placement restricting options.
- Design MEP/IT infrastructure to anticipate changes in space use or expansion to facilitate future adaptation.
- Provide flexibility using a simplified kit of parts for office and workstations to support an agile workforce. Consider movable/demountable walls at office areas.
- Design for Deconstruction where appropriate to avoid the carbon burden of landfilling and to provide an opportunity to reuse materials if needed.

Minimal Complexity and Customization

Reducing the complexity and customization of a design will streamline the schedule and reduce overall project costs. Examples include, but are not limited to:

- Reduce or avoid curves, angles, and bump outs in the floor plan to ease construction and minimize possibility for errors.
- Consider using standard dimensions for building elements.
- Avoid custom designed or proprietary elements that may have longer lead times and/or be more costly to maintain or replace.

2.3 Value

Sound Capital Investment

To avoid projects coming in over-budget or over-sized, and resulting in buildings that are costly to operate, there needs to be a constant discussion throughout the duration of the project about cost control with all team members.

- Understand how design choices balance first cost with long term value.
- Renovate existing buildings when feasible.
- Use materials and design principles that ensure durability against general use and the environment for the next 50+ years.
- Avoid items that provide limited value to the building (e.g., minimizing finish materials in non-public spaces such as fire stairs, etc.).
- Consider consolidation and/or centralization where appropriate.
- Maximize technology to potentially reduce how much space is built & used.

On-Budget

When a project is initiated, there are often competing priorities that must be considered. To ensure that funding allocations are appropriately used, the team is often faced with making hard decisions throughout the project’s duration. **Designers need to take responsibility for maintaining the project’s budget and managing expectations to ensure the project can be completed on time and on budget.**

- Track design changes with rough order of magnitude pricing as design proceeds to flag major cost items/decisions before completing a full pricing exercise at the end of a phase.
- Prioritize maintaining budgets and consider phased investment if full funding is not available.

Appropriate for Civic Use

Commonwealth buildings provide essential services to its citizens. They should be places where users feel safe and welcomed, not feel overwhelmed or out of place.

- Limit aesthetic design features to 1-2 signature elements.
- Consider investment in high visible areas such as entrance or common spaces rather than less visible or less utilized spaces.
- Minimize voluminous spaces such as atriums or overly high-ceilinged spaces.
- Right-size floor to floor heights.
- Prioritize ease of navigation and wayfinding.

Right-Sized

Right-size the program early and keep the square footage as efficient as possible. Spaces that are oversized not only can make the users feel overwhelmed, but also can result in unnecessary costs to operate and maintain these spaces.

- Understand “need” versus “want”.
- Provide spaces that are within reasonable metrics: SF/person; window: wall ratio; cost/bed.

Low Operating and Maintenance Costs

Minimizing annual operating and maintenance costs can be achieved through good design. Construction costs represent only a small fraction of the total costs over the life cycle of a building. Design decisions to select efficient building systems and envelope will result in lower annual operating costs and substantial savings over the life of the building.

- Consider and document through life cycle costing design decisions that may have a higher initial construction cost but will result in lower operating costs.
- Explore opportunities that have little or no construction or design cost impact.
- Consider design decisions that provide long term benefits to users even though the return on investment may be difficult to quantify.

2.4 Stewardship

Maintainable, Durable, Safe

Ensure that long-term facility operations and maintenance considerations are factored into project planning and design decisions. Designing a building for maintainability requires that the ease, quality, management, safety, and economy of maintenance tasks are considered at the beginning of the project to optimize the building’s life cycle. Of a building’s total costs, the costs associated with the operation, maintenance, and repair are more than three times the cost of initial construction, and studies show these costs equate to 60-80 percent of a building’s life-cycle costs. Examples of design decisions in this area:

- Use materials that can easily be replaced such as carpet tiles in lieu of wall to wall carpeting.
- Ensure systems’ maintenance is understood and within the capacity of the facility to deliver.

- Ensure that systems are accessible through doors, not windows, from the floor or a reasonable ladder - not a lift.
- Specify systems and equipment are durable and efficient.
- Avoid wireless (battery) lighting, plumbing, BMS, and other controls, unless approved by DCAMM and the User Agency.
- Avoid multiple control systems within a single building.
- Avoid customization and proprietary equipment, unless approved by DCAMM.

The Commonwealth utilizes a web-based integrated workplace management system, which is referred to as the Capital Asset Management Information System (CAMIS), that can provide important information about a building before design starts. CAMIS is also where preventative maintenance schedules are located and should be used by facility management staff to ensure equipment longevity and reduce deferred maintenance. Updating the CAMIS database to include new equipment/system information and maintenance procedures is an important part of every project. In addition, most buildings in the Commonwealth are connected to a central real-time energy metering platform, known as [Commonwealth Energy Intelligence \(CEI\)](#). CEI can help Design teams understand existing building consumption and load conditions and should be incorporated into final design. Design teams should consult their project manager about CAMIS and CEI data and requirements.

Creating a safe and secure building and protecting its occupants from unsafe or hazardous situations that can cause harm or damage is a critical component of a building. Also important is protecting the property. During the study phase, the Project Team must consider the level of security the proposed building requires considering the context of the building's function, location, and criticality of services.

Carbon Conscious

Massachusetts has set aggressive carbon reduction goals in legislation and by Executive Order. These goals will be met by:

- Energy efficiency
- Electrification of new buildings and existing buildings
- Ready buildings for low temperature water when they continue to use fossil fuels
- Renewable energy generated at the site
- Reducing embodied carbon in building materials

DCAMM generally does not purchase carbon off-sets or renewable energy credits to meet the project goals.

From the early phases of a project, carbon reduction through fossil fuel reduction or elimination should be among the priorities. While some project scopes are limited, carbon reduction should be explicitly considered in practical ways. Where eliminating fossil fuels is not feasible, particularly in existing buildings, design teams should plan for low carbon fuel systems and create a pathway for their adoption.

[Executive Order 594](#), Leading by Example: Decarbonizing and Minimizing Environmental Impacts of State Government, details specific requirements for Commonwealth projects. Requirements for new buildings and major renovations include [USGBC LEED](#) Silver or better certification, fossil fuel-free thermal sources, solar-ready design, and electric vehicle charging infrastructure, among

others. The Department of Energy Resources has prepared [guidance documents](#) and other materials to assist teams in meeting the requirements. In addition, the DCAMM checklists provide guidance to help teams meet the requirements, but it is essential that Design teams understand the goals and meet them in their designs.

Renewable energy, usually solar energy, should also be considered on a project. The Commonwealth owns and operates over 70 solar arrays and hosts many more that are owned and operated by third parties through power purchase agreements. Both options are available to a facility, and Design teams should discuss the merits of each approach early in the process. When solar will be part of the project, it should be designed by a consultant with expertise in Massachusetts solar regulations and installations.

High Performance

Design buildings that integrate and optimize high performance qualities including but not limited to energy conservation, minimal adverse environmental impact, sustainability, safety and security, durability, and operational functionality.

The Commonwealth has over 100 LEED certified buildings in its portfolio and strives to meet or exceed LEED standards for projects. All new construction and major renovation projects over 20,000 square feet must comply with the Massachusetts LEED Plus 2.0 Standard, per Executive Order 594. Projects must be Certified to the Silver level or higher in the most recent version of the USGBC's LEED Standard.

To achieve decarbonization goals, the performance of the building envelope is important. Passive House principles are encouraged, and Passive House certification can be pursued in place of the LEED certification. Designers should work with their DCAMM project manager to determine the right standard for their project and closely follow the DCAMM instructions for registering a project. Designers should also work to maximize the utility incentives for efficiency, alternative fuels, and electrification.

Even projects that are not subject to LEED requirements will benefit from considering the LEED elements in many issues including:

- Stormwater
- Native landscapes
- Access to public transportation
- Electric vehicle charging

Many Commonwealth buildings and sites participate in the [Demand Response](#) programs of the utilities. The programs provide significant revenue to the sites, and the DCAMM Standard Specification requires that any project with a backup generator larger than 400kW be enrolled where feasible and applicable.

In addition, utility rebates shall be maximized; preparation of utility rebate applications is the responsibility of the Design Team.

Waste Minimizing and Recycling-Oriented

Commonwealth agencies are expected to follow state waste management best practices and comply with Massachusetts [solid waste bans](#). This has implications for building design and construction activities in the following important ways:

- Include space for recycling and centralized collection of recycling.
- Include space and methods for food waste collection for composting in kitchen or dining areas that will generate food waste over the required limits.
- Specify construction and demolition waste recycling as required by DEP rules and LEED prerequisites.

Sustainable and Healthy

In addition to carbon conscious design, material selection is an important and emerging consideration for Designers. This includes:

- Embodied carbon: the greenhouse gas emissions generated by the manufacturing, transportation, installation, maintenance, and disposal of construction materials used in buildings, roads, and other infrastructure
- Healthy materials: those from natural materials or without chemicals such as [“Red List” chemicals](#)
- Durable materials
- Recycled products

During the early design phases, the project team should draft a narrative identifying the highest embodied carbon materials on the project and describing potential strategies to use lower carbon alternatives. Other material selection goals should also be identified. Structural and enclosure materials including concrete, steel, aluminum, and foam insulations typically have the highest greenhouse gas (GHG) emissions, or embodied carbon, on a project, and material alternates should be investigated and compared based on cost, durability, and availability as well as carbon reduction impact. During the Design Development and Construction Document phases, the project team should incorporate the identified low carbon materials into the specifications by requiring that Environmental Product Declarations (EPDs) be submitted for all materials and noting allowable greenhouse gas emissions limits.

Resilient

[Executive Order 569](#) requires that the Commonwealth address greenhouse gas emissions and “prepare for the impacts of climate change...” The impacts include extreme heat, increased precipitation, flooding, and sea level rise. Designers are required to assess these hazards on all projects and evaluate measures to reduce the risks. Some of these risk reduction measures can be modest changes to stormwater management, while others will require more extensive interventions. Regardless, Design teams will be asked to assess the risk using DCAMM’s Climate Resilience Checklist and to discuss risks and develop solutions in the design process. This checklist will be provided by the Project Manager and includes an assessment of existing and future risks from flooding, coastal flooding, heat, and other risk.

ADDITIONAL RESOURCES

[Commonwealth Energy Intelligence](#)
[Embodied Carbon Environmental Product Declarations](#)
[US Green Building Council LEED Systems](#)
[Demand Response](#)
[Executive Order 594 Guidance](#)
[Climate Resilience Design Standards and Guidance](#)

3.1 Overview

Based on experience and lessons learned from other projects, DCAMM has developed several best practices to facilitate the planning and design process to ensure project success. Like Guiding Principles, these too evolve over time; these best practices are solid practice principles and standards that have been developed in recent years.

Best practices in the following categories are listed below and are organized into the three Design Excellence categories – Design, Value, Stewardship:

- Collaboration
- Stakeholder engagement
- Coordination with other DCAMM departments
- Goals & Guiding Principles
- Quality Control
- Benchmarking
- Cost Control
- Best practice expectations

The following charts illustrate several key Best Practices in the Study Phase and Design Phase.

Study Phase (Study and SD)

BEST PRACTICES			
	DESIGN	VALUE	STEWARDSHIP
STAKEHOLDER ENGAGEMENT	<ul style="list-style-type: none"> • Lead regular meetings & workshops with project participant teams • Engage key stakeholders to solicit feedback representing various viewpoints • Ensure individual projects are consistent with broader agency strategic plans and any Design Guidelines • Meet with AHJ 	<ul style="list-style-type: none"> • Set and manage realistic expectations to align project with available funding 	<ul style="list-style-type: none"> • Discuss systems maintenance needs with facilities staff to ensure their capacity to maintain
GOALS & GUIDING PRINCIPLES	<ul style="list-style-type: none"> • Establish guiding principles with User Agency & DCAMM of what a successful project looks like in the future • Discuss overall design vision, aesthetics and building image 	<ul style="list-style-type: none"> • Identify opportunities to improve operations & maximize efficiencies • Compare the design & quality goals with cost modeling to maintain project budget 	<ul style="list-style-type: none"> • Establish carbon, sustainability goals, target EUIs, system alternatives • Identify opportunities to reduce operating cost • Identify opportunities for inclusive design
QA/QC	<ul style="list-style-type: none"> • Set expectations for QA/QC • Perform quality control of all documents & deliverables before submitting to DCAMM • Incorporate comments from DCAMM & Client Agency 	<ul style="list-style-type: none"> • Ensure cost estimates reflect building design and specs 	<ul style="list-style-type: none"> • Ensure that long-term facility operations and maintenance considerations are factored into project planning and design decisions
BENCHMARKING	<ul style="list-style-type: none"> • Identify comparable projects that meet design & quality goals for discussion • Gather data on program square footages and standards 	<ul style="list-style-type: none"> • Gather data & metrics of comparable projects and industry standards for TPC, operating costs, cost/SF, SF/PP 	<ul style="list-style-type: none"> • Gather data on window to wall ratios • Establish Energy Use Intensity • Carbon Intensity
COST CONTROL	<ul style="list-style-type: none"> • Limit design features to 1-2 elements • Renovate existing buildings when feasible • Right-size the program to keep the square footage as efficient as possible • Understand “need” versus “want” • Consider consolidation & centralization (where appropriate) • Understand how design choices balance first cost with long term value • Avoid construction complexity, voluminous spaces, items that provide limited value to the building 	<ul style="list-style-type: none"> • Perform cost modeling as design advances • Make decisions that are data driven • Prioritize & consider phased investment to maintain budgets. • Maximize technology to potentially reduce how much space is built & used 	<ul style="list-style-type: none"> • Maximize project performance in ways that are cost & design neutral • Provide good envelope design to reduce need for oversized HVAC systems • Avoid customization & proprietary equipment

Design Phase (DD and CD)

BEST PRACTICES			
	DESIGN	VALUE	STEWARDSHIP
STAKEHOLDER ENGAGEMENT	<ul style="list-style-type: none"> Lead regular meetings & workshops with project participant teams to refine design Coordinate with the CM (if CMAR project) design deliverables, cost estimates, & schedule Prepare detailed construction schedule & review any occupancy impacts (work in occupied buildings, seasonal implications, limited working hours) Meet with AHJs 	<ul style="list-style-type: none"> Continue to manage expectations to align project with realistic expectations 	<ul style="list-style-type: none"> Ensure systems maintenance is understood & within the capacity of the facility to deliver
GOALS & GUIDING PRINCIPLES	Confirm all project goals established in the Study Phase are being met or discuss any potential changes that will alter the goals of the project		
QA/QC	<ul style="list-style-type: none"> Prepare Quality Control statement Document & Incorporate comments from DCAMM & User Agency Perform quality control of all documents before submittals Organize clash detection meeting Complete bid room checklist 	<ul style="list-style-type: none"> Complete cost modeling to maintain project budget Avoid customization & proprietary equipment 	<ul style="list-style-type: none"> Ensure easy access to systems (through doors, not windows; from the floor or reasonable ladder, not a lift)
BENCHMARKING	Compare project metrics to benchmarks established in the Study Phase. Discuss any deviations		
COST CONTROL	<ul style="list-style-type: none"> Review the design development & major building components including building enclosure, building systems, general quality & efficiency of construction Avoid design elements that add costs & do not provide adequate value Confirm final program & room requirements are efficient 	<ul style="list-style-type: none"> Review construction costs, material selection quality decisions & alternatives that may impact the building, operating costs & final project cost Perform cost reconciliation, value engineering to ensure that design remains within the project budget 	

3.2 Collaboration

All projects involve a team of participants who need to work together to achieve a common goal. Working with a team is a necessity and creating a culture of collaboration is essential for a project's success. A collaborative atmosphere that encourages open, direct, and honest communication and sharing of information will help to encourage team members to focus on optimizing project outcomes rather than achieving individual goals.

3.3 Stakeholder Engagement

Stakeholder engagement is a process that creates a plan to involve key entities to listen to, collaborate with, and/or inform stakeholders. Engaging with stakeholders early and at key points throughout the project's duration is key for consensus building. The Designer will lead the stakeholder engagement and follow up with DCAMM and the User Agency to determine appropriate actions.

Key steps for stakeholder engagement include:

- **Identify key stakeholders:** Working with the User Agency and DCAMM, identify and establish the key groups and individuals who represent various viewpoints for the project and develop a plan for engagement.

Stakeholders could be individuals who are directly involved in the project (e.g., for a college project: Institution Leadership, Director of Facilities, faculty) and outside entities who provide input (e.g., abutting neighbors, city representatives).

- **Organize Project Workshops:** DCAMM and the Design team will organize periodic workshops with key stakeholders throughout the life of the project to review project progress and make decisions. The goal of the workshops is to ensure that critical issues are not overlooked and that stakeholders have an opportunity to provide input.

Multiple Global workshops (and preparation meetings) may be requested to ensure that project goals for Design Excellence (Design – Value – Stewardship) are being fully addressed. In the Study phase, to review the Design Excellence goals and alternatives and select the preferred alternative; and in the Design Phase, to discuss how the project meets the goals for Design Excellence.

It is important that workshop attendees provide guidance in the various areas to be discussed so that decisions can be made. The Designer will lead the meeting, provide in advance an agenda and presentation material approved by the DCAMM Project Manager, and publish meeting notes indicating resolved and unresolved issues with changes incorporated into the design. Attendance by key members of the Design team is required at all workshops unless DCAMM informs the team otherwise. Workshops may also include outside consultants for peer review.

Potential Workshop Topics in the Study and/or Design Phase may include:

Goals Setting	Define the overall vision and Guiding Principles
	Discuss Design Excellence Goals (Design – Value – Stewardship)
Program	Discuss program areas, adjacencies, & room requirements
Design	Discuss the design vision for the project and how the Design Excellence goals are being addressed
	Review how comprehensive integration of all aspects of the design has been achieved
	Review major building components including building enclosure, materials, equipment, building systems, & the general quality and efficiency of construction. DCAMM Engineering should be in attendance.
	Potentially convene peer review/design crit with outside Designers for larger projects
Schedule	Review detailed construction schedule highlighting any occupancy impacts such as seasonal implications, material selection, & limited working hours in occupied buildings. The final schedule is incorporated into the Specifications.
Quality Control & Clash Detection	Review quality and coordination of reports, drawings, & specifications
	Discuss QA/QC lessons learned on other projects with Quality Control Lead
Cost Control & Reconciliation	Align project with available funding
	Compare design & quality goals with cost modeling
	Conduct detailed review of construction costs reflecting decisions made on the quality of materials & equipment that make up the building
	Discuss any alternatives that may impact the building & operation costs, and ultimately the final cost of the project
Energy, Carbon, Sustainability	Review goals for energy conservation, resiliency measures
	Review Executive Order requirements (including MA LEED Plus or other required certification as required)
	Establish target EUIs
	Discuss system alternatives for energy efficiency & carbon design of MEP systems & envelope
	Identify utility incentives & rebates
Alternatives Global	Review goals for design excellence
	Review alternatives and select preferred option
	Discuss modifications to be made for Schematic Design

Inclusive Design	Ensure the building is designed to universal design goals/MAAB/ADA standards and best practices
	Ensure Diversity, Equity and Inclusion – engage with the institution’s DEI organizations to engage diverse user groups

- **Address Individual Agency Design Guidelines:** Several agencies have developed agency Design Guidelines that define the unique design principles and space requirements to guide their future projects. Agency Design Guidelines will be made available to the Design Team as appropriate.

In planning new or renovated facilities, the Designer (in conjunction with DCAMM and the User Agency) will review the agency’s Guidelines to assess their applicability for the project and best method for implementing.

DCAMM Design Guidelines include:

[Workplace Guidelines, Space Standards, Metrics and Test Fit Plans](#)

[Facilities Management and Maintenance Standards](#)

[Manual for Leasing and State Office Planning](#)

3.4 Coordination with DCAMM Departments

The DCAMM Project Manager will engage with staff from various DCAMM departments as appropriate to solicit guidance and expertise throughout the duration of the project. This may include:

Department		Areas of Focus
Executive Office	EXEC	Agency Leadership
Office of Design and Construction	ODC	Responsible for final design and constructing the project.
Small Project Team	SPT	Oversees smaller vertical construction projects capable of being completed on an accelerated timeline and typically under \$10 million.
Office of Facilities Management & Maintenance	OFMM	Provides resources to extend asset life, minimize operating costs, and maximize building efficiency at Commonwealth facilities.
Energy and Sustainability Team		Advises on carbon, energy, resilience, and high performance.
Environmental Team		Provides peer review and advises on full range of environmental issues, requirements and permitting.
Interior Planning, Design & Management	IPDM	Designs and manages the project’s furniture, fixtures and equipment selection and procurement.
Property Operations Unit		Operates, maintains, and provides technical services and security for DCAMM-owned and managed buildings and surplus properties. Advises on maintenance and maintainability issues.
Office of Finance and Administration	OFA	Addresses issues related to contracts and payments.
Access and Opportunity		Oversees Access and Opportunity (MBE/WBE) and workforce tracking.
Office of General Counsel	OGC	Provides legal services and support, particularly for activities related to public construction and real estate activities.
Office of Planning	OP	Initiates and manages all pre-design activities for state building projects and public development initiatives.
Statewide Accessibility Initiative	SAI	Advises on inclusive design and solutions. SAI may engage

		outside access consultants to perform audits and detailed reviews.
Office of Real Estate Management	OREM	Oversees site acquisition, long term leases, and disposition of real property.
Office of Leasing and State Planning	OLSOP	Meets office and related space needs of state agencies.

3.5 Establish Project Goals and Guiding Principles

Establishing project goals at the onset of a project is important to provide an opportunity to discuss with the User Agency and key stakeholders the goals and objectives of the project and what a successful project would look like at project completion.

The key guiding principles that all projects should strive to achieve to provide Design Excellence described in Section 2 should be explicitly addressed at this early stage and re-evaluated throughout the process:

- Design Quality (DESIGN)
- Sound Capital Investment (VALUE)
- Responsible Stewardship (STEWARDSHIP)

Some additional discussion topics may include:

- What are the current issues, trends, challenges, and opportunities of the current facility and operations?
- What are the core themes/issues that need to be addressed?
- What are the key goals for the project?
- Prioritizing key issues and generating the Guiding Principles

3.6 Quality Control

Quality control is required to be an on-going effort throughout the duration of a project. Designers are responsible to provide complete coordination of all products and deliverables including those of their consultants before a submittal is made to DCAMM. A lack of thorough quality control often results in an excessive number of bulletins and change orders that are Designer driven.

Providing drawings that are complete, clear, correct and coordinated will reduce the incidence of questions raised in the field and reduce the number of change orders. **All drawings and specifications, including those from sub-consultants, must undergo quality control review by the Designer before submitting to DCAMM.** This coordination shall be within the architectural drawings, between the architectural drawings, specifications, and the subconsultants' drawings. Incomplete submissions may be rejected and will not be eligible for payment. Submissions may be subject to third party peer review.

To ensure quality control, the Design team will:

- Identify the QA/QC person who will be responsible to ensure that a thorough quality control review has occurred for the project for each submission. The QA/QC person should be an independent party who is not involved in the project.
- Present the QA/QC plan for the specific project at the study and design phase kick-off meetings and discuss any lessons learned from similar projects.

- Include the QA/QC plan in both the Study and Design Phase Work Plans.
- Review the submission requirements in advance of forwarding all deliverables to DCAMM to ensure that the submissions have been thoroughly reviewed for Quality Control (clear, concise, correct, complete, coordinated) in accordance with the terms of the contract and the project Work Plan.
- Build in reasonable timeframes for QA/QC in the project schedules.
- Utilize software programs such as Bluebeam or Redicheck.
- Organize a clash detection workshop in the design phase.
- Complete DCAMM checklists for Study Report, SD, DD, CD, Bid Room, and Close-Out, and include with submissions to ensure QA/QC has been completed. (Refer to Section 7: Reference Materials for checklists).

Refer to Section 7: Reference Materials for Best Practices for Quality Control for Submittals.

3.7 Benchmarking

Benchmarking is a strategic planning and research process to gather data and metrics of comparable projects or industry standards to develop and measure performance and best practices. The Designer shall review with the DCAMM Project Manager the appropriate benchmarks to be considered. Some examples of benchmarking include:

- Time: how long comparable projects took for planning, design, and construction
- Costs: total project construction costs, operating costs, cost per person/space
- Program: square footage metrics
- Quality: design
- Window to wall ratios
- Energy use intensity
- Carbon intensity

3.8 Cost Management

Rigorous cost modeling and management is essential throughout a public project's planning, design, and construction phases. DCAMM is responsible for managing the cost throughout all phases of state building projects and the **Designer (as well as the CM/GC) is responsible to keep the project on budget and actively participate in cost control activities for each phase.**

Once an initial budget is established, the Designer shall perform cost modeling and over the course of the project, actively engage with the cost estimator to employ a series of increasingly precise cost estimating techniques, matching the development of the project design through each phase.

Expectations for cost control and reconciliation include:

- Design to the available budget.
- The project cannot proceed beyond Schematic Design unless the approved budget is met.
- The Designer is responsible for reconciling costs should estimates exceed project budget.
- Perform value engineering as the design progresses, especially for CMAR projects. Note

that representatives from the OP, ODC, Energy, Facilities Engineering, and other relevant offices shall attend VE meetings to provide input on items being considered. Consider reducing scope, reducing complexity, changing materials or systems.

- Consider qualitative contingencies identifying potential changes to keep the project on budget.
- Alert DCAMM of any outside factors that may affect costs (such as inflation, COVID 19, etc.)

3.9 Best Practice Expectations

The design team is expected to keep current on new and emerging technologies and techniques and incorporate them as appropriate into design. Examples of these issues (at this publication date) include the use of materials to lower embodied carbon, avoiding [toxic materials](#) where possible, and working with contractors to reduce on-site emissions. Best practices in universal design, resilience, and technology are other examples. DCAMM expects design teams to be current and to bring current best practice design to their projects.

4.0 Designer Activities during Study and Design Phases

4.1 Meetings

Running productive meetings is critical for a project's success and timely decision making. Project meeting cadence is specific to each project, and the DCAMM Project Manager and Designer will discuss and agree upon what is most beneficial for the project.

In the Study Phase, hybrid bi-weekly project meetings chaired by the Designer are often held with DCAMM and the User Agency, with weekly calls as required to keep the workflow moving. In the Design Phase, weekly meetings are held to discuss relevant issues to design, constructability, and construction phasing. During construction, weekly on-site meetings are expected.

Some key requirements for project meetings:

- DCAMM must be present for all meetings including site visits.
- Designer shall provide DCAMM all meeting materials to review a minimum of three working days in advance of all meetings with the User Agency.
- Remote meetings will not be recorded, unless previously approved by DCAMM.
- Designer is responsible for preparing summary minutes of all key project meetings and submitting to DCAMM Project Manager in draft form within three days of the meeting.
- DCAMM reserves the right to edit meeting minutes prior to the Designer issuing the official edition.
- Minutes should succinctly identify attendees, items discussed, decisions made and action items with responsible party clearly indicated.
- At key milestones, workshops will be held, with participation by DCAMM and agency stakeholders, to review findings and solicit input for decision making.
- Designer shall be fully prepared to lead remote and hybrid meetings with the ability to organize break-out sessions.

DCAMM will work with the User Agency to identify participant teams who will be engaged in the project and may develop a Governance Document to define each team's role, point of contact, meeting and/or reporting frequency, how decisions will be made and by whom. Each Team will have a designated leader who will act as the point of contact for their respective teams. The lead is also responsible for communicating with other teams as required by the work.

Teams may include these and other groups:

- **Executive Team** – Secretary and Commissioner level to provide executive leadership, project direction, and resolution of policy and financial issues.
- **Steering Committee** - Senior staff who provide oversight, decision-making and guidance. The Steering Committee assures that the work aligns with their agencies' missions, goals and expectations for the project. The Steering Committee reports up to leadership on the project's progress or issues needing to be addressed.
- **Stakeholder Groups** - Stakeholder groups are identified to provide input on specific project components. This may include building users and outside entities. Each group often includes a member of the Steering Committee to provide leadership around decision making.
- **Working Group** - Working directly and frequently with the Designer and their consultants, this group oversees the project development; provides input on the overall program,

concept design, budget, schedule, and operational requirements; and assures that the work aligns with their agency's mission and objectives.

- **Subject Matter Experts** – Meetings will also be held with the User Agency's ADA coordinator to assist with programmatic accommodations and universal access needs, as well as Facilities and Maintenance staff to review the proposed systems, reinforce resources needed to maintain equipment, and to support them in preparing specifications for maintenance of specialized equipment.

4.2 Incorporating Comments from DCAMM and User Agency

Documenting and responding to DCAMM and User Agency comments throughout the duration of the project is a critical responsibility of the Designer to ensure that all comments are promptly addressed. The Designer shall:

- Use preferred software solution to track and respond to all comments (e.g. Bluebeam, etc.).
- Review comments with DCAMM.
- Provide DCAMM a summary of the action to be taken and how it will be addressed in the next deliverable.
- Provide a written response to DCAMM for any exceptions to comments.

The Designer shall anticipate that each deliverable will have multiple changes required to incorporate comments from DCAMM and User Agency. Making the iterative changes is included within the base fee.

4.3 Cost Estimating

The cost estimate shall be prepared by an independent professional Estimator as listed on the Designer's team, although specialist components may be prepared by other consultants and consolidated by the Estimator. Refer to the [DCAMM Cost Estimating Manual](#) for cost estimating requirements.

Preliminary estimates are employed in the early planning phases of a proposed project to match User Agency needs, programmatic requirements, and budget constraints to establish project scope and quality expectations. In the Study Phase, measured estimates in [Uniformat II](#) (Elemental) are developed. These estimates maintain accountability for initial budget projections and are used as a means of evaluating competing alternative construction assemblies, systems, and materials.

Preliminary estimates in the Study Phase may include:

- Benchmarking cost comparison to understand the range of costs/SF
- Estimates for each proposed alternative
- Detailed estimate for Preferred Alternative
- On-budget detailed estimate for Schematic Design

It is often advantageous to break out project costs into the following major components:

- Site costs
- Core and shell
- Fit out

In the Design Phase (early DD), cost estimates shall be prepared in both Unifomat II Level 3 and CSI MasterFormat and as the design progresses, the estimating contingency can be reduced. Cost verification and if necessary, Value Engineering will be required to ensure that the design as developed remains on budget.

During CD, a complete pre-bid estimate is prepared including separate estimates and bids for Filed Sub-Bids/Trade Bids under MGL 149/149A. This estimate allows for a comparison of the final estimate with the bids received and may aid in any contract negotiations. The estimating contingency should be reduced to zero.

For CM projects, multiple “mini” estimates may be needed for early bid packages. This will be addressed in the design fee negotiation when early bid packages are identified. This may include but not limited to site work, demolition, abatement of hazardous materials, utilities, and foundations. In addition, a final Unifomat document is prepared from the same detailed information to provide continuity and comparison with previous phase estimates. Data are also used to update the DCAMM cost database, providing elemental rates to be used in planning subsequent projects.

Estimate Type and Accuracy

ESTIMATE CATEGORY	Pre-Study	Study	SD	DD	CD	Bid	Const	Close-Out
Order of Magnitude	X							
SF Rates	X	X						
Elemental Rates Level 1		X	X					
Elemental Rates Level 2			X	X				
Elemental Rates Level 3				X	X			
CSI Item List & Rates				X	X	X	X	X
Schedule of Rates						X	X	X
Final Account								X

Cost Estimating Participation in the Various Phases is as follows:

For Schematic Design

- First Design Iteration in advance of Global Workshop: Cost modeling for the Designer to allow cost comparisons between alternative building footprints, story structure, layouts, site locations & major construction systems.
- Attendance at Progress Workshops: As above to allow comparisons between alternative schemes & advise on cost matters for each proposed scheme until the Preferred Scheme is selected.
- Assist Designer in developing the Preferred Scheme layout and specifications: Cost measurement for all building elements & components of the Preferred Scheme including site related costs, LCCA & other external factors affecting the TPC.
- Incorporation of CM into Project Team (if applicable): Compare & reconcile with the first CM estimate at 50%, if available & 100% SD Phase; advise the Designer on constructability issues suggested by the CM.

- Submittal Preparation: Formally document in Unifomat II structure the estimate breakdown in detail as specified.

For Design Development

- Attend regular Progress Workshops to advise on cost matters for each element or section of work: Cost data & advice to the Design team to provide an accurate indication of the cost of each designed element & major specification item.
- Attend Progress Workshops to advise on LEED & LCCA: Cost data & advice related to LCCA, LEED evaluation & specialist costs.
- Assist the Designer achieve the required cost budget within design & specification requirements, including scheduling needs: Value engineering of specific elements within the total estimate budget for construction and all specialist consultants, and the impact of the detailed construction work schedule on the total cost picture.
- Incorporate CM into Project Team (when CM commences within the DD phase): Compare and reconcile with the first CM estimate at 50% if available; advise the Designer on constructability issues suggested by the CM.
- CM Estimate Reconciliation: Reconcile estimates with the CM at 100% DD prior to formal submittal to complete the phase.
- Submittal Preparation: Formal documentation in Unifomat II structure to complete estimate breakdown as specified. Integrate costs from other specialist consultants, Provide suitable contingencies where appropriate.

For Construction Documents

- Attend Progress Workshops & Attendance at CM Cost Meetings: Provide cost data & an accurate indication of the cost of each design element & major specification and advise on cost matters for each section of work, including LEED certification or sustainability issues in the documentation.
- Assist the Designer in Maintaining the Cost Budget: Provide Value Engineering of specific elements in the estimated budget for construction & all specialist consultants, & the impact construction work schedule has on the total cost picture. For CM Procurement, attend regularly with the CM & reconcile ongoing estimates & packages.
- CM GMP Reconciliation (CMAR Procurement only): Reconcile estimates with the CM at 100% GMP preparation prior to formal GMP submission.
- CD Submittal Preparation (DBB Procurement only): Formally document in Unifomat II & CSI Masterformat a detailed estimate breakdown as specified for printed & electronic submittal. Integrate costs from other specialist consultants. Provide suitable remaining contingencies as directed.

Refer to Section 7: Reference Materials for Cost Estimating Requirements.

4.4 Project Scheduling

The project schedule has dramatic implications on the project cost. The schedule is based on DCAMM, User Agency, Designer and CM/Contractor input and is also influenced by the User Agency's desired occupancy date and the duration provided by the cost estimator.

Detailed schedule shall illustrate:

- Project phases (study, design, procurement, construction, close-out durations) including review periods and construction impacts due to work in occupied buildings, seasonal restrictions, etc.
- Key milestones
- Permitting, testing, commissioning, and move-in timelines

Designers may be requested to engage a scheduling consultant in the Design Phase to provide a detailed timeline of the project and/or verify Contractor/CM's anticipated schedule.

4.5 Existing Conditions Verification

If an Approved Work Plan or Design Phase Scope of Services calls for an analysis of existing conditions of a site or facility by Designer, Design Teams are responsible for completing a thorough assessment of existing conditions to provide a clear understanding of the condition of the site, building(s) and systems. Sufficient information shall be assembled using non-destructive examination to assess the condition, problems, and opportunities so that all major implications for future requirements and design can be accurately judged and anticipated. In many cases the CAMIS asset database can provide some information. If Designers find anomalies between on-site information and data in CAMIS, the Designer shall report such anomalies to the DCAMM Project Manager so that CAMIS can be updated accordingly. Energy use data is available from the CEI platform, the facility, or the Energy and Sustainability Team.

Identifying the component material and assessing the condition noting any evidence of failures, deterioration, need for repair/replacement or probable useful life will identify immediate and potential areas in need of repair/replacement. These issues are particularly important for major expansion projects.

DCAMM values strong existing conditions verification to minimize unanticipated conditions. Renovation projects that have insufficient analysis performed often result in increased change order requests and extended schedules.

4.6 Investigative Work

Building investigation begins with surface examination, sub-surface non-destructive testing, and may progress to various degrees of sub-surface destructive testing. Similarly, property investigation begins with review of historical records and visual observation, site reconnaissance, and may require subsurface mapping, imaging and/or sampling of onsite media, including soils, sediments, surface waters, wetlands.

It may be necessary for the Designer to procure services (as additional services) on behalf of DCAMM to perform investigative work to observe, assess and plan for potential hidden conditions. Development of any hazardous materials assessments, specifications, and documents will be provided through the Environmental Professional Consultant design team member. DCAMM reserves the right to obtain supplemental services through independent consultants who will collaborate with the Designer's team. These supplemental services may include, but are not limited to, asbestos inspection and monitoring, and indoor air quality testing and monitoring. Coordination with the User Agency is critical to minimize disruption to ongoing operations.

Investigative work may include, but is not limited to:

- **Building investigation:** Engaging a qualified consultant or contractor to perform testing and/or destructive testing and repair disturbed conditions back to its original state. This may include but is not limited to foundation exploration, opening walls/ceilings/floors to observe existing structure and/or systems, building envelope, and climate testing.
- **Hazardous Materials testing:** Engaging qualified environmental professionals to sample and test suspect hazardous materials associated with the proposed project's site, environment, and buildings.
 - Hazardous materials may include but are not limited to: asbestos containing materials (ACM), polychlorinated biphenyls (PCBs), mercury, lead paint, mold, guano, refrigerants, containerized wastes, and raw products storage.
 - Note that suspect PCB materials should not be tested without prior agreement by DCAMM and User Agency.
 - Environmental site investigation may include but is not limited to the presence or likely presence of hazardous substances or petroleum products on the property under conditions that indicate an existing release, past releases, or a threat of a release (as defined by Massachusetts law and regulation) of hazardous substances or petroleum products into structure on the property or into the ground, groundwater, or surface water of the property.
- **Site investigation and subsurface explorations:**
 - Engaging a geotechnical engineer to examine the soil composition of the area and the strength of the soil and rock, as well as some other characteristics that could affect construction or building safety. These explorations include but are not limited to soil boring, test pits, piezometers, geoprobes, drilling, sampling, and other testing to get a clear understanding of the geotechnical characteristics of the project site.
 - Engaging qualified environmental professionals to evaluate and advise on environmental conditions and requirements that may apply to the project, including but not limited to:
 - identification and delineation of wetlands resource areas, surface waters, rivers, etc. on or proximate to the project site.
 - identification of potential surface and subsurface contamination, including subsurface imaging, soil borings, test pits, groundwater monitoring wells.
 - environmental testing based on available information, only if approved by DCAMM after thorough vetting of scope and timing of such testing.
 - stormwater management assessment and preparation of Stormwater Management Plan.
- **Identify environmental permits and or approvals:**
 - Engaging qualified environmental professionals to:
 - identify environmental permits or approvals that may be required for the project, and associated thresholds, requirements and timelines.

4.7 Specifications

Designers shall utilize the DCAMM Standard Specifications (to be provided by DCAMM Project Manager) and shall include the following for each submittal. Refer to the Submission Checklists and Additional Resources below.

For the Study Phase

- Submit outline specifications which are to be based on the DCAMM Standard Specifications_Table of Contents (TOC), with the addition of a brief description for the content of each section.
- Identify additions and deletions to the TOC using "track changes" or redline/strikeout to identify revisions.
- Indicate proposed filed sub-bids/trade bid sections, as applicable. Identify specialty sections which are not currently in the DCAMM Standard Specifications.
- Do not submit full-length specifications.

For Design Development

- Submit full-length specifications using the DCAMM Standard Specifications as base text.
- Edit the project requirements and identify additions and deletions using the "track changes" feature.
- Provide new specification sections in DCAMM format for materials or systems required for the project which are not currently included in the DCAMM Standard Specifications.
- Refer also to the "Notes to the Designer" at the end of some of the DCAMM Standard Specifications for additional requirements.
- The specification should be written such that it is capable of being met by three manufacturers, or an approved equal.

For Progress Construction Documents

- Submit revisions to the design development specifications, continuing to use the 'track changes' feature on a cumulative basis.
- Incorporate DCAMM comments from the previous submittal.

For Final Construction Documents

- Accept all changes to remove the tracked changes, delete all notes, and incorporate any remaining DCAMM comments from the previous submittal.
- Prepare a high-quality single-sided originals suitable for reproduction, and a file in electronic format. Refer to Article 6.5.5 of the Design Contract.

For Early Bid Packages (for CMAR contracts)

- Early packages must have their own standalone set of specifications and drawings. Subsequent packages shall also have their own set of specifications and drawings. Early packages would typically be included as reference documents for later packages.

Material Substitutions: After the GC/CM is awarded the Contract, if it wishes to use products or materials other than those specified, the following must be adhered to:

- GC/CM must request such use by writing to the Designer. The request should name and describe the proposed substitutions and include associated shop drawings. The GC/CM should state what differences, if any, it has made in the contract price for such substitutions.

- When the Designer has received complete information from the GC/CM, it must consider all aspects of the proposed substitution and must write a letter to DCAMM and the GC/CM recommending its approval or disapproval of the substitution.
- An item will be considered an “equal” substitute of the named and described item if it is:
 - compatible in durability, appearance, strength, and design.
 - performs compatibly to the function that the general design for the work requires.
 - conforms substantially, even with deviations, to the specification’s detailed requirements of the item.

Alternates: The following shall be taken into consideration for alternates. Refer to DCAMM Specifications for detailed requirements.

- Alternates must be taken in order of listing, as the low bidder could change based on which alternates are accepted. Typically, alternates are all 'add' or all 'deduct' for clarity. For CMAR projects with multiple bid packages, each separate package may have different alternates.
- The Designer’s use of “alternates” in general bids will be subject to DCAMM’s approvals.
- If the Designer includes alternates in the Bid Document package, the alternates should be identified in the alternate’s section(s) of the Division II - “Special Provisions.”
- The Designer should identify the alternates by number and explain the procedures it has established for bidding & comparing the alternates.
- The Designer must describe the changes that each alternate would require if approved.
- The Designer should also list and cross-reference the divisions of specifications and drawings that each alternate would affect so Bidders can bid the job accordingly.

Refer to Section 7: Reference Materials for Standard Specification Requirements and Special Specification Requirements.

4.8 Building Information Modeling (BIM)

Building Information Modeling (BIM) will be used in the study, design, and construction phases of the project. The List of Services document is a general statement of DCAMM’s current requirements regarding the use of Building Information Modeling technology in agency projects. The specific requirements regarding use of the BIM will vary depending on the nature of the project, the levels of development delineated in the DCAMM approved BIM Execution Plan for the project, and the diverse purposes for which DCAMM will use the BIM during the life cycle of the facility from design through facility operations. In all instances, the language of the project contract(s) will be controlling.

Additional BIM Resources:

[BIM Guidelines for Design and Construction](#)
[BIM List of Services](#)

4.9 Building Commissioning

Total building commissioning is a process for quality assurance in new construction and major modernization to ensure that all building systems are providing the performance that was expected during the design process. Commissioning also provides training and documentation to ensure the User Agency has the ability to maintain the systems designed and installed at their optimum level of efficiency during their life cycle.

DCAMM will engage an independent third-party building commissioning agent (BCA) as part of this project, typically during SD. The commissioning scope should begin to be developed during the study and refined throughout the design phase. HVAC, security, IT, and other building specialty systems, as well as enclosure (roof and envelope) often require commissioning. The BCA will meet with DCAMM and the Designer's team during planning, design and construction to evaluate design proposals and make recommendations to ensure the maintainability and operational efficiency of the new building. The commissioning agent may be engaged to develop, in collaboration with DCAMM, an operations and maintenance plan as a reimbursable expense during the building commissioning phase.

The Designer is responsible for:

- providing an outline of commissioning services to be performed for DCAMM review.
- meeting and consulting with DCAMM's BCA to document the basis of design; review, respond and incorporate the commissioning specification; and review documents prepared by the BCA, as appropriate, for all operating systems to ensure maintainability and operational efficiency.
- meeting, consulting, and reviewing with BCA and User Agency to enable the BCA to develop an owner's project requirements and operations and maintenance plan for the facility.
- reviewing and commenting on the BCA periodic commissioning progress reports and issues log as appropriate.
- participating in the initial operation and maintenance training session by presenting the project basis of design.
- coordinating commissioning activities with the CM.
- ensuring that relevant information from the project is delivered to the DCAMM PM for uploading into CAMIS.
- specifying indoor air quality standards for products that meet volatile organic compound limits. Also, Environmentally Preferable Products shall be viewed.

Refer to Section 7: Reference Materials for Commissioning Scope of Services for Mechanical, Electrical, Plumbing and for Enclosures.

4.10 Construction Manager Consultation Services (if CMAR project)

For projects procured utilizing a Construction Manager at Risk (CMAR) contract under M.G.L. Ch. 149A, the Construction Manager (CM) is typically under contract with DCAMM during Schematic Design. The CM is expected to, among other things, provide detailed consultation services to DCAMM and the Designer in connection with the project design development and construction planning. This includes providing, for example, advice and recommendations relating to value engineering, estimating, budgeting, constructability, suitability of materials and equipment, critical path method scheduling, phasing, time, and other matters. Upon the issuance of the Notice to Proceed for construction services, the CM enters into subcontracts with firms who

provide construction services, and may, on an extremely limited basis, provide construction services themselves.

CMAR projects are procured through a two-phase procurement process:

Phase 1: Request for Qualifications (RFQ) to pre-qualify CM firms:

- CM firms submit Statement of Qualifications (SOQ).
- DCAMM will evaluate submitted SOQs based upon the RFQ evaluation criteria and will select those respondents deemed qualified.
- Pursuant to M.G.L. Ch. 149A, Section 5(a), the Designer is statutorily required to participate in the prequalification committee for the purpose of reviewing and evaluating SOQ responses.

Phase 2: Request for Proposals (RFP)

- Those respondents deemed qualified are invited to submit a proposal (and GMP) in response to a detailed RFP.
- Pursuant to M.G.L. Ch. 149A, Section 6(a), the Designer is statutorily required to participate in the selection committee for the purpose of reviewing and evaluating the RFP responses.

For larger projects (typically over \$10 million), DCAMM is likely to procure “Early Pre-Construction” services from the CM for the SD phase. Designers will assist DCAMM in the prequalification and selection of the CM (and trade contractors) mid-study and will coordinate both their design deliverables and cost estimates with the CM at all phases of design. It is likely that design deliverables may be provided in a custom-tailored sequence to expedite early bid packages required by the CM. For example, the CM may be provided with final construction documents for site work, demolition, structural steel, excavation, and foundation work during DD.

The Designer’s coordination responsibilities will be defined within the Designer’s Contract and the Final Design Phase Amendment (Attachment G).

In general, it is the Designer’s responsibility to coordinate their Design Deliverables, Construction Cost Estimates, and schedule with the CM, throughout the Design Phase.

4.11 Meetings with Authorities Having Jurisdiction

During SD, DD and CD, the Designer shall provide drawings and specifications and meet with the Authorities Having Jurisdiction (AHJ) where the project is located. The DCAMM Project Manager shall be present at all AHJ meetings.

In SD, the intent is to discuss the project and review drawings. In DD, the intent is for “Tentative Approval” from the AHJ, and during CD, the intent is for “Final Review.” It is critical that those meetings are well documented as to the requests made by the AHJ and agreements made at the meetings.

The AHJs may include:

- Dept. of Public Safety Inspector
- State Building Inspector
- State Plumbing Inspector

- State Electrical Inspector
- State Sheet Metal Inspector
- State Environmental Agencies – if needed (MassDEP, MWRA)
- Massachusetts Historical Commission – if needed
- Local Fire Department Chief
- Local Inspectors (typically local electrical only)
- Local Commissions – if needed (MAAB, local commissions on disabilities, local conservation commissions)
- For County-Owned buildings: local City/Town Building Commissioner

4.12 Designer Fee Negotiation

Designer Fee Negotiation will occur at two points: prior to Schematic Design/Certifiable Study and prior to Design Phase.

- **Prior to Schematic Design/Certifiable Study:** The Draft Study task will either verify the initial project budget or establish a revised budget upon which DCAMM and Designer shall work in good faith to develop the scope of services to be performed during the Schematic Design/Certifiable Building Study task and establish the Basic Fee for those services. If such negotiation is successfully completed, DCAMM and Designer shall execute an amendment to the Contract.
- **Prior to the Design Phase:** The Contract will again be amended to incorporate a scope of services relating to the Design Phase and Construction Administration Services. The Designer and DCAMM shall work in good faith to develop a Design Phase Scope of Services ([Attachment G](#)) and establish the Design Phase Basic Fee. A detailed scope of work and fee breakdown for all tasks will be required.

It should be noted that in both cases, if the Designer scope and fee negotiation is unsuccessful, the second ranked Designer selected by the DSB shall be solicited to provide services.

4.13 Permitting

State projects are subject to the state building codes and standards, rather than local building codes. Although state projects are not subject to local zoning, DCAMM considers local zoning requirements in its projects. One exception will be the applicability of the Specialized Stretch Energy Code for new construction or substantial renovations that begin a study after July 1, 2023, as required by Executive Order 594 and detailed in the [relevant guidance](#) documents. Designers should pay attention to site specific requirements in the codes, including requirements for hurricane rated windows and equipment. Designers are expected to apply the appropriate standard of care for developing documents for permitting. Variances should only be applied for with prior DCAMM approval.

Some state and local jurisdiction permitting applies, including but not limited to those for wetlands, stormwater, and municipal connections to water and sewer. Design teams should include DCAMM Project Managers in all communications with local authorities. Utility permits are generally handled directly through the utilities. Preparation of utility rebate applications is the responsibility of the design team. Solar installations need a series of interconnection permits that

can be time consuming. Designers should include the permitting requirements in the project schedule. Consult with the DCAMM Energy and Sustainability Team for guidance as early as possible in a project.

4.14 Lessons Learned

Quality Control

- Submit deliverables with adequate QA/QC having been performed.
- Incorporate feedback from DCAMM into presentations and final deliverables.
- Be attentive to agency regulatory requirements that may impact the project.
- Ensure all submittals are complete and there are no missing documents, pages, etc.
- Confirm all required filed sub-bids have been included.
- Detail all labor and materials required for each filed Sub-bid Section by that particular sub-trade and list, by number, 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 that trade.
- Write product specifications such that they are capable of being met by at least three manufacturers by providing for either a minimum of three named brands of material or a description of material which can be met by a minimum of three manufacturers or producers, and “or equal”. Such specifications may be otherwise written for sound reasons in the public interest, which must be stated in writing in the public records of DCAMM.
- Ensure that plans and specifications have no conflicting information.

Project Management

- Design within project budget.
- Ensure DCAMM is included in all interactions with User Agency.
- Provide adequate time for DCAMM review of draft materials before meetings.
- Alert DCAMM of any requests from legislators, local government officials, the press, or external stakeholders.
- Secure approval of any propriety items well in advance of construction. Document such approvals in the project record.

Project Administration

- Proceed with work only after receiving a Notice to Proceed from DCAMM.
- Discuss invoices with DCAMM Project Manager prior to submitting.
- Provide complete documentation with invoice.

4.15 Designer Performance Evaluations

State law requires evaluations of Designer performance by all public entities for projects under the designer selection law (M.G.L. Ch. 149 section 44A). DCAMM and the DSB have developed standard designer performance evaluation forms that are required to be completed and uploaded into the on-line Designer Selection Network - [Autocene](#) - at specific milestones of a project.

The evaluation form will be submitted at the completion of three stages: Study – Design – Construction. Designers are evaluated on four areas: Management – Quality – Schedule – Budget.

DCAMM shall provide the Designer with a written preliminary evaluation at the completion of the analysis stage of the Study Phase for informational purposes and to initiate a dialogue between the PM and the Designer as to the firm's performance. This provides an opportunity to acknowledge good performance or a discussion on ways to improve performance before the SD/certifiable study phase is completed and the official Study evaluation is uploaded into the on-line Designer Selection Network - [Autocene](#).

Evaluations may be viewed by the DSB, state agencies, authorities, and cities and towns for future work. If the Designer disagrees with the evaluation, they may respond within 30 days and their responses will become part of their permanent file.

In addition to Designer Performance Evaluations, Autocene also provides a platform for Designer Reference to be uploaded by DCAMM, a User Agency, or others.

[Contractor Evaluations](#) are also required by DCAMM, and Designers may be asked to provide Contractor performance feedback.

5. Study Phase

5.1 Overview

The Study Phase commences upon execution of the Contract, during which the Draft Study and, if authorized by a Notice to Proceed, Schematic Design/Certifiable Study are completed. In most cases, DCAMM's Office of Planning will lead the Study Phase, engaging with staff from Office of Design and Construction who will be responsible for overseeing the construction of the project.

The purpose of the Study Phase is to ensure that the Commonwealth implements the most strategic, cost effective, and technically feasible solution. In some cases, studies reveal that a need may be satisfied without new construction or renovation, but rather the solution may be to lease space or to initiate a real estate solution such as a public-private-development, or to implement an operational solution.

The Study Phase is a critical component of a project's development as decisions made in the early concept stages regarding siting, building footprint and massing, scope of investment, material selection, building systems and envelope will have long term impacts on our natural resources and on the indoor environment for building users. If these decisions are not addressed through a thorough study of the options at the beginning of a project, significant opportunities can be missed.

This section provides an overview of the Study Phase and outlines potential tasks and deliverables that a project may be required to complete. However, it is important to note that each project is unique. Complicated projects may require deeper analysis than a simpler project. And so, the tasks and deliverables included in this section may or may not be required and will be used by the Designer and DCAMM Project Manager to define a project's scope of work. The requirements included in DCAMM's standard Contract for Study, Final Design, and Construction Administration Services (as well as the approved Work Plan which amends the standard Contract) take precedence over this Manual.

A study for a building construction project must be certified before DCAMM can amend the contract and issue a Notice to Proceed for Design Phase services. For a study to be certified, all the required funding must be committed to the project and available for spending. As part of the certification process, the Designer is expected to support DCAMM in the preparation or updating of study deliverables and for presentation to authorities outside of DCAMM.

Accuracy in the study is important as statute limits the degree of deviation between the study solution and the final design solution. The deviation cannot be "substantial," and cannot result in more than a 10 percent change in the total floor area (if applicable). Otherwise, the study will need to be revised and recertified. However, a redistribution of areas and costs can occur within the total figures for the project.

5.2 Types of Studies

Depending on the individual project to be initiated, there are various types of studies that can be performed to determine capital investment. A series of studies of increasing detail may be required on large scale projects or projects that need to be defined before initiating a particular building study.

- **Master Plans:** This type of study is a comprehensive review of one or more facilities or campuses. The review may be focused on an aspect of the facility, such as space utilization, or may cover broad, long-range building programs and replacement alternatives. The Master Plan may be used to consider a development policy or to serve as the basis for a program of subsequent construction projects. Increasingly, DCAMM is including the development of a Decarbonization Roadmap as part of master planning.
- **Feasibility Studies:** A feasibility study is often completed before the initiation of the certifiable building study determine whether a proposed project is feasible and/or to define the parameters of a project.
- **Certifiable Building Study:** A Certifiable Building Study provides a detailed overview of the planning process and recommends a solution that can be accomplished within the appropriation or authorization for that project. It includes a space program to reflect the User Agency's needs, alternative options explored and a refinement of the preferred option including schematic design package, detailed cost estimate and implementation schedule. Once completed, the study is officially certified by DCAMM and the User Agency (and at times the Secretariat) before the project can proceed into final design.
- **Certifiable Repair Study:** This type of study provides a basis for repairs or upgrades to an existing building or system without altering the program use. These projects are typically small, urgent, specific repairs or upgrades and are handled by House Dr. contracts. Once completed, the study is certified by the User Agency and DCAMM before the project can proceed into final design.
- **Facility Conditions Assessment (FCA):** An FCA is a comprehensive survey of a building or campus to identify the condition of its major components and systems. FCAs are often completed before a Certifiable Building Study is initiated to identify and prioritize issues and deficiencies, remaining useful life, and provide cost estimates to repair or replace the deficiencies. They are also utilized as a foundation for strategic planning for a system portfolio to help clarify priorities for investment.
- **Facility Performance Evaluation (FPE):** DCAMM will often complete a post occupancy evaluation to assess the performance, function, and comfort of a building 6-12 months after occupancy to inform future projects. Areas of evaluation may include user satisfaction, wayfinding, workflow, comfort, aesthetics, energy and water use, waste generation, environmental conditions, acoustics, and lighting. FPEs can be performed by OP for a comparable facility to understand lessons learned, or by ODC post construction. Designers are expected to participate in the FPE process.
- **Other types of studies:** Depending on the analysis needed, there are other studies and analyses that could be requested to define a project including utilization analysis, employee categorization, development of design guidelines and space standards, to name a few.

5.4 Study Tasks

Due to the variety and nature of DCAMM projects, each study will vary as to the specific tasks and requirements. **The unique requirements of a project will be first defined in the DSB advertisement or House Doctor scope of work. Once the project is initiated with the User Agency and more information is known, a detailed scope of work (“Work Plan”) will be developed by the Designer for DCAMM approval.** The approved Study Phase Work Plan will define the actual scope of work for the specific project.

The DCAMM Project Manager will provide the Designer an edited Study Phase Work Plan template, which identifies the tasks and deliverables required for the project. The Designer will draft the Study Phase Work Plan and submit to DCAMM for approval.

Because of the diversity of project types, for practical purposes, the length and content of a study should depend on the complexity of the project. However, building studies should include the following activities at a minimum:

- Identify project goals and guiding principles (including Design Excellence goals).
- Review existing documentation, including previous studies.
- Analyze existing conditions.
- Evaluate current and future programmatic needs.
- Review best practices in the design of the project type, including current trends, standards and guidelines, specialty spaces, and use of technology.
- Review relevant sustainable design practices and measures to improve building resiliency, energy performance, and environmental comfort.
- Finalize program and project scope.
- Develop conceptual design alternatives and select a preferred alternative.
- Evaluate phasing and swing space alternatives (if required).
- Develop and finalize the design, program, budget, and schedule and complete Schematic Design.
- Complete a Certifiable Study (including Schematic Design package).
- File PNF to Mass Historical Commission.

Because so much detailed information is gathered in the Study Phase, it is important that the Study Report document be clear, concise, and readable with back up and detailed material placed in the Appendix. Key decisions and concerns should be clearly identified in the body of the main Study Report with identification of any items to be more thoroughly addressed during design.

The Study Phase MAY BE organized into the following major tasks. **The study process is not linear, in that it is often an iterative process where multiple tasks are advancing concurrently.** The study initially includes Tasks 1 through 5 upon which a Draft Study Report is submitted. Authorization to progress to Tasks 6 and 7 Schematic Design and Certifiable Study Report will be based on a review of available funding sources for the total project cost and alignment with initial project goals. The fees associated with Tasks 6 and 7 will be negotiated during the Study Phase, following the determination of the precise building program.

Draft Study Phase

Study Task 1 – Project Start-up & Work Plan

Study Task 2 – Program Development & Existing Conditions Documentation/Analysis

Study Task 3 – Development & Evaluation of Alternatives

Study Task 4 – Preferred Alternative

Study Task 5 – Draft Study Report

Schematic Design/Certifiable Study Phase

Study Task 6 – Schematic Design

Study Task 7 – Certifiable Study Report

Study Task 1: Project Start-Up and Work Plan

Objective: Confirm with the design team, User Agency and DCAMM the scope of the work anticipated and establish clear, commonly understood objectives and a methodology for the project execution.

Project Start-Up and Work Plan tasks and deliverables typically include the following items. Final tasks and deliverables will be determined with the DCAMM Project Manager based on the specific needs for the project. Some tasks or sub-tasks may not be necessary given the project complexity. The approved Study Phase Work Plan will define the actual scope of work for the specific project.

Tasks:

- 1.1 DCAMM Administrative Conference
- 1.2 Study Conference
- 1.3 Study Work Plan

Deliverables:

- Meeting Agendas and Minutes (DCAMM Administrative and Study Conferences)
- Study Conference Presentation
- Study Phase Work Plan (Draft and Final) for approval by Director of Planning. Draft to be submitted within two weeks following Study Conference. The Work Plan typically includes:
 - Workplan Approvals
 - Project Overview (with Design Excellence Goals)
 - Directory
 - Budget and Fee
 - Project Schedule
 - Quality Control Plan
 - BIM Execution Plan
 - Detailed Tasks Lists (Tasks 1-7)

Refer to Section 7: Reference Materials for a PDF of the Study Phase Work Plan Template. The DCAMM Project Manager will provide the Designer an edited Study Phase Work Plan template, which will include detailed lists of tasks for the Designer to draft the Study Phase Work Plan.

Study Task 2: Program Development & Existing Conditions Documentation/Analysis

Objective: Review all documents provided by DCAMM and User Agency. Assess, analyze, and document the programmatic, siting and building requirements for accommodating the services and activities identified by the User Agency. Assess existing conditions of the site and buildings providing sufficient information to identify the problems and opportunities, so that all major implications for future requirements and design can be accurately judged.

Program Development and Existing Conditions Analysis tasks and deliverables typically include the following items; however, the approved Work Plan dictates the actual scope of work.

Tasks:

- 2.1 Existing Documentation Review
- 2.2 Program Development
- 2.3 Site and Building Analysis
- 2.4 Cost Analysis
- 2.5 Project Schedule
- 2.6 Program Development and Existing Conditions Report
- 2.7 Problem Restatement (if required)

Deliverables:

- Meeting Minutes
- Meeting Presentations
- Program Development and Existing Conditions Report (Draft and Final).

Study Task 3: Development & Evaluation of Alternatives

Objective: Identify and analyze up to three meaningful alternative design concepts for implementing the proposed project. Emphasis should be placed on developing reasonable, economical, and practical solutions to evaluate. Each alternative should satisfy the standards and policies. The types of alternatives to be considered should be reviewed and approved by DCAMM and the User Agency before they are developed in any detail.

Development & Evaluation of Alternatives tasks and deliverables typically include the following items; however, the approved Work Plan dictates the actual scope of work.

Tasks:

- 3.1 Alternatives
- 3.2 Alternatives Evaluation
- 3.3 Global Workshop
- 3.4 Alternatives Documentation & Preferred Alternative
- 3.5 CM Procurement (if applicable)

Deliverables:

- Meeting/Workshop Minutes
- Meeting Presentations
- Alternatives Report – Alternatives, Evaluation Matrix, Preferred Alternative (Draft and Final).

Study Task 4: Preferred Alternative

Objective: Based on an agreed-upon building alternative, develop and document the Preferred Alternative (which may be developed further into a schematic design package) with corresponding cost and implementation schedule. Cost reconciliation may be required to bring the preferred alternative in line with the project budget.

Preferred Alternative tasks and deliverables typically include the following items; however, the approved Work Plan dictates the actual scope of work.

Tasks:

- 4.1 Finalize Program
- 4.2 Site and Building Development
- 4.3 Sustainability & Resilience Analysis
- 4.4 Cost Analysis
- 4.5 Project Schedule / Permitting Requirements
- 4.6 Commissioning
- 4.6 Preferred Alternative Documentation

Deliverables:

- Meeting Minutes
- Global Workshop Presentation & Meeting Minutes
- Preferred Alternative Report (Draft and Final).

Study Task 5: Draft Study Report

Objective: Prepare a Study Report Table of Contents and draft report incorporating, coordinating, and narrating appropriate content for the previous tasks 1-4. The report document shall be sufficiently detailed to summarize all relevant aspects of the proposed project program and design concept. However, the report must also be easy to navigate, be formatted to find key information, and present material only once to avoid errors and repetition.

Draft Study Report tasks and deliverables typically include the following items; however, the approved Work Plan dictates the actual scope of work.

Tasks:

- 5.1 Table of Contents
- 5.2 Draft Study Report

Deliverables:

- Draft Table of Contents
- Draft Study Report

Note: Authorization to progress to Schematic Design will be based on a review of available funding sources for the total project cost and alignment with initial project goals.

The fee associated with the Tasks below will be negotiated during the study phase, following the determination of the precise building program. The Designer's contract will be amended to incorporate the final fee and scope for the Schematic Design/Certifiable Study phase.

Study Task 6: Schematic Design

Objective: Schematic Design (SD) phase shall develop the Study outcomes to the next level of detail and specificity to verify the cost and ensure that the project is maintaining the established budget and project goals. Prepare and submit a SD Package.

It is anticipated that the duration of the SD Phase will be approximately 4 months. If this duration may be shortened or needs to be extended, DCAMM and the User Agency should discuss such changes.

SD tasks and deliverables typically include the following items; however, the approved Work Plan dictates the actual scope of work.

Tasks:

- 6.1 Stakeholder Engagement
- 6.2 Construction Manager Coordination (if CMAR)
- 6.3 Meetings
- 6.4 Schematic Design Package
- 6.5 Schematic Design Package checklist (Refer to Section 7: Reference Materials for the checklist. Checklist to be reviewed with DCAMM PM prior to submittal. Checklist to be submitted with SD package to ensure QA/QC has been completed)
- 6.6 File a Project Notification Form (PNF) with MA Historical Commission (MHC)
- 6.7 Initiate Final Design Services and Fee Negotiation (if Study Designer is requested to submit a proposal for Design Phase services)

Deliverables:

- Meeting Minutes
- Meeting Presentations
- Schematic Design checklist
- Schematic Design submission (Draft and Final)
- Reconciled cost estimate (per Cost Estimating Manual)
- Schedule for duration of project
- Project Notification Form (PNF) [PNF Form](#)
- Summary of Building and Fire Inspector project review
- Draft Design Phase Fee Proposal and DRAFT Attachment G (if requested)

Refer to Section 7: Reference Materials for General Drawing Requirements for all Submittals.

Study Task 7: Certifiable Report

Objective: Update the draft Study Report (Task 5) based on further development of the project following SD. Prepare a certifiable report incorporating, coordinating, and narrating appropriate content for the tasks above. Appendices should be used to provide more detailed data and information.

Certifiable Report tasks and deliverables typically include the following items; however, the approved Work Plan dictates the actual scope of work.

Tasks:

- 7.1 Table of Contents
- 7.2 Draft Certifiable Report
- 7.3 Final Certifiable Report
- 7.4 Study Report Checklist (Refer to Section 7: Reference Materials for the checklist.
Checklist to be reviewed with DCAMM PM prior to submittal. Checklist to be submitted with
Study Report package to ensure QA/QC has been completed)
- 7.5 Executive Presentation

Deliverables:

- Meeting Minutes
- Meeting Presentations
- Briefing Presentation
- Study Report Checklist
- Certifiable Report and Schematic Design Package (Draft and Final)
- Executive Presentation (Draft and Final)

Refer to Section 7: Reference Materials for the required Study Preface text.

6. Design Phase

6.1 Overview

Following the conclusion of the Study Phase, the Schematic Design/Certifiable Study must be certified, and an appropriation of sufficient funds must be secured for the project to proceed to the Design Phase. Should DCAMM elect to proceed with the Design Phase, the Study Phase Designer may be selected to perform Design Phase services (although this is not guaranteed), and an amendment to the Contract incorporating the Attachment G – Design Phase Scope of Services and, if applicable, a negotiated Design Phase Basic Fee, and all other necessary documents to the Contract shall be executed.

The Designer and DCAMM shall work in good faith to develop a Design Phase Scope of Services and Basic Fee amount negotiated to be attached to and incorporated into Attachment G. The Design Phase commences upon the execution of an amendment to the Contract and the issuance of a Notice to Proceed. DCAMM's Office of Design and Construction takes the lead in the Design Phase, engaging with staff from Office of Planning and other DCAMM departments as appropriate.

For DCAMM projects, the agency is statutorily required to establish a maximum fee prior to negotiations. Fee negotiations should be a team effort involving both the DCAMM Project Manager and the Directors from the Office of Planning and the Office of Design and Construction, with the assigned Project Manager taking the lead in the process. When setting the maximum fee, DCAMM will consider special, project specific conditions which may require an increase or decrease in the maximum fee. DCAMM will evaluate these special conditions against the Design Contract requirements and adjustment the maximum fee accordingly.

The project goals established in the Study Phase should continue to be monitored and refined to ensure that they are being met in the Design Phase. The Design Team's attention to Quality Control and Budget Management are critical to project success.

In the Design Phase, the decisions made to select materials and provide detailed drawings should reinforce DCAMM's goals to **ensure that our buildings not only meet the needs of the User Agency but are high quality, high performance, and cost-effective while being completed on time and on budget.**

Filed sub-bids are required for areas of work valued over \$25,000. The 18 filed sub-bid trades are noted below. Refer to [Filed Sub-Bidders Categories of Work](#).

- Acoustical Tile
- Electrical Work, including direct electrical radiation for heating
- Elevators
- Fire Protection Sprinkler Systems
- Glass and Glazing
- Heating, Ventilating and Air Conditioning
- Lathing and Plastering
- Marble
- Masonry Work
- Metal Windows

- Miscellaneous and Ornamental Iron
- Painting
- Plumbing
- Resilient Floors
- Roofing and Flashing
- Terrazzo
- Tile
- Waterproofing, Damp-proofing and Caulking

And any other class of work for which the Designer deems sub-bids are necessary, subject to DCAMM approval.

6.2 Design Phase Tasks

The Design phase is broken into the following tasks:

Design Task 1: Initial Meeting and Design Phase Work Plan

Design Task 2: Design Development (DD)

Design Task 3: Construction Documents (CD)

Design Task 4: Bidding

Design Task 5: Construction Administration (CA)

Design Task 6: Project Closeout

It is important to note that DD and CD are often very fluid, in that the development of the design should continue to progress while design reviews are occurring. DCAMM will provide approval of all design submittal packages. Although a project's schedule is driven by complexity, it is anticipated that the typical duration of the DD and CD Phases will be approximately 4-6 months each.

Due to the variety and nature of DCAMM projects, each project will vary as to the specific tasks and requirements for the Design Phase. The Initial Meeting and Design Phase Work Plan will further define the scope of work.

The DCAMM Project Manager will provide the Designer an edited Design Phase Work Plan template, which identifies the tasks and deliverables required for the project. The Designer will draft the Design Phase Work Plan and submit to DCAMM for approval.

Design Task 1: Initial Meeting and Design Phase Work Plan

Objective: Confirm the scope of the work anticipated and establish clear, commonly understood objectives and a methodology for the project execution.

The Design Phase tasks commence upon the execution of an amendment to the Contract and the issuance of a Notice to Proceed. If the Notice to Proceed for Design Phase services has not been issued, the DCAMM Project Manager will work with the Designer to complete this effort.

Tasks: FOLLOWING ISSUANCE OF THE NOTICE TO PROCEED

- 1.1 Kick off Meeting
- 1.2 Design Phase Work Plan

Deliverables:

- Meeting Agenda, presentation, and Minutes (Kick off Meeting)
- Design Phase Work Plan (Draft and Final). Draft to be submitted within two weeks following Kick off Conference. The Work Plan typically includes:
 - Workplan Approvals
 - Designer's Statement of Approach to meet Project Goals, Budget & Schedule
 - Schedule of Values
 - Contract Schedule
 - Quality Control Plan
 - BIM Execution Plan
 - Energy Conservation Measures
 - Updated Directory
 - Detailed Tasks Lists (Tasks 1-6)

Refer to Section 7: Reference Materials for a PDF of the Design Phase Work Plan Template. The DCAMM Project Manager will provide the Designer an edited Design Phase Work Plan template, which will include detailed lists of tasks for the Designer to draft the Design Phase Work Plan. Some tasks or sub-tasks may not be necessary given the project complexity.

Design Task 2: Design Development (DD)

Objective: Further refine each part of the design, including selection of components for architectural and mechanical systems, and detailed layout for all program and support spaces.

A half day Global Workshop is typically held at the mid-point of the DD to present how the Design Excellence goals (Design – Value – Stewardship) are being addressed and assure comprehensive integration of all aspects of the design. The Designer will coordinate all consultants' work to date and ensure consensus at all levels of design detail. At the completion of DD no changes should occur to the finalized program.

In DD and CD, decisions often get made that may impact on the original design of the building. The Designer shall notify the DCAMM Project Manager in advance of changes that will alter the design intent.

Design Development tasks and deliverables typically include the following items:

Tasks:

- 2.1 All Designer Activities and Tasks During Design Phase (refer to Sections 3 and 4)
- 2.2 Global Workshop
- 2.3 Cost management and potential value engineering
- 2.4 DD checklist and Submission (Refer to Section 7: Reference Materials for the checklist. Checklist to be reviewed with DCAMM PM prior to submittal. Checklist to be submitted with DD package to ensure QA/QC has been completed)

Deliverables:

- Meeting Minutes
- Global Workshop presentation
- DD checklist
- DD Submittal (represents 30% completion of CD package)

Refer to Section 7: Reference Materials for General Drawing Requirements.

Design Task 3: Construction Documents (CD)

Objective: Provide information in the form of final drawings and specifications that enables permitting by authorities having jurisdiction, as well as bidding and construction of the project by a qualified builder.

Designers may submit Construction Bid Set Plans and Specificationsok Affidavits in lieu of stamped drawings for bid purposes. Stamped drawings are required when permits are pulled. Refer to Section 7: Reference Materials for the affidavits.

Construction Documents tasks and deliverables typically include the following items:

Tasks:

- 3.1 All Designer Activities and Tasks During Design Phase (refer to Sections 3 and 4)
- 3.2 Global Workshop may be held to review conditions, assumptions and decision made)
- 3.3 Cost management and potential value engineering
- 3.4 60% CD checklist and 60% CD Submission
- 3.5 90% CD checklist and 90% CD Submission
- 3.6 100% checklist and 100% CD Submission
Refer to Section 7: Reference Materials for the checklist. Checklist to be reviewed with DCAMM PM prior to submittal. Checklist to be submitted with CD package to ensure QA/QC has been completed.

Deliverables:

- Meeting Minutes
- Global Workshop presentation
- 60% CD checklist and submittal
- 90% CD checklist and submittal
- 100% CD checklist and submittal

Note: more complicated projects may require 75% CD submission

Refer to Section 7: Reference Materials for General Quality Control Guidelines and Drawing Requirements for the CD Phase.

Design Task 4: Bidding

Objective: The Designer shall assist DCAMM in the public bidding process and submission of documents to the DCAMM Bid Room.

The Bidding phase scope of work will vary if the project is Design-Bid-Build or CM at Risk. Bidding tasks and deliverables typically include the following items:

Tasks:

- 4.1 Prepare Bid Documents and Checklist (Refer to Section 7: Reference Materials for the checklist. Checklist to be reviewed with DCAMM PM prior to submittal.)
- 4.2 Estimator prepares Construction Cost Estimate. (CSI Master Format and/or Unformat)
- 4.3 Conduct Pre-Bid Conference
- 4.4 Respond to Questions and Prepare Addenda
- 4.5 Attend the filed Sub-bid and General Bid openings
- 4.6 Review and evaluation of all Bids; advise DCAMM on all Bid protests
- 4.7 Advise DCAMM on all matters pertaining to the public bidding of the project

Deliverables:

- Meeting minutes
- Bid Room Checklist – either for Ch.149 or Ch.149A (Refer to Section 7: Reference Materials for the checklist. Checklist to be reviewed with DCAMM PM prior to submittal. Checklist to be submitted with Bid package to ensure QA/QC has been completed)
- Bid documents
- Construction Cost Estimate
- The Recommendation Letter (for Filed Sub-bids, General Bids and Trade Bids)
- Addenda

Design Task 5: Construction Administration (CA)

Objective: Upon award of the construction contract, the Design team shall be charged with general administration of the construction contract.

Construction Administration tasks and deliverables typically include the following items:

Tasks:

- 5.1 Prepare Contract Documents
- 5.2 As Builts/Record Drawings
- 5.3 Change Orders
- 5.4 Review and Approval
- 5.5 Maintain Construction Schedule
- 5.6 Coordinate with DCAMM Resident Engineer

- 5.7 Conduct Meetings
- 5.8 Prepare and Update Submittal Logs and Changes to the Contract
- 5.9 Environmental Conditions Assessment
- 5.10 Testing

Deliverables:

- Meeting Minutes
- Contract Documents
- As-Built/Record Drawings
- Change Orders
- Updated construction schedule
- Submittal Logs and Changes to contract
- Environmental Conditions Assessment
- Testing Reports

Design Task 6: Project Close-Out

Objective: To make the project ready to turn over to the User Agency.

Project close-out is an essential phase of a successful construction process to provide a complete and effective handover. The Close-Out Phase ensures that:

- All work has been completed in accordance with the contractual obligations.
- The quality of the work matches the project requirements.
- The State Inspector accepts all health and safety issues prior to substantial building occupancy. Please note that “Substantially Complete” means less than one percent (1%) of all contract work, including change orders, remains to be done, and that none of the remaining work will affect health, safety, or function. (Note: Substantial Completion also triggers the start of the Massachusetts mandated warranty period.)
- All relevant project documents have been collected and provided to the User Agency
- Project is evaluated to discuss and capture lessons learned to provide guidance for future projects.

Project Close Out tasks and deliverables typically include the following items:

Tasks:

- 6.1 Complete procedural requirements prior to use and occupancy (see Frequently overlooked items list in Additional Resources below)
- 6.2 Prepare Closeout submittals (GC/CM and Designer)
- 6.3 Conduct final inspection
- 6.4 Review/Submit DCAMM Certificate of Substantial Completion/Use and Occupancy (E-1)
- 6.5 Generate DCAMM Certificate of Final Release and Acceptance (E-2)
- 6.6 Perform Project Evaluation

Deliverables:

- Meeting Minutes
- Close-out Checklist (Refer to Section 7: Reference Materials for the checklist. Checklist to be reviewed with DCAMM PM prior to submittal. Checklist to be

submitted with close out package to ensure QA/QC has been completed)

- Monetized Punch List
- DCAMM Certificates
- Project Evaluation Report
- Facility Performance Evaluation (if requested)
- Updated CAMIS equipment, building, site information (DCAMM to provide format for data collection)
- As-builts, O&M manuals, equipment schedules
- Final Site survey
- Contractor and Sub Contractor evaluations

Refer to Section 7: Reference Materials for Frequently overlooked items when preparing for E-1/
Substantial Completion.

7. Reference Materials

Note: The following Reference Materials are provided to Designers for informational purposes only. Designers shall confirm with DCAMM Project Manager that the materials are the most up to date and are applicable for the project.

- A. Study Phase Work Plan Template
- B. Design Phase Work Plan Template
- C. Study Phase Checklists (Schematic Design Study Report)
- D. Design Phase Checklists (DD, CD, Bidding, Close-Out)
- E. Drawing Requirements
- F. Cost Estimating Requirements
- G. Specifications Requirements
- H. Commissioning Scope of Work
- I. Construction Bid Set Plans and Specs Affidavits
- J. Quality Control
- K. Items Frequently Overlooked When Preparing for E-1
- L. Study Preface
- M. Common Acronyms

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP for the full document.

DCAMM Project Manager to edit all templates before forwarding to Designer.



STUDY PHASE WORK PLAN COVER AND APPROVALS

Project Number:	(insert MA State Project Number)
Project Title:	(insert project title)
Project Location:	(insert project location)
User Agency:	(insert User Agency)
Prime Consultant	(insert Firm name)
Table of Contents	
	Project Overview
	Directory
	Budget and Fee
	Schedule
	Quality Control
	BIM Execution Plan
	DETAILED TASK LISTS
	Study Task 1: Start-Up and Workplan
	Study Task 2: Program Development and Existing Conditions
	Study Task 3: Alternatives
	Study Task 4: Preferred Alternative
	Study Task 5: Draft Study Report
	Study Task 6: Schematic Design
	Study Task 7: Certifiable Report
Work Plan Approvals	
	<p>This Work Plan outlines the scope of work required to complete the Study Phase for the above referenced project. The work plan includes a breakdown of major tasks, critical meetings and workshops, deliverables, fee allocation, and project schedule. The final product will be a Certifiable Building Study including Schematic Design that describes the project design, budget, schedule, and implementation plan. The definitions, obligations and requirements for a Certified Study and Schematic Design are defined in Massachusetts General Law Chapter 7C, Section 59: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter7C/Section59</p> <p>This document references general requirements included in DCAMM's Contract for Study, Final Design, and Construction Administration Services. If there are discrepancies between this document and the DCAMM Contract, the DCAMM Contract shall take precedence.</p> <p>During the Study, new opportunities or constraints may be uncovered and require a re-thinking of original intentions. If necessary, the Designer will issue a memo outlining any revisions to the Work Plan that might be required.</p> <p>All study services authorized by any Notice to Proceed must comply with the Work Plan approved by the DCAMM Director of Planning and will be incorporated into the Designer's contract.</p>
Designer Approval	
(insert signature)	(insert date)
Principal	Date
DCAMM Approval	
(insert signature)	(insert date)
Planning Director	Date



PROJECT OVERVIEW

Project #:		Date:	
General Project Overview			
	<p>The Division of Capital Asset Management (DCAMM), in collaboration with (insert User Agency) has engaged (insert firm name) for the study to (insert project description). The project will include Study/Schematic Design services initially, with the intent to continue into design development, construction documentation and construction administration services for the recommended option identified by this Study, using a (insert construction procurement - D/B/B, CMAR, Ch.30, Ch.25A) process.</p>		
	<p>Project Summary: The goal of this project is to (insert project goals/objectives demonstrating an understanding of the vision, scope, budget, and schedule for the project)</p>		
Design Excellence Goals			
	DESIGN: (insert goals to meet programmatic needs; design aesthetics; inclusive; efficient, flexible, functional; minimal complexity and customization)		
	VALUE: (insert goals for sound capital investment; on budget; appropriate; right-sized; low operating and maintenance costs)		
	STEWARDSHIP: (insert goals to be maintainable, durable; carbon conscious; high performance; sustainable, healthy; resilient; security)		
	If required per EO 594: insert LEED checklist showing a minimum number of points to achieve Silver		
	(insert a statement of climate and energy, "best in class" energy (site) use intensity, zero-net energy, and/or climate resilience goals)		
Scope of Work			
	The Study/Schematic Design will clearly define the program, siting, design, scope, budget, and schedule to complete this project. Refer to the Detailed Task Lists for all tasks, events, and deliverables.		
	The Study initially includes Tasks 1 through 5 upon which a Draft Study Report is submitted. Authorization to progress to Schematic Design will be based on a review of available funding sources for the total project cost and alignment with initial project goals. The fees associated with Tasks 6 and 7 will be negotiated during the study phase, following the determination of the precise building program.		
	The Study is organized into the following major tasks:		
	Task 1 – Project Start Up & Work Plan		
	Task 2 – Program Development and Existing Conditions		
	Task 3 – Development & Evaluation of Alternatives		
	Task 4 – Preferred Alternative		
	Task 5 – Draft Study Report		
	The Schematic Design is organized into the following major tasks:		
	Task 6 – Schematic Design		
	Task 7 – Certifiable Building Study Report		
	Throughout the process, it is imperative that issues potentially impacting program, scope, costs, and schedule be identified and accounted for to provide all parties with the relevant information to make informed decisions.		
Project Roles:			

	<p>DCAMM Project Manager: The DCAMM Project Manager will serve as the primary contact for all parties to ensure clear communication and answer questions or contact individuals who have answers to questions as they arise throughout the course of the Study. The Project Manager will manage the project scope, schedule and budget from the User's perspective and will facilitate all interaction with the User Agency. DCAMM is the Designer's "Client" and has statutory authority to direct the Designer's scope of work.</p>
	<p>User Agency: User Agency representatives will assure the project is aligned with their respective Agency missions and goals and will make recommendations on programmatic and operational matters as they affect the design and implementation of the project.</p>
	<p>Steering Committee: DCAMM and User Agency will form an oversight and decision-making group (Steering Committee) to provide guidance throughout the Study. The Designer will meet during relevant milestones (within regular bi-weekly meetings) with this group to update them on Study findings, share information, and discuss the issues they are charged with addressing.</p>
	<p>Designer: The Design Team is responsible for architectural, engineering and all related professional services required for the completion of the project and are held to the Standard of Care. The Designer's contractual obligations are to DCAMM who is responsible for all project direction and matters related to the project scope of work. The Design Team will operate in accordance with instructions provided by DCAMM, regulatory requirements and all professional standards. The Designer is responsible for conducting the activities of the overall project, technical accuracy, coordination of all work by the Designer's staff, and any consultants who may be employed for its preparation.</p>
Project Administration & Communication	
	<p>All communication must go through DCAMM and all project direction to the Designer must come from DCAMM.</p>
	<p>The DCAMM PM will engage with staff from various DCAMM departments to solicit guidance and expertise throughout the duration of the project.</p>
	<p>Unless otherwise notified, the Designer should assume bi-weekly Project meetings throughout the duration of the Study phase with key members of the design team and representatives from DCAMM and User Agency. The intent is to keep the workflow moving with minimal delays. Meetings may be conducted remotely via a virtual meeting platform at DCAMM's discretion. At key milestones for each task, workshops may be held, with greater participation by DCAMM, User Agency and other stakeholders, to develop project requirements, review findings, and solicit input for decision making.</p>
	<p>DCAMM will review all agendas and presentations a minimum of three (3) business days in advance of all meetings with User Agency thus timelines should be planned accordingly. The Designer is responsible for recording summary minutes of all key project meetings and submitting these to the DCAMM Project Manager in draft form within three (3) business days of the meeting for DCAMM's review, editing, and approval. DCAMM reserves the right to edit meeting minutes prior to the Designer issuing the official edition to others. Meeting minutes will be included in the Appendix of the Final Study.</p>
	<p>Further investigations may be required to accurately determine the impact of a specific issue. The Design Team's obligation during the Study is to identify those issues and use their professional expertise to anticipate, estimate, and document their potential impact. Changes to the scope of work require prior authorization by DCAMM. No work can commence without prior authorization from DCAMM.</p>



PROJECT DIRECTORY

Project #:		Date:	
Division of Capital Asset Management			
	(insert name)	Planning Executive	(insert email) (insert phone number)
	(insert name)	Planning Project Manager	(insert email) (insert phone number)
	(insert name)	Design & Construction Executive	(insert email) (insert phone number)
	(insert name)	Design & Construction Project Manager	(insert email) (insert phone number)
(insert User Agency name)			
	(insert name)	(insert title)	(insert email) (insert phone number)
	(insert name)	(insert title)	(insert email) (insert phone number)
	(insert name)	(insert title)	(insert email) (insert phone number)
	(insert name)	(insert title)	(insert email) (insert phone number)
Prime Consultant: (insert Prime Consultant name, MBE/WBE designation if applicable)			
	(insert firm address)		
	(insert name)	Principal	(insert email) (insert phone number)
	(insert name)	Project Architect	(insert email) (insert phone number)
	(insert name)	Project Manager	(insert email) (insert phone number)
	(insert name)	Quality Control	(insert email) (insert phone number)
Sub-Consultant: (insert sub-consultant name, Discipline, MBE/WBE designation if applicable)			
	(insert name)	(insert title)	(insert email) (insert phone number)
	(insert name)	(insert title)	(insert email) (insert phone number)
	(insert name)	(insert title)	(insert email) (insert phone number)
Sub-Consultant: (insert sub-consultant name, Discipline, MBE/WBE designation if applicable)			
	(insert name)	(insert title)	(insert email) (insert phone number)
	(insert name)	(insert title)	(insert email) (insert phone number)
	(insert name)	(insert title)	(insert email) (insert phone number)
Stakeholder Groups			



BUDGET AND FEE BREAKDOWN

Project #: _____ Date: _____

Evaluation of the preliminary estimated construction cost (ECC)

	(insert narrative)
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Project Fee/Schedule

The Study Phase fee breakdown and schedule are outlined below.					
Task #	Task	Duration	Fee	% of Total Fee	# of Meetings
Draft Study (Tasks 1-5)					
Task 1	Project Start Up & Workplan	x weeks	\$	%	#
Task 2	Existing Conditions Documentation & Analysis	x weeks	\$	%	#
Task 3	Development & Evaluation of Alternatives	x weeks	\$	%	#
Task 4	Preferred Alternative	x weeks	\$	%	#
Task 5	Draft Study Report	x weeks	\$	%	#
Subtotal (Tasks 1-5)		x weeks	\$	100%	#
SD/Report (Tasks 6-7)					
Task 6	Schematic Design *		TBD		
Task 7	Certifiable Building Study Report *		TBD		
Subtotal (Tasks 6-7)			TBD		
TOTAL STUDY PHASE (Tasks 1-7)			TBD		
* Task 6 and 7 will be negotiated at a later date. Following agreement and the development of a funding strategy for the recommended solution, the Designer will be tasked to develop a Certifiable Study that incorporates Schematic Design.					

Fees

Discipline	Firm Name	Total Fee	MBE/WBE
Prime	(insert firm name)	\$	%
(insert Discipline)	(insert firm name)	\$	%
(insert Discipline)	(insert firm name)	\$	%
(insert Discipline)	(insert firm name)	\$	%
(insert Discipline)	(insert firm name)	\$	%
(insert Discipline)	(insert firm name)	\$	%
Total		\$	%

Confirmation of team members' roles and their expected participation

	(insert narrative or chart)
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Financial Procedures and Requirements

	Payment of work performed is per the Work Plan and based on the deliverables completed (not percentage of work completed) and approved.
	Draft invoices shall be reviewed with the DCAMM Project Manager prior to submittal. The Designer shall adhere to instructions from the finance office received at contract signing which describe the process for invoicing. All invoices should include necessary backup documentation.
	Note that the DCAMM policy regarding administrative costs is that travel costs, phone charges, etc. are included in project fee and will not be reimbursed separately. Printing and documentation expenses are included in the contract; copies in excess of the contract may be reimbursed.



PROJECT SCHEDULE

Project #:

Date:

Project Schedule

(insert project schedule)

Proposed graphic project schedule based on the detailed understanding of the project scope and objectives, tasks, and deliverables. The format for the schedule should readily allow for continuous manipulation and additional detail as required by the evolution of the project scope. The project schedule should incorporate the following:

1. Duration of each major task
2. Proposed meetings and workshops dates (include detailed schedule of meetings and workshops through the study phase including key attendees, draft topic agendas, projected time frames for design, construction, and permitting. Number of meetings and workshops shall be discussed with DCAMM.
3. Identify reasonable timeframes for Quality Control in the project schedules
4. Key Milestones (study certification, construction start, occupancy)
5. Projection for final design and construction phases incorporating permitting timelines and construction phase logistics.
6. Provide a detailed schedule of meetings and workshops including key attendees, draft topic agendas, projected time frames for design, construction, and permitting. Number of meetings and workshops shall be discussed with DCAMM.

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP for the full document.



QUALITY CONTROL PLAN

Project #:

Date:

Quality Control Plan

(Insert the QA/QC plan for this project)

I hereby certify that that all deliverables to DCAMM will be thoroughly reviewed for Quality Control (clear, concise, correct, complete, coordinated) in accordance with the terms of the contract and the project Work Plan.

Quality Control Designee

(insert signature)

(insert date)

Name, Title

Date

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP for the full document.



BIM EXECUTION PLAN

Project #:

Date:

BIM Execution Plan

(insert BIM Execution Plan)



STUDY TASK 1: START-UP AND WORK PLAN

DETAILED TASK LIST

Project #:		Date:	
Objective: Confirm with the Designer, DCAMM, and User Agency the scope of the work anticipated and establish clear, commonly understood objectives and a methodology for the project execution.			
1.1	DCAMM Administrative Conference		
	a. The Administrative Conference is led by DCAMM's Office of Planning and will include the Designer, their major subconsultants as required, and other DCAMM business units within two weeks from the notice to proceed. Topics will focus on general expectations and procedures and include:		
	1. DCAMM administrative and project management policies including guidelines regarding interactions between the Designer, DCAMM, and User Agency		
	2. Invoicing procedures		
	3. The Designer's project management responsibilities		
	4. Designer's approach for QA/QC		
	5. Project goals for Design Excellence		
	6. Coordination with DCAMM's in-house teams: Statewide Accessibility Initiative, Office of Energy and Sustainability, and Environmental Team.		
	7. Preliminary Project Schedule		
	8. Protocols required in anticipation of site visits		
	9. Review of the Estimated Construction Costs (ECC) and a discussion on budgeting constraints.		
	10. CAMIS resources and coordination		
	b. <i>DCAMM PM to add any additional items</i>		
	Deliverable: Meeting minutes		
1.2	Study Conference (typically on-site meeting)		
	a. Prepare an agenda and presentation to illustrate the study process and scope of work for the User Agency. All Designer team members (including subconsultants) will be introduced and their roles and responsibilities described. Designer to lead a discussion to establish overall expectations and project objectives with respect to the programs, services, and facilities. Identify any additional scope and establish a process for confirming and finalizing the study phase of the project. Agenda items to include:		
	1. Introductions		
	2. Team structure		
	3. Overview of planning process		
	4. Discussion of project goals for Design Excellence (Design - value - stewardship)		
	5. Project objectives and expectations		
	6. Draft Project Schedule with milestones and critical decision-making points		
	7. Budget Review		
	8. Next steps		
	9. Additional information needed and data requirements		
	b. <i>DCAMM PM to add any additional items</i>		
	Deliverable: Study Conference agenda, presentation, meeting minutes, and list of any additional information/data needed.		
1.3	Study Phase Work Plan		
	a. DCAMM PM will provide an edited Work Plan template for the Designer to prepare the Work Plan using the DCAMM template which will include a detailed scope of work including all required tasks, deliverables, schedule and fee breakdown for the study.		
	b. Scoping Meeting: Meet with DCAMM to confirm the scope of work for the project. Submit a draft Work Plan for review and approval by DCAMM's Director of Planning and User Agency.		

c.	All study services authorized by any Notice to Proceed must comply with the Work Plan approved by the DCAMM Director of Planning and will be incorporated into the Designer's contract. The final approved Work Plan will include at minimum:
	1. Project Overview with a statement of understanding of the vision, goals (including goals for Design Excellence) scope, budget, and schedule for the project.
	- If required per EO 594, a LEED checklist showing a minimum number of points to achieve Silver.
	- A statement of climate and energy, "best in class" energy (site) use intensity (EUI), zero-net energy, and/or climate resilience goals
	2. Directory and confirmation of team members' roles and their expected participation including MBE/WBE participation
	3. Budget evaluation of the preliminary estimated construction cost (ECC)
	4. Fee Breakdown
	5. Project Schedule with detailed schedule of meetings and workshops through the study phase including key attendees, draft topic agendas, projected time frames for design, construction, and permitting timeline. Number of meetings and workshops shall be discussed with DCAMM.
	6. Quality control statement
	7. BIM Execution Plan
	8. Detailed Tasks Lists and deliverables (Tasks 1-7)
	During the course of the Study, new opportunities or constraints may be uncovered and require a re-thinking of original intentions. If necessary, the Designer will issue a memo outlining any revisions to the Work Plan that might be required.
	d. <i>DCAMM PM to add any additional items</i>
	Deliverable: Draft and Final Study Phase Work Plan



STUDY TASK 2: PROGRAM DEVELOPMENT & EXISTING CONDITIONS DETAILED TASK LIST

Project #:		Date:	
Objective: During this phase of the study, the emphasis will be on collecting and analyzing data and documentation which will inform the alternatives developed in Task 3.			
2.1	Existing Documentation Review		
	a. Review all prior/relevant studies, reports and documentation provided by DCAMM and User Agency.		
	b. Maintain a list of all documents provided including date of the document and author.		
	c. Submit a data request to DCAMM identifying any additional information or testing needed to complete this study.		
	d. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: List of all documents provided, and outstanding documentation needed.		
2.2	Program Development		
	a. The Steering Committee and Working Group serve as subject matter experts and will work with the Designer to identify user groups and finalize the programmatic requirements, describing in as much detail as possible the needed services, activities, capacities, workflows, etc.		
	b. The goal of Program Development is to review and analyze program requirements and identify any gaps. The final program will be reviewed and endorsed by User Agency and DCAMM before proceeding to the development of alternatives.		
	c. <i>DCAMM PM to add any additional tasks</i>		
	Program Analysis		
	a. Review and analyze User Agency's current and future programmatic needs.		
	b. Review best practices, guidelines, and benchmarks for modern planning for buildings of this type, applicable standards and regulations, future trends, and explore any opportunities for space sharing.		
	c. Review, verify, and update utilization data available based on current and projected needs and assess applicability to future program needs for the building; Perform space utilization analysis for existing and future spaces.		
	d. Schedule and facilitate tours of comparable facilities to assist User Agency and DCAMM in the planning process. Prepare a case study memo and visual presentation to illustrate main takeaways/lessons learned from comparable facilities.		
	e. Conduct walk-throughs of existing facilities and confirm documentation of existing layouts, space allocation and capacity; prepare documentation of existing space including layouts and a program indicating department, space type, and square footage.		
	f. Prepare a request for supporting documentation pertinent to programming such as mission statements, use statistics, organization charts for business units, etc. to enable informed programming decisions. Compile and distribute information/surveys prior to any programming interviews/discussions.		
	g. Conduct programming interviews with Steering Committee, Working Group, and user groups to gain a thorough understanding of their mission, programs, staffing, functional and technical requirements, and any other relevant planning-design considerations. Programming interviews will be scheduled to enable DCAMM staff to attend all meetings. Detailed agendas/questions will be distributed to all Working Group members in advance of the interviews to ensure that attendees are well-prepared for the conversation.		
	h. Document interviews and distribute summary of findings and an assessment of the implications for space planning, including a narrative which documents and presents a justification for all programmatic needs and requirements.		
	i. If requested, develop, and facilitate a Visioning session to establish the project's guiding principles and goals and generate an agreed upon Vision Statement.		

	j. <i>DCAMM PM to add any additional tasks</i>
	Space Program Development
	a. Develop spatial adjacency diagrams for the different functional areas of the program indicating existing and projected key relationships, workflows, and technical requirements.
	b. Provide a narrative which documents and presents a justification for all programmatic needs and requirements.
	c. Develop a detailed tabular space program including existing, right sized, and proposed space allocations broken down by individual functional area and sub-area and identifying all net useable square footage, and all gross space requirements.
	d. Use justifiable space planning standards and guidelines (including DCAMM space allocation and utilization guidelines)
	e. Provide appropriate factors for grossing net usable areas to determine total built area.
	f. Prioritize program based on User Agency's current and projected needs.
	g. Identify and develop space program for any temporary swing space and permanent backfill needs including space type, existing and proposed temporary size and occupancy.
	h. <i>DCAMM PM to add any additional tasks</i>
	Room Data Sheets
	a. For each program area, generate preliminary typical room diagrams and data sheets outlining room layout, adjacency requirements, room requirements, and FF&E lists.
	1. Compile equipment list identifying existing equipment and new equipment, including space and power requirements.
	2. Compile data on new and/or existing furnishings and equipment, and any pertinent structural, spatial, or system requirements for the equipment.
	3. Document who will furnish the equipment.
	b. Review room data sheets with DCAMM's accessibility team to ensure compliance.
	c. Furniture will be procured or approved by DCAMM's Interior Planning and Design Management (IPDM). Coordinate
	d. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Tour walk thru memo, programming interview questions, meeting minutes, Draft Program Development Report
	2.3 Site and Building Analysis
	Site Analysis
	a. Identify key site data including but not limited to: overall context within the surrounding community, acreage, historical significance, public transportation, etc.
	b. Identify, analyze, and document all conditions relevant to the site including, but not limited to:
	1. Existing building location and size (if applicable)
	2. Topography
	3. Geotechnical
	4. Hazardous materials including soil characterization
	5. Wetlands
	6. Drainage and groundwater flows
	7. Location and capacity of utilities and infrastructure (including telecommunications)
	8. Wind direction
	9. Solar exposure
	10. Primary internal and external pedestrian circulation
	11. Desire lines/ visual sights lines
	12. Accessibility
	13. Vehicular circulation and parking
	14. Possible regulatory requirements including potential permits and other approvals that may be required for the project.
	15. Security
	16. Wayfinding
	c. Advise DCAMM of any additional work, such as topographical surveys, wetlands surveys, geotechnical, geological, or hazardous materials investigations, as required.

d. Review, verify and update existing survey information as needed
e. <i>DCAMM PM to add any additional tasks</i>
Deliverable: Draft Site Analysis Report
Building Analysis
a. Identify key building data including but not limited to year built, historical significance, date of major renovations, current occupancy, gross square feet, etc.
b. Conduct a comprehensive existing conditions assessment of the existing building(s) including, but not limited to:
1. Exterior Envelope
2. Structure
3. Mechanical Systems
4. Electrical Systems
5. Plumbing Systems
6. Life Safety/ Fire Protections
7. Interior Elements/ Finishes
8. Elevators and Stairs
9. Security, IT, Audio/Visual systems
10. Wayfinding
c. Supplement visual survey with selective destructive testing if necessary to document existing conditions and support accurate conceptual pricing; all destructive testing to be identified and scheduled with DCAMM and User Agency.
d. Review existing hazardous material documentation and conduct any further testing and analysis recommended including outline scope, methods and cost for remediation as required. All further testing and analysis to be identified and scheduled with DCAMM and User Agency.
e. Interview User Agency facilities team for input on condition, use and operation of existing building.
f. Review existing deferred maintenance data and information associated with recent and ongoing projects managed by the User Agency.
g. If further investigations are required to accurately determine the impact of a specific issue, the Design Team's obligation is to identify those issues and use their professional expertise to anticipate, estimate and document their potential impact.
h. Identify and document all utilities including, but not limited to, electrical, gas, potable water, fire mains and sanitary sewer, storm water.
i. Evaluate existing envelope condition and opportunities to reduce envelope heat loss.
j. Evaluate strategies to eliminate fossil fuel use except for emergency power.
k. Evaluate emergency power and demand management strategies
l. Coordinate with DCAMM's accessibility consultant who will provide technical assistance and oversight for accessibility compliance during the study, design, and construction progress.
m. <i>DCAMM PM to add any additional tasks</i>
Deliverable: Draft Building Analysis Report with photographs documenting conditions of the building(s) and site, and a master list of facility deficiencies.
Code Analysis
a. Provide a comprehensive code analysis for the project based on applicable building codes including, but not limited to, identification of all health, safety, energy, zoning, seismic, environmental code requirements, and accessibility regulations (521 CMR and 2010 ADA Standards). The Code Analysis must also include a thorough plumbing analysis per 248 CMR and a means of egress analysis per 780 CMR.
b. Coordinate with DCAMM's in-house Statewide Accessibility Initiative team (SAI) and consultant to review any completed accessibility audits and evaluate existing conditions for accessibility compliance. Note that a DCAMM procured accessibility consultant may be engaged to perform an accessibility audit of existing buildings or site as well as to provide technical assistance and oversight for accessibility compliance during the study, design, and construction
c. Compile a summary of design assumptions to address any identified code deficiencies.
d. For renovations and additions: identify thresholds that trigger additional building improvements such as seismic upgrades, fire suppression systems, accessibility improvements, etc.
e. <i>DCAMM PM to add any additional tasks</i>
Deliverable: Draft Code Analysis Report

Base Drawings – Existing Conditions	
a.	Discuss with DCAMM PM drawing format to be used (CAD, BIM, Revit) in study phase
b.	Based on existing site conditions, prepare a site plan to scale showing relevant context including property boundaries, topography, buildings, parking lots, roadways, sidewalks, plazas, ramps, utility locations, vegetation, etc.
c.	Prepare base drawings for existing buildings including plans, elevations, and sections (as needed) in accordance with DCAMM's CAD standards and BIM requirements.
d.	In coordination with the User Agency, prepare floor plans that accurately memorialize the current occupancy of all rooms/spaces within the buildings.
e.	<i>DCAMM PM to add any additional tasks</i>
Deliverable: Base Drawings including site plan, dimensioned floor plans, elevations and sections	
Sustainability / Climate Resilience Analysis	
a.	Review Executive Order (EO) 594 - Leading by Example or the current Massachusetts Leading by Example Executive Order.
b.	Zero Net Energy Building (ZNEB) Analysis
	1. Establish goals for building performance as measured by site Energy Usage Intensity (EUI) (kBtu/sf/yr) based on similar buildings. Choose Pathway 1 or 2 for EUI calculation. Calculate the building EUI baseline for a typical building that meets MA Energy Code and the target 20% reduction EUI for the project. (EO594 requires EUI at least 20% below similar buildings)
	2. Estimate the capacity for on-site energy generation. Determine minimum requirements for project to be solar-ready per MA Building Energy Code
	3. Identify optimal sources of energy for the new facility given the renewable energy potential regionally and on site.
c.	Energy Usage analysis
	1. Obtain 5 years of energy usage data and operating costs from User Agency
	2. Evaluate the effect of COVID operations to determine an appropriate baseline
	3. Propose energy efficiency target based on EUI (Energy Utilization Index) benchmarks and evaluate EUI target with DCAMM
	4. Determine energy and water usage targets
	5. Work with DCAMM and User Agency to determine appropriate renewal energy location, sizing, and procurement strategy.
d.	Utility Incentives
	1. Evaluate utility incentive programs and assess potential rebates for different scenarios /systems to inform a potential strategy
	2. Participate in meetings with DCAMM, utility companies and their Technical Assistance Team as required.
	3. Evaluate demand management opportunities and set related goals.
e.	LEED Certification
	1. Review and confirm viability of achieving LEED certification for the project
	2. Draft a Massachusetts LEED Plus Scorecard
	3. LEED Silver certification (Minimum) is required for new construction and major renovations
	4. Determine if Passive House Certification is a feasible pathway for the project (Per EO 594 this is an acceptable alternative to meeting the EUI 20% reduction).
f.	Climate Resilience
	1. Provide an evaluation of vulnerability to flood, storm surge, rising sea level, increased precipitation, temperature and identify strategies to fix known problems and avoid risk (use DCAMM Resilience Checklist and the Resilient MA Action Team Climate Resilience Design Standards Tool).
	2. Present resiliency assessment and consider climate adaptation strategies for resiliency, incorporating information from any previous resiliency investigations and using the Resilient MA Action Team RMAT tool.
g.	Electric Vehicle Infrastructure

	1. Determine if project will include a new or reconstructed parking area and the total number of spaces in order to determine the number of EV charging spaces required by EO 594.
	h. Conduct a sustainability goals/building systems workshop with DCAMM and User Agency
	1. Outline potential sustainability, energy and climate resiliency strategies and outline achievable goals and challenges
	2. Identify and summarize User Agency's sustainability goals, climate resiliency strategies, potential building system upgrades, viability of renewables, and opportunities to incorporate sustainability as an educational tool.
	i. Outline a preliminary basis of design consistent with MA climate goals and provide options for building systems requirements, including high performance envelope and right-sized systems.
	j. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Draft Sustainability / Climate Resilience Report
2.4	Cost Analysis
	a. Determine with DCAMM PM the format of cost information. All cost analysis shall adhere fully to the detailed requirements described in the DCAMM Cost Estimating Manual, including but not limited to:
	1. All required margins and allowances to produce a projected GMP for a CMAR project.
	2. Costs that are broken out by building and phase in order to make informed decisions on the budget.
	3. An Estimated Construction Cost (ECC) that includes direct trade costs; CM general conditions, fees and contingencies (if CMAR); estimating contingency and escalation contingency (to mid-point of construction).
	b.. Develop order of magnitude cost estimate, based on D/B/B or CMAR project delivery, for space program and building renovations to assist in prioritization and to provide initial guidance for the development of affordable architectural options. All cost analysis should adhere fully to the detailed requirements described in the DCAMM Consultant Estimating Manual.
	c. Provide a current assessment of the construction cost escalation rate for similar projects in Massachusetts.
	d. Recommend potential options to reconcile preliminary costs with project budget for review by DCAMM.
	e. DCAMM (and potentially User Agency) to confirm available funding for the project for comparison to this cost assessment.
	f. Specialty components prepared by others may be incorporated.
	l. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Draft Cost Analysis
2.5	Project Schedule
	a. Prepare preliminary project schedule to be updated as project progresses, including swing space and back fill, permitting and regulatory reviews.
	b. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Updated schedule
2.6	Program Development and Existing Conditions Report
	a. List of additional documentation or information identified by Designer required to complete the study.
	b. Program Analysis
	1. Program Narrative.
	2. Summary of programming interviews and responses.
	3. Standards and Guidelines
	4. Adjacency Diagrams.
	5. Prioritized Tabular Space Program.
	6. Preliminary swing space and backfill space requirements (if required).
	7. Preliminary Room Data Sheets including preliminary equipment lists.
	c. Site & Building Analysis
	1. Site analysis diagrams and analysis including summary findings
	2. Preliminary commissioning requirements.
	3. Existing conditions assessment for the existing building(s) including summary narratives and photographs.
	4. Code review and analysis

	5. Base drawing set including site plan and existing condition drawings for the building(s)
	6. Base plans for temporary swing and/or backfill spaces (if required)
	d. Sustainability & Resiliency Analysis
	1. Summary of project sustainability, energy, and climate resiliency goals.
	2. Net Zero Ready Analysis
	3. Summary of current energy usage.
	4. Summary of available utility incentives and evaluation.
	5. Summary of opportunities for low embodied carbon materials
	6. Preliminary resiliency checklist.
	e. Cost: Summary of order of magnitude cost estimate
	f. Schedule: Preliminary Project Schedule
	g. Prioritized list of recommended life safety, access, MEP/FP and other required building systems, site and infrastructure improvements to be considered.
	h. Existing Conditions and Analysis report to be included in final study.
	i. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Program Development and Existing Conditions Report (Draft and Final) Clearly organized and illustrated existing condition report (for all above tasks) combining the analysis of site, building program, case studies, code analysis, budget, and schedule, with completed workshop material and meeting minutes collated in an appendix. This report should include a summary of findings, issues and factors expected to have an impact on design alternatives and costs.
2.7	Problem Restatement (if required)
	a. Compare information gathered against the original goals agreed upon at the start of the project and evaluate if project objectives need to be adjusted based on: development of program; investigation of existing conditions; constraints of budget; physical conditions of the site and/or buildings.
	b. If necessary, develop the following information, reflecting the new realities of the project:
	1. Revised program data
	2. Revised facility data
	3. Revised budget
	4. Revised schedule
	c. Based on findings to date, consider if the work plan should be modified. If modifications to the work plan are required, provide a memorandum outlining any proposed revisions to the Work Plan as required. Alternatively, if revisions are considerable, modify the approved work plan, highlighting proposed revisions for DCAMM's review and approval.
	d. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Problem Restatement (if Required)



STUDY TASK 3: ALTERNATIVES DETAILED TASK LIST

Project #:		Date:	
Objective: This phase of the study will focus on developing and analyzing up to three meaningful alternatives. These scenarios will define and prioritize the deficiencies in the buildings and sites and identify the best and most cost-effective approach to address them and achieve the goals of this study. The alternative solutions may be iterative or combined through successive workshops to reach a preferred alternative.			
3.1	Develop Alternatives: Develop and present conceptual building and site design alternatives for the project that can be completed within the allocated budget. Each alternative may include the following:		
	a. Program		
	1. Narrative summary of the alternative to implement the recommended program and/or in phases, including swing space and backfill		
	2. Tabular program		
	3. Blocking/stacking diagrams and illustrate internal adjacencies and collaboration opportunities for each.		
	4. Approach to maintain the building in operation during construction (if needed) or swing space.		
	b. Site & Building		
	1. Master list of facility deficiencies and proposals to address them		
	2. Design Excellence features		
	3. Site plan and site planning diagrams indicating circulation, parking impacts and Universal Design features.		
	4. Illustrative floor plans, building sections, elevations, and three-dimensional views.		
	5. Approach to building systems.		
	6. If applicable, determine need for leased or purchased space; approach to maintaining the operation of some parts of the existing building, determining swing space and back fill needs.		
	c. Sustainability & Resiliency: Approach to sustainable design, energy, and climate resiliency strategies.		
	d. Cost		
	1. Order of magnitude cost estimate summaries including any permanent moves/swing space & enabling work		
	2. Summary of lifecycle/operating cost impacts.		
	e. Schedule: Project implementation, phasing and construction schedule including, enabling projects, permanent moves/swing space needed (including any backfill), permitting, and construction.		
	f. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Draft Alternatives Report		
3.2	Alternatives Evaluation		
	a. Develop evaluation criteria and pros and cons analysis/matrix for building and site design alternatives with User Agency and DCAMM.		
	b. Develop and present the alternatives to DCAMM and User Agency in one or more workshops as required.		
	c. Identify and define priority projects for near- and long-term implementation. This list may include phased projects, swing space, and backfill as the User Agency intends to maintain both buildings open during construction.		
	d. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Evaluation Matrix		
3.3	Global Workshop (GW)		

	a.	Conduct a project review workshop to provide all project participants and stakeholders an opportunity to comment on the key goals and issues identified by the Study, review the alternative concepts, and contribute to site planning and building design recommendations.
	b.	Prepare a presentation to present all aspects of the preferred alternative for a broader audience.
	c.	Lead the workshop and present the project goals, ideas, and solutions including:
		1. A clear problem statement.
		2. Design Excellence goals and how this project will achieve them
		3. A summary of space needs.
		4. Any relevant issues related to design, siting, access, adjacencies, and efficiency that the team requires feedback on.
		5. A description of primary building elements relating to building enclosure and systems.
		6. An implementation plan and schedule for design, construction, and any impacts on occupancy.
		7. Comprehensive project costs and any alternatives that may impact the building and operational costs.
	d.	The GW shall be scheduled so input can be incorporated into the development of the preferred alternative.
	e.	The intent of the GW is to bring the entire design team (including the engineering team), stake holders from the Steering Committee and Working Group, and DCAMM together to inform and discuss the project and select the preferred approach.
	f.	Refine and document the selected alternative per the GW outcome.
	g.	<i>DCAMM PM to add any additional tasks</i>
Deliverable: Global Workshop Presentation and Meeting Minutes		
3.4	Alternatives Documentation & Preferred Alternative	
	a.	The alternative solutions may be iterative or combined through successive workshops to reach a preferred alternative.
	b.	Develop a technical memorandum for integration within the final study report appendix. Memorandum should include:
		1. Criteria for evaluation
		2. Narrative summary of each alternative summarizing pros/cons analysis for each alternative regarding User Agency & DCAMM goals for the project, costs, construction schedule, and potential implementation impact
		3. Alternatives information for each option
		4. Evaluation matrix
		5. Preferred alternative, including program, project schedule, permitting requirements, operational impacts, and cost analysis.
	c.	<i>DCAMM PM to add any additional tasks</i>
	Deliverable: Preferred Alternative Report (Draft and Final)	
3.5	CM Procurement (if applicable) Note: this may occur during Task 3 or later in the study phase	
	a.	Participate with DCAMM and the User Agency in a selection committee to select a CM for the project. The selection process will involve the review and evaluation of qualifications and proposals, potential interviews of short-listed firms, and final selection. DCAMM will be responsible for drafting and issuing the Request for Qualifications and Request for Proposals. The goal is to select a construction manager who may be available to assist the project team with pre-construction services during the Schematic Design phase.
	Deliverables: Review and Evaluation materials related to Construction Manager selection	



STUDY TASK 4: PREFERRED ALTERNATIVE DETAILED TASK LIST

Project #:		Date:	
Objective: During this phase of the study, the emphasis will be on collecting and analyzing data and documentation which will inform the alternatives developed in Task 3.			
4.1	Finalize Program		
	a. Conduct stakeholder meetings to confirm and finalize the program.		
	b. Develop a narrative outlining all components to be included in the project and rationale for inclusion.		
	c. Finalize a detailed prioritized tabular program for all programmed and support spaces including backfill (if applicable).		
	d. Update relationship diagram depicting important adjacencies		
	e. Finalize room data sheets with room layouts, equipment lists (new and reused) and performance requirements.		
	f. Review room diagrams with DCAMM's access consultant to ensure compliance with ADA and MAAB.		
	g. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Draft Final Program		
4.2	Site and Building Development		
	a. Develop narrative that clearly outlines the preferred strategy for renovation, demolition, new construction, and/or phased projects as well as the rationale for their selection. Identify approach for maintaining the operation of some parts of the existing building if applicable.		
	b. Develop pre-schematic drawings that clearly outline the preferred alternative design, including, but not limited to:		
	1. Site plan showing all proposed site, civil, & landscape work		
	2. Building floor plans		
	3. Exterior elevations		
	4. Building sections		
	5. Blocking and stacking diagrams		
	6. 3D views of key interior spaces and exterior perspectives		
	c. Identify and coordinate completion of, any geotechnical or environmental evaluation of subsurface, surface, and existing structures needed. It is the responsibility of the design team to determine both the location and number of borings required and to coordinate work with User Agency.		
	d. Review preferred alternative with DCAMM's Statewide Accessibility Team and develop a narrative to address issues.		
	e. Participate in a Universal Design Workshop with DCAMM's accessibility consultant to ensure the building is designed to Universal Design Goals / MAAB / ADA standards and best practices.		
	f. Provide outline specifications with summary descriptions		
	g. Provide building code analysis, review of permits and compliance requirements.		
	h. Provide a base scope for commissioning that will be updated throughout the project.		
	i. Coordinate FF&E with DCAMM's Interior Planning and Design Management Department (IPDM)		
	j. Coordinate AV/IT, security needs		
	k. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Draft Site and Building Development, Outline Specifications, Code Analysis		
4.3	Sustainability & Resilience Analysis		
	a. Develop sustainability & resilience narrative		
	b. Identify building performance metrics		
	c. Prepare Life Cycle Cost Analysis		
	d. Complete a preliminary LEED checklist indicating project goals.		

	e. Provide EO 594 Compliance for fossil fuel free (new/substantial renovation) or evaluation of alternatives and readiness for low carbon fuels (renovation).
	f. Complete Resilience Checklist including strategies to address vulnerabilities.
	g. Update the net zero energy goals and provide a narrative about how they are being met.
	h. Provide energy and water use estimates as required for EO 594 compliance.
	i. Provide Backup power.
	j. Provide Thermal and electric redundancy, Facility recycling and composting plan and space requirements.
	k. Identify EV charging location and infrastructure.
	l. Provide Solar ready plan.
	m. Provide Materials including embodied carbon and sustainability).
	n. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Draft Sustainability and Resilience Analysis
4.4	Cost Analysis
	a. Provide a pricing narrative (basis of design) for all architectural, M/E/P, structural, civil, landscape work.
	b. Provide a comprehensive cost estimate per the DCAMM's Cost Estimating Manual.
	c. Develop using the Uniformat II Elemental Classification to as much detail as the schematic drawings and specifications permit. (Typically, Level 2, sections A-G inclusive, complete with single line outline specification description for each item)
	d. Costs shall be broken out by phase in order make informed decisions on the budget.
	e. Throughout SD, cost modeling and estimating will be required to ensure the design is in the established project budget.
	f. Work with DCAMM to complete the Operating Cost Worksheet. Provide operating lifecycle & cost analysis/worksheet (including utility rebates, Alternative Energy Credits, and demand response payments) to be updated throughout the project.
	g. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Cost Estimate and Operating Cost Worksheet
4.5	Project Schedule / Permitting Requirements
	a. Develop a schedule of design and construction
	b. Provide an implementation schedule including required permitting, reviews, required move and swing space coordination and other critical logistics, enabling projects, etc.
	c. Schedule and lead a preliminary meeting with key code officials including, but not limited to the State Building Inspector, the State Plumbing Inspector, Fire Chief, and the State Sheet Metal Inspector.
	d. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Updated Schedule
4.6	Commissioning
	a. As the basis for commissioning, generate an outline of the Owner's Project Requirements addressing building performance criteria from planning to project closeout and the Basis of Design (BOD) to describe how the project requirements are to be met. These documents are intended to be updated throughout the project.
	b. Develop the scope of commissioning for the project.
	c. Research best practices from similar projects previously completed by the Commissioning Agent for other Users.
	d. Review the size and skill levels of the user's maintenance staff. Provide recommendations to fill any deficiencies, either through hiring additional personnel or contracting for professional services.
	d. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Draft Commissioning Report
4.7	Preferred Alternative Documentation
	a. Develop a report that includes the following items. This report will be the basis for the Final Study Report.
	1. Final tabular program
	2. Floor plans
	3. Adjacency diagrams
	4. Room data sheets
	5. Conceptual architectural, MEP systems and site narratives & drawings

6. Sustainability Analysis
7. LEED checklist
8. EO 594 estimates
9. Resiliency Checklist
10. Zero Net Energy goals and narrative
11. Accessibility Narrative
12. Commissioning Scope
13. Outline Specifications
14. Cost Estimate
15. Operating Cost Worksheet
16. Life Cycle cost summary
17. Implementation plan/Project Schedule
b. <i>DCAMM PM to add any additional tasks</i>
Deliverable: Preferred Alternative Report (Draft and Final) that clearly outlines all program, scope, budget, and schedule of the preferred alternative, as well as the rationale for selection.



STUDY TASK 5: DRAFT STUDY REPORT DETAILED TASK LIST

Project #:			Date:	
Objective: A draft study report that will include compiling and revisiting the products of the Tasks 1 through 4.				
5.1	Table of Contents			
	a. Prepare and submit draft Table of Contents for DCAMM's review prior to drafting the report outline.			
	b. <i>DCAMM PM to add any additional tasks</i>			
	Deliverable: Table of Contents			
5.2	Draft Study Report			
	a. Prepare and submit the Draft Study Report that will provide the basis for the Certifiable Study Report following SD. The			
	b. The Draft Study Report shall clearly identify the proposed program, scope of work, implementation and phasing plans, critical logistics (including demolition, swing space coordination, the critical path, filing dates for permits, bids, etc.) and a record of decisions that support the preferred concept.			
	c. Review the Study Report checklist to ensure that all applicable items will be completed.			
	d. <i>DCAMM PM to add any additional tasks</i>			
	Deliverable: Draft Study Report - a professional, detailed report that includes all the analyses, findings, and relevant background information compiled from all tasks performed and services as the basis for design. Documents to be transmitted electronically in a format and software acceptable to DCAMM.			
NOTE:				
Authorization to progress to Schematic Design will be based on a review of available funding sources for the total project cost and alignment with initial project goals.				
The fee associated with the Tasks below will be negotiated during the study phase, following the determination of the precise building program and scope. The Designer's contract will be amended to incorporate the final fee and scope for the Schematic Design/Certifiable Study phase.				



STUDY TASK 6: SCHEMATIC DESIGN

DETAILED TASK LIST

Project #:		Date:	
Objective: Schematic Design phase shall develop the Study outcomes to a customary and appropriate level of detail and specificity in order to verify the cost and demonstrate that the project is maintaining the established budget.			
6.1	Stakeholder Engagement		
	a. Engage stakeholders a minimum of two times during SD for decisions regarding refined adjacencies, room layout and furniture and equipment decisions. Assume these workshops take place at 50% and at 95%.		
	b. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Meeting Minutes		
6.2	Construction Manager Coordination (if CMAR)		
	a. Throughout the SD process, coordinate design decisions, construction schedule and cost estimating with the CM.		
	b. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Meeting Minutes		
6.3	Meetings During SD:		
	a. Bi-Weekly Meetings with Design Team, DCAMM and User Agency		
	b. Progress Workshops with key members of the design team and representatives from DCAMM and the User Agency, and key stakeholders to:		
	1. Present project goals, ideas, and solutions including Design Excellence features.		
	2. Refine the scope and the design.		
	3. Update project schedule based on SD phase. The Designer shall communicate and work closely with the selected CM to confirm schedule feasibility and ensure the best solution to the project.		
	4. Additionally, the Designer shall engage the broader project team, including the Steering Committee and other stakeholders (as needed), during approximately two progress workshops (tentatively at 50% SD and at 95% SD). The progress workshops shall be scheduled to bring together all project stakeholders so input can be incorporated into the SD.		
	c. Hold a Cost Workshop to review the estimate, confirm scope, and adjust as required to align the project with the available funding. Key members of the design team are to attend. Multiple sessions may be required and are to be considered as base services. The cost estimator will prepare a project estimate based on the SD Documentation, per the Cost Estimating Manual. The estimate should include all margins and allowances necessary to produce complete Estimated Construction Cost (ECC). Throughout SD, cost modeling and estimating will be required to ensure the design is within the established project budget. The cost estimator will communicate and work closely with the selected CM to ensure the project budget to be certified. Reconciliation of the estimate with the CM's cost estimate, including value management, is also assumed as base service.		
	d. Meet with code officials to review project and code summary, including but not limited to the State Building Inspector, the State Plumbing Inspector, the State Sheet Metal Inspector, and the Fire Chief.		
	e. Meet with DCAMM's in-house teams, IPDM, Statewide Accessibility Initiative and Office of Energy and Sustainability, to coordinate all improvements being proposed.		
	f. LEED meeting to review checklist		
	g. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Meeting Minutes		
6.4	Schematic Design Submission Package		

	<p>a. The SD submission may include (but may not be limited to) the tasks included in the SD Phase checklist. Refer to SD Submission checklist and General Drawings requirements for all submittals.</p> <p>b. <i>DCAMM PM to add any additional tasks</i></p> <p>Deliverable: SD Checklist; SD Submission (Draft and Final) Designer sh</p>
6.5	Schematic Design Submission Checklist
	<p>a. Complete the SD submission checklist to document that DCAMM and User Agency comments have been incorporated or addressed and that quality control has occurred.</p> <p>b. <i>DCAMM PM to add any additional tasks</i></p> <p>Deliverable: SD Submission Checklist</p>
6.6	File Project Notification Form (PNF)
	<p>a. DCAMM projects require state funding and therefore must be reviewed by the Massachusetts Historical Commission (MHC) for impacts to historic and archaeological properties. DCAMM will determine who will complete the PNF (which could be DCAMM, the Designer, or a consultant). Refer to PNF form and MACRIS for a listing of historic properties and significant archaeological sites that meet the criteria of eligibility for listing in the National or State Registers of Historic Places.</p> <p>Deliverable: PNF (Draft and Final)</p>
6.7	Design Phase Fee Negotiation & Attachment G (if requested by DCAMM)
	<p>a. The OP and ODC PMs and Directors shall work with the Designer to discuss Design Phase services, negotiate the Basic Fee, and complete Attachment G. (if requested)</p> <p>b. <i>DCAMM PM to add any additional tasks</i></p> <p>Deliverable: Designer Proposal for services and Attachment G</p>



STUDY TASK 7: CERTIFIABLE REPORT

DETAILED TASK LIST

Project #:		Date:	
Objective: Update the draft Study Report (Task 5) based on further development of the project following SD. Prepare a certifiable report incorporating, coordinating, and narrating appropriate content for the tasks above. Appendices should be used to provide more detailed data and information.			
7.1	Table of Contents		
	a. Finalize the TOC for DCAMM review and approval. b. The contents of the certifiable report should include items in the Study Report Checklist, with the intent of describing all important aspects of the project justification and recommendations. c. <i>DCAMM PM to add any additional tasks</i> Deliverable:		
7.2	Draft Certifiable Study Report Submission		
	a. Update the Draft Report (Task 5) revisiting and updating all information gathered from the SD phase. b. Submit a draft Certifiable Report including all appendices to DCAMM for detailed review and editing. Submit native files as well as a searchable and bookmarked PDF. The report shall be a professionally packaged product, well organized, well-written and well-illustrated. c. Circulate the DCAMM edited draft report to user agency for review. d. <i>DCAMM PM to add any additional tasks</i> Deliverable: Draft Certifiable Report		
7.3	Final Certifiable Report Submission		
	a. Prepare a Final Certifiable Report, including an executive summary and project narrative, with revisions as directed by DCAMM. The preferred report format is 8 1/2 x 11 size with portrait orientation. b. <i>DCAMM PM to add any additional tasks</i> Deliverable: Final Certifiable Report that incorporates comments from the draft report for certification. The report package should provide a sufficiently detailed information package that describes all relevant aspects of the proposed project and includes: the executive summary; program and final tabular program, project narrative; project justification and rationale for selection; schematic design package; final Universal Design goals and Accessibility analysis, operations, MEP and site narratives; code analysis; energy costs, sustainable and resilient design approach; construction cost estimate and narrative; an operating cost analysis; and a proposed project schedule (Gantt chart). Designer shall confirm with the DCAMM PM the number of paper sets to be provided for DCAMM and the User Agency in addition to electronic files that are searchable and bookmarked in a software that is acceptable to DCAMM.		
7.4	Study Report Checklist		
	a. Complete the Study Report checklist to document that DCAMM and User Agency comments have been incorporated or addressed and that quality control has occurred. b. <i>DCAMM PM to add any additional tasks</i> Deliverable: Study Report Checklist		
7.5	Executive Presentation		
	a. Executive briefing Power Point presentation b. <i>DCAMM PM to add any additional tasks</i> Deliverable: Executive Presentation (Draft and Final)		

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).

Refer to the DGP manual for the full document.

DCAMM Project Manager to edit all templates before forwarding to Designer.



DESIGN PHASE WORK PLAN COVER AND APPROVALS

Project Number:	(insert MA State Project Number)
Project Title:	(insert project title)
Project Location:	(insert project location)
Prime Consultant:	(insert Firm name)
Construction Procurement:	(pick one: D/B/B, CMAR, Ch.30, Ch.25A)

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Design Task 5: Construction Administration (CA)
Design Task 6: Project Closeout

WORK PLAN APPROVALS

This Work Plan outlines the scope of work required to complete the Design phase (Design Development, Construction Documents, Bidding, Construction Administration, and Close-Out) for the above referenced project. The work plan includes a breakdown of major tasks, critical meetings and workshops, deliverables, fee allocation, and project schedule. The definitions, obligations and requirements for Design are defined in Massachusetts General Law Chapter 7C, Section 59: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter7C/Section59
During the Design Phase, new opportunities or constraints may be uncovered and require a re-thinking of original intentions. If necessary, the Designer will issue a memo outlining any revisions to the Work Plan that might be required.
When approved by DCAMM, the Design Phase Work Plan, including the updated BIM Execution Plan and the Contract Schedule, shall govern the Design Phase Services.

Designer Approval

(insert signature)	(insert date)
Principal	Date

DCAMM Approval

(insert signature)	(insert date)
ODC Project Executive	Date



DESIGNER'S STATEMENT OF APPROACH TO MEET PROJECT GOALS, BUDGET & SCHEDULE

Project #:

Date:

PROJECT GOALS

Summary of goals and objectives for this project and approach to meeting these goals:

DESIGN EXCELLENCE GOALS

DESIGN: (insert goals to meet programmatic needs; design aesthetics; inclusive; efficient, flexible, functional; minimal complexity and customization and approach to meeting these goals)

VALUE: (insert goals for sound capital investment; on budget; appropriate; right-sized; low operating and maintenance costs and approach to meeting these goals)

STEWARDSHIP: (insert goals to be maintainable, durable; carbon conscious; high performance; sustainable, healthy; resilient; security and approach to meeting these goals)

If required per EO 594: insert LEED checklist showing a minimum number of points to achieve Silver

(insert a statement of climate and energy, "best in class" energy (site) use intensity, zero-net energy, and/or climate resilience goals)

BUDGET

Issues that may affect project budget and approach to meeting these challenges:

SCHEDULE

Issues that may affect maintaining project schedule and approach to meeting these challenges:

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SCHEDULE OF VALUES

Project #:

Date:

SCHEDULE OF VALUES

insert the Schedule of Values
or fee payment schedule by phase DD, 60%/90%/100% CD, Bidding, CA and Closeout
as appropriate



CONTRACT SCHEDULE

Project #:

Date:

CONTRACT SCHEDULE

(insert proposed Contract Schedule)

Proposed Contract Schedule to be consistent with Attachment G project schedule and shall contain: dates for submittals, deliverables, actions, milestones, design workshops, meetings and critical path through all phases of Design Phase; allowances of time for Design Team quality control review and DCAMM review and approval; and allowances for permit submissions.

DESIGN WORKSHOPS

Identify Proposed Design Workshops schedule and agenda topics

REQUIRED APPROVAL PROCESS

REQUIRED PERMITS

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP manual for the full document.



QUALITY CONTROL PLAN

Project #:

Date:

QUALITY CONTROL PLAN

(Insert the updated QA/QC plan)

I hereby certify that that all deliverables to DCAMM will be thoroughly reviewed for Quality Control (clear, concise, correct, complete, coordinated) in accordance with the terms of the contract and the project Work Plan.

Quality Control Designee

(insert signature)

(insert date)

Name, Title

Date

*NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP manual for the full document.*



BIM EXECUTION PLAN

Project #:

Date:

BIM EXECUTION PLAN

**insert updated BIM Execution Plan
Or CAD Plan**



CARBON REDUCTION and ENERGY CONSERVATION MEASURES

Project #:	Date:
EO 594 compliance and decarbonization strategies	
MA LEED Plus Checklist and credit narratives	
Coordination with the Commissioning Agent	
Utility rebates documentation	
Sustainable design strategies	
LCCA	
Energy Modeling	

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP manual for the full document.



DIRECTORY

Project #:

Date:

Division of Capital Asset Management

(insert name)	ODC Executive	(insert email)	(insert phone number)
(insert name)	ODC Project Manager	(insert email)	(insert phone number)
(insert name)	ODC Project Engineer	(insert email)	(insert phone number)
(insert name)	ODC Resident Engineer	(insert email)	(insert phone number)
(insert name)	OP Executive	(insert email)	(insert phone number)
(insert name)	OP Project Manager	(insert email)	(insert phone number)

(insert User Agency name)

(insert name)	(insert title)	(insert email)	(insert phone number)
(insert name)	(insert title)	(insert email)	(insert phone number)
(insert name)	(insert title)	(insert email)	(insert phone number)
(insert name)	(insert title)	(insert email)	(insert phone number)

Prime Consultant: (insert Prime Consultant name, MBE/WBE designation if applicable)

(insert firm address)			
(insert name)	Principal	(insert email)	(insert phone number)
(insert name)	Project Architect	(insert email)	(insert phone number)
(insert name)	Project Manager	(insert email)	(insert phone number)
(insert name)	Quality Control	(insert email)	(insert phone number)

Sub-Consultant: (insert sub-consultant name, Discipline, MBE/WBE designation if applicable)

(insert name)	(insert title)	(insert email)	(insert phone number)
(insert name)	(insert title)	(insert email)	(insert phone number)
(insert name)	(insert title)	(insert email)	(insert phone number)

Sub-Consultant: (insert sub-consultant name, Discipline, MBE/WBE designation if applicable)

(insert name)	(insert title)	(insert email)	(insert phone number)
(insert name)	(insert title)	(insert email)	(insert phone number)
(insert name)	(insert title)	(insert email)	(insert phone number)

Stakeholder Groups



DESIGN TASK 1: INITIAL MEETING & DESIGN PHASE WORK PLAN DETAILED TASK LIST

Project #:		Date:	
Objective: Confirm with the Designer, DCAMM, and User Agency the scope of the work anticipated and establish clear, commonly understood objectives and a methodology for the project execution.			
1.1	Initial Meeting (on-site)		
	a. Designer to prepare an agenda and presentation to kick off the Design Phase of the project, outlining the anticipated scope of the work and establishing clear, commonly understood objectives and methodology for the project execution. Agenda items to include but not limited to:		
	1. Project Overview		
	2. Outstanding decisions to be made		
	3. Discussion of Design Excellence goals and how they will be met (Design - value - stewardship)		
	4. Additional information or testing needed		
	5. Quality Control Plan		
	6. Updated Project Schedule (discuss proposed meetings and workshop dates)		
	7. Protocols required in anticipation of site visits, logistics		
	8. Budget review and discussion on budgeting constraints.		
	b. DCAMM PM to add any additional items		
	Deliverable: Meeting Agenda, presentation, minutes		
1.2	Design Phase Work Plan		
	a. DCAMM PM will provide the Design Phase Work Plan template for the Designer to prepare the Work Plan.		
	b. Work Plan Review Meeting: Meet with DCAMM to finalize the draft Design Phase Work Plan.		
	c. The Final Design Work Plan will include at minimum:		
	1. Cover and Approvals		
	2. Statement of Approach		
	3. Schedule of Values		
	4. Contract Schedule		
	5. Quality Control Plan		
	6. BIM Execution Plan		
	7. Energy Conservation Measures		
	8. Updated Directory		
	9. Detailed Task Lists (Tasks 1-6)		
	d. DCAMM PM to add any additional items		
	Deliverable: Draft and Final Design Phase Workplan		



DESIGN TASK 2: DESIGN DEVELOPMENT

DETAILED TASK LIST

Project #:		Date:	
Objective: Further refine each part of the design, including selection of components for architectural and mechanical systems, and detailed layout for all program and support spaces			
2.1	All Designer Activities and Tasks During Design Phase		
	a. Meetings		
	b. Incorporating Comments from DCAMM, User Agency, or relevant others		
	c. Cost Estimating		
	d. Project Scheduling		
	e. Existing Conditions Verification		
	f. Investigative Work		
	g. Specifications		
	h. Commissioning		
	i. CM Coordination (if CMAR)		
	j. Meetings with AHJ		
	k. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Draft products		
2.2	Global Workshop(s)		
	a. Global Workshop(s) will be organized to present how the Design Excellence goals (Design – Value – Stewardship) are being addressed and assure comprehensive integration of all aspects of the design. The Designer will coordinate all consultants' work to date and ensure consensus at all levels of design detail. At the completion of the DD phase no changes should occur to the finalized program.		
	b. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Workshop presentation and minutes		
2.3	Cost management and potential value engineering		
	a. Perform cost modeling actively engaging with the cost estimator to employ a series of increasingly precise cost estimating techniques, matching the development of the project design through each phase. Advise DCAMM of any additional work, such as topographical surveys, wetlands surveys, geotechnical, geological, or hazardous materials investigations, as required.		
	b. Perform value engineering as the design progresses, especially for CMAR projects. Assist in reconciliation of CM estimates.		
	c. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Supporting cost management and value engineering materials		
2.4	DD checklist and DD Submission Package		
	a. Complete DD Checklist and submit with DD Submission.		
	b. Complete DD Submission including drawings and other submittals (Design Excellence Statement, Specifications, Cost Estimate, Schedule, Commissioning, Final Program, Building Code Analysis, Sustainability, Environmental, Interiors, and any other submittals.)		
	c. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: DD checklist and DD Submission		



DESIGN TASK 3: CONSTRUCTION DOCUMENTS

DETAILED TASK LIST

Project #:		Date:	
Objective: Provide information in the form of final drawings and specifications that enables permitting by authorities having jurisdiction, as well as bidding and construction of the project by a qualified builder.			
3.1	All Designer Activities and Tasks During Design Phase		
	a. Meetings (may include Global Workshop to review conditions, assumptions and decisions)		
	b. Incorporating Comments from DCAMM and User Agency		
	c. Cost Estimating		
	d. Project Scheduling		
	e. Existing Conditions Verification		
	f. Investigative Work		
	g. Specifications		
	h. Commissioning		
	i. CM Coordination (if CMAR)		
	j. Meetings with AHJ		
	k. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Draft products		
3.2	Global Workshop		
	a. A Global Workshop may be organized to present how the Design Excellence goals (Design – Value – Stewardship) are being addressed and assure comprehensive integration of all aspects of the design. The Designer will coordinate all consultants' work to date and ensure consensus at all levels of design detail.		
	b. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Workshop presentation and minutes		
3.3	Cost management and potential value engineering		
	a. Perform cost modeling actively engaging with the cost estimator to employ a series of increasingly precise cost estimating techniques, matching the development of the project design through each phase. Advise DCAMM of any		
	b. Perform value engineering as the design progresses, especially for CMAR projects.		
	c. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Supporting cost management and value engineering materials		
3.4	60% CD checklist and 60% Submission Package		
	a. Complete Checklist and submit with Submission.		
	b. Complete Submission including drawings and other submittals (Design Excellence Statement, Specifications, Cost Estimate, Schedule, Commissioning, Final Program, Building Code Analysis, Sustainability, Environmental, Interiors, and any other submittals.)		
	c. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: 60% CD checklist and 60% CD Submission		
3.5	90% CD checklist and 90% Submission Package		
	a. Complete Checklist and submit with Submission.		
	b. Complete Submission including drawings and other submittals (Design Excellence Statement, Specifications, Cost Estimate, Schedule, Commissioning, Final Program, Building Code Analysis, Sustainability, Environmental, Interiors, and any other submittals.)		
	c. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: 90% CD checklist and 90% CD Submission		
3.6	100% CD checklist and 100% Submission Package		

	a. Complete Checklist and submit with Submission.
	b. Complete Submission including drawings and other submittals (Design Excellence Statement, Specifications, Cost Estimate, Schedule, Commissioning, Final Program, Building Code Analysis, Sustainability, Environmental, Interiors, and any other submittals.)
	c. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: 100% CD checklist and 100% CD Submission



DESIGN TASK 4: BIDDING

DETAILED TASK LIST

Project #:		Date:	
Objective: The Designer shall assist DCAMM in the public bidding process and submission of documents to the DCAMM Bid Room.			
4.1	Prepare Bid Documents and Checklist		
	a. Bid Documents shall be dated with the Construction Document approval date.		
	b. Designer shall confirm with the DCAMM PM the number of paper sets to be provided (and stamping requirements) in addition to electronic files.		
	c. Provide one copy of the contract documents on electronic media (drawings in CAD/BIM format and specifications/addenda in MS Word format) to DCAMM.		
	d. Conformed Set: At the completion of bidding process and before the award of the contract, the Designer is to incorporate all addenda into the contract documents and provide two paper copies and electronic copy to DCAMM.		
	e. Complete Checklist and submit with Bid Documents		
	f. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Bid Documents and Checklist		
4.2	Prepare Construction Cost Estimate		
	a. Prepare Construction Cost Estimate		
	b. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Estimate Sheet		
4.3	Conduct a Pre-Bid Conference and prepare meeting minutes		
	a. A Pre-Bid Conference is usually set-up by DCAMM to allow the bidders an opportunity to view the site prior to bidding. The Designer shall attend the Pre-Bid Conference, solicit questions from the attendees, and refrain from providing answers to any question asked.		
	b. Prepare meeting minutes listing all questions asked. The Designer should inform those in attendance that only questions received in writing may be answered if they are relevant to the bidding process. The Designer shall review the questions asked and, if required, issue the answers as an addenda after review and approval by DCAMM.		
	c. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Meeting Minutes		
4.4	Respond to all questions; prepare all addenda		
	a. The Designer may respond to bidders in the following ways:		
	1. Direct the bidder to read the specification completely. If their question is not answered after a complete read, the Designer may direct the bidder to the section in the documents that clearly answers the question asked.		
	2. No verbal opinions regarding the documents may be given regarding any question asked.		
	3. Require the bidder to put the question in writing. If the question(s) is/are relevant, the Designer will then issue a response as part of an addendum (by stating each relevant question and its associated answer).		
	b.		
	1. If either a bidder or sub-bidder asks a question that requires clarification, the Designer must respond in writing in the form of an addendum.		

	<p>2. If the clarification involves a filed sub-bid section during the general contract bidding, DCAMM may elect to not issue the clarification and issue a change order after the contract has been awarded. If the clarification is substantial, DCAMM may elect to re-bid the effected sub-bid section, or extend the bid date, or have the general contractors carry an amount for that section of work.</p>
	<p>c. Bidder's questions may be submitted up to ten calendar days prior to opening of bids. The Designer shall review any questions received after the deadline for relevance. If questions have minor impact on bids, no further addenda will be issued.</p>
	<p>d. <i>DCAMM PM to add any additional tasks</i></p>
	<p>Deliverable: Addenda</p>
4.5	Attend the Filed Sub-bid or Trade Bid openings
	<p>a. Attend the Filed Sub-bid or Trade Bid opening.</p>
	<p>b. Review all file sub-bids, compare them to the approved final estimate, contact the sub-bidder if required for clarification, and make a recommendation to DCAMM to award, reject, or re-bid. If no bids are received for a filed sub-bid section, the Designer may recommend to DCAMM that this section of work may be included with the work of the GC.</p>
	<p>c. Attend the general contract bid opening.</p>
	<p>d. <i>DCAMM PM to add any additional tasks</i></p>
4.6	Review and evaluate all bids; advise DCAMM on all bid protests
	<p>a. Review and evaluate all general contract bids, unit prices and alternates, compare them to the final estimate, contact general contractors if required for clarification, check references, and make a recommendation to DCAMM to award, reject or re-bid.</p>
	<p>b. Review the contract documents and advise DCAMM in writing regarding the protest of a bidder. If required the Designer shall attend a hearing regarding the bidder's protest.</p>
	<p>c. <i>DCAMM PM to add any additional tasks</i></p>
	<p>Deliverable: The Recommendation Letter (for Filed Sub-bids, General Bids and Trade Bids)</p>
4.7	Advise DCAMM on all matters pertaining to the public bidding of the project
	<p>a. Advise DCAMM on all matters pertaining to the public bidding of the project</p>
	<p>b. <i>DCAMM PM to add any additional tasks</i></p>



DESIGN TASK 5: CONSTRUCTION ADMINISTRATION

DETAILED TASK LIST

Project #:		Date:	
Objective: The Designer shall assist DCAMM in construction administration of the project and the Designer (and their Consultants where applicable) shall be responsible for completing the following tasks.			
5.1	Prepare Contract Documents		
	a. Conformed Set: Prepare a set of plans and specifications that incorporate all addenda and SK drawings issued during the bidding process.		
	b. All changes shall be indicated in a clear manner, by either a revision symbol or bold print, on both the drawings and specifications.		
	c. Any inconsistencies discovered during this process shall be brought to the attention of DCAMM.		
	d. No additional changes shall be incorporated at this time. All future changes or interpretations shall be incorporated into the drawings and specifications when they are accepted after a Notice to Proceed is issued by a DCAMM Director or Deputy Commissioner and during construction.		
	e. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Contract Documents		
5.2	As-Builts/Record Drawings		
	a. Review and accept as complete the marked-up Contractor's set of drawings on a monthly basis during construction prior to approval of the monthly requisition submitted by the Contractor.		
	b. At the completion of the project the Designer is responsible to receive and review the drawings which depict the as-built conditions prepared by the Contractor and incorporate all the changes and modifications which have been made to the original contract documents on their electronic CAD/BIM files.		
	c. Provide a copy of the record drawings on electronic media to DCAMM at the completion of the project. The record drawings shall be submitted in the format provided by DCAMM (refer to the DCAMM CAD/BIM standard format).		
	d. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Record Drawings		
5.3	Change Orders		
	a. Review and document via letter to DCAMM PM all change orders for mathematical correctness, prevailing wage rates, Contractor mark- up on prevailing wage rates, but not union benefits, time and materials charges (if appropriate), schedule impacts and cost of work (R.S. Means or other acceptable labor and material charges).		
	b. The Designer may charge DCAMM, as an "extra compensation," for time spent reviewing and administering change orders on an hourly basis, if the change order is not the result of a Designer error or omission. If the change order resulted from an error or omission the Designer will not be compensated. The Designer should submit the cost for processing the change orders to the manager for review and acceptance as defined in the Contract.		
	c. The Contractor can request a time extension that must be substantiated by a critical path schedule. In this event, the Designer must evaluate, by the Contractor's manpower estimate, the time (or determine that this is a concurrent event and does not require additional time) required to perform the work and grant the time on the Change Order.		
	d. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Change Orders		
5.4	Review and Approval		
	a. Refer to the Designer's or Contractor's contract for review period time.		
	b. Review information supplied by the Resident Engineer, the Contractor and testing agencies.		

	c. Review the Resident Engineer's daily reports.
	d. Review and approve the schedule of values, shop drawings, samples, substitutions, monthly requisitions, Change Orders, and equals to the contract requirements promptly.
	e. Review "As-Built" on a monthly basis and make recommendations to DCAMM for payments to the Contractor.
	f. Review, modify, and recommend approval of all record drawings, accept all warranties, and prepare a punch list of all items necessary for completion.
	g. Reject all Contractor substitutions or equals not named in the specification unless the Contractor provides sufficient technical information indicating that the product meets or exceeds all of the criteria in the specification. If the product specified is no longer manufactured then the Designer must review the Contractor's submission for compliance to the contract documents and confirm this to be fact. If the selection and delivery of the product will delay the project, the Designer must determine this to be fact and inform DCAMM.
	h. Review all coordination drawings promptly.
	i. Inspect the mock-up/sample panel to determine compliance with the contract documents regarding quality, workmanship, aesthetics and weather-tightness. The mock-up/sample panel must be approved prior to any incorporation of these materials. The Designer shall instruct the Contractor to stop work on the installation of these materials until approved.
	j. Respond promptly to any request by the Contractor to inspect or clarify work.
	k. If the Contractor requests payment for work not installed, the Designer shall refer to the contract regarding payment for stored materials.
	l. Review the results of all tests and determine compliance with the specifications promptly. The Designer needs to supervise the testing agency on-site, and review the documentation and ensure that it is provided in a timely manner.
	j. Review and respond to all change orders (refer to the contract for appropriate language).
	k. Review and coordinate with the commissioning plan.
	l. Review the project and recommend occupancy for substantial completion.
	m. <i>DCAMM PM to add any additional tasks</i>
5.5	Maintain Construction Schedule
	a. Review the construction schedule, the construction progress and construction quality promptly
	b. Review the initial construction baseline schedule and determine that all activities are present. The Designer shall require that the construction schedule be cost and manpower loaded if possible (this is not necessary for smaller projects). (Note: This will allow the Designer to determine the cost and delay associated with changes to the contract). The Designer shall correlate the construction schedule with the actual construction progress on a monthly basis. Review all revisions and variances from the original construction baseline schedule proposed by the Contractor and recommend acceptance to DCAMM.
	c. Contractor may delay finalizing the construction schedule until they have completed signing their subcontracts. It is important that the Designer not accept this delay. It is recommended that no requisitions be approved until a final schedule is submitted and approved. Partial approval of requisitions and prolonged review of the schedule by the Designer will result in the delay of submission and approval of the progress schedule.
	d. The schedule must be submitted in the format outlined in the contract specifications.
	e. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Construction Schedule
5.6	Coordinate with the DCAMM Resident Engineer (RE)
	a. Provide the DCAMM RE copies of all correspondence and an updated set of contract document plans and specifications that incorporate all addenda and SK drawings. Two sets of documents are required. One set is the bid set with all addenda added to the plans and specification. This is the legal contract set. The other set is a confirmation set prepared by the Designer with all of the addenda and SK drawings incorporated into the plans and specifications.
	b. The RE has the following responsibilities:
	1. Report on the number of all Contractor and sub-contractor employees by trade, race, and gender; the scope of work, material deliveries, and the weather conditions at the site; and may report on stored material at the site.

	2. Review the monthly requisition and change orders submitted by the Contractor and provide a signature acknowledging approval, rejection, or make modifications as required.
	3. They may observe the work and notify either DCAMM or the Designer that the work is, or is not in conformance with the contract documents. The RE may stop the work of the Contractor in an emergency situation only or as directed by DCAMM.
	c. <i>DCAMM PM to add any additional tasks</i>
5.7	Conduct meetings
	a. Chair and conduct weekly meetings, distribute copies of meeting minutes, and have their consultants in attendance when work of their discipline is ongoing.
	b. Assemble a list of all email addresses along with phone, cell, and fax numbers for all contractors, consultants, DCAMM contacts, and User Agency representatives involved in the project.
	c. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Meeting Minutes
5.8	Prepare and Update Submittal Logs and Changes to the Contract
	a. Request a list of all proposed contract submissions from the Contractor and these submittals shall be indicated on the construction schedule.
	b. Prepare and update weekly submittal logs for the following items:
	1. Shop drawings and samples
	2. Requests for information (RFI)
	3. Notice of intent (NOI)
	4. Proposed change orders (PCO)
	5. Change orders (CO)
	6. SK drawings (SK-)
	c. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Submittal Logs
5.9	Environmental Conditions Assessment
	a. Data collected in the study/design phases will be used to develop the appropriate environmental testing program during construction. The two types of environmental analyses that can occur during construction include: management of potentially contaminated fill and groundwater, and post-excavation sampling to verify residual conditions. The analyses and frequency of sampling of stockpiles for determining off-site disposal options focus on required analyses by the disposal facility (landfill, asphalt batch plant, etc.). These requirements are specified in the operating permit of the disposal facility. Typical permit requirements are presented in the Appendix. Collection and analyses of samples from excavations is necessary to verify acceptable residual contamination. The selection of the analyses, sample locations, and cleanup criteria are functions of the data collected during the study/design phases. As these samples will be used in assessing potential risks associated with the residual contamination, the types and detection limits of analyses are different than those required by disposal facilities.
	b. Latent conditions encountered during construction may include an unknown underground storage tank, pockets of ash from power plants, and debris from historic demolition of earlier structures. Upon encountering these conditions, the Designer's field representatives should immediately contact the DCAMM PM to discuss what has been encountered together with possible options. Typically, the DCAMM PM will have a member of DCAMM's Environmental Staff join them in a conference call with the field representative. Refer to the Appendix for a checklist of the minimum information the field representative should have available for the conference call. In no instance shall the Designer contact MA DEP without DCAMM's concurrence.
	c. <i>DCAMM PM to add any additional tasks</i>
5.10	Testing
	a. Determine when the services of a testing agency are required and review the results of their tests for compliance with the contract documents.
	b. Prepare a request for testing services from three testing agencies to meet the requirements of the contract specifications and the Mass. State Building Code. (Note: The structural engineer may also provide inspection services.)

- | | |
|----|---|
| c. | Recommend to DCAMM which testing agency they feel provides the requested services at the most competitive price. |
| d. | Review the scope of work of the commissioning agent and coordinate the work of the commissioning agent and their consultants. |
| e. | <i>DCAMM PM to add any additional tasks</i> |



DESIGN TASK 6: PROJECT CLOSE OUT

DETAILED TASK LIST

Project #:		Date:	
Objective: To make the project ready to turn over to the User Agency.			
The Designer and GC/CM have many overlapping tasks and the Designer must actively participate to ensure that all work is performed. GC/CM requirements and submittals are noted below to ensure that the Designer is aware of the GC/CM responsibilities and will assist DCAMM in their preparation and/or review.			
6.1	Procedural Requirements Prior to Use and Occupancy		
	a. CM/GC makes frequent inspections with Subcontractors, Designer, Designer's consultants, and DCAMM RE to check for and correct faulty work.		
	b. GC/CM procures and maintains the required test records and certificates for issuance of the DPS Certificate of Occupancy and the DCAMM E-1.		
	b. GC/CM determines that the project or a portion of the project is Substantially Complete (< 1% of all contract work including COs remains to be done, and that none of the remaining work will affect health, safety, or function) and submits to the Designer a list of items to be completed or corrected. Failure to include any items on such list does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents. GC/CM to also provide the required certificates for applying for DPS inspection. Please note that "Substantially Complete" means less than one percent (1%) of all contract work, including change orders, remains to be done, and that none of the remaining work will affect health, safety, or function.		
	c. Designer, upon receipt of the GC/CM's list of items to be completed or corrected, promptly makes a thorough inspection, together with representatives of DCAMM and the User Agency, and prepares a "punch list," identifying in accurate detail any items not acceptable and/or additional items. Concurrently, the GC/CM Contractor arranges for all inspections, fire, plumbing, electrical, and DPS inspection.		
	d. Designer organizes a meeting with the GC/CM, subcontractors and DCAMM PM to discuss all punch list items (include DPS Inspector comments) and answer questions on the Work that must be done before Final Acceptance. Note: If any authorized DPS inspectors require modifications and/or additions that were not included in the construction documents, the Designer should review the applicable code(s) and provide written interpretation and recommendations to the DCAMM PM.		
	e. GC/CM shall immediately correct all punch list items that effect health, safety, or function as determined by the Designer. Completion is required before issuance of E-1.		
	f. Designer should prepares a monetized punch list.		
	g. GC/CM, following receipt of the E-1 and monetized punch list, shall begin to complete all the other items within the timeframe required by the certificate.		
	g. Refer to Additional Resources for Frequently overlooked items when preparing for E-1.		
	v. <i>DCAMM PM to add any additional tasks</i>		
	Deliverable: Montetized Punch List, Meeting Minutes		
6.2	GC/CM Closeout Submittals		
	a. The GC/CM shall provide (via transmittal to the DCAMM RE) the following "closeout submittals":		
	1. Project record documents and as-built marked-up drawings		
	2. Approved operating and maintenance (O & M) data and preventative maintenace schedules		
	3. Extended guarantees and warranties		
	b. GC/CM written guarantees for one (1) year from date of Substantial Completion of the project, against defective workmanship, material, installation, and equipment for all work of the project		
	c. During this period the GC/CM shall:		
	1. Repair or replace defective workmanship, material, installation, or equipment that develop within this period; this shall be accomplished promptly upon notification to the Contractor, to the satisfaction of the User Agency and/or Operating Agency, at no cost.		
	2. The replacement or repair of material or equipment that requires excessive service during the guarantee period. The guarantee shall include 24-hour service of complete system(s) during the guarantee period at no additional cost.		

	d. When necessary, provide the manufacturer's engineering and technical staff's prompt appearance at site to analyze and rectify problems that develop during guarantee period. If problems cannot be rectified promptly to the satisfaction of the User Agency, the Designer must be immediately advised in writing, with a detailed description of efforts taken to rectify the situation, along with an analysis of the cause of the problem.
	e. Regarding the Manufacturer's guarantee or warranty: In addition to guarantee requirements above, obtain manufacturers' written installation, equipment, and material warranties for time periods indicated in the various Specification Sections of the Contract Documents. Such manufacturers' warranties contained within the Specification Sections, together with any other warranties offered in manufacturers' published data, are to be transferred to the User Agency.
	f. Keys and keying schedule.
	g. Spare parts and maintenance materials.
	h. Evidence of compliance with requirements of governing authorities including, without limitations, the following:
	1. Certificate of Inspection, in form of signed permits from the electrical, plumbing, gas, fire department, boiler and any other required inspectors.
	2. Certification from the local fire department to the effect that all detection, alarm and suppression systems, and other equipment or systems under fire department jurisdiction are approved.
	3. When carpeting and/or draperies are provided, a flame, smoke and fuel-rating certificate provided by the supplying contractors.
	4. Elevator certification(s) from the elevator inspector obtained through the General Contractor's elevator Subcontractor.
	5. A letter from the Plumbing Subcontractor that the potable water supply has been sanitized and a back-flow preventor test report.
	6. Septic system certification obtained from the town by the GC (when applicable).
	7. Pressurized vessel certifications from the boiler inspector obtained through the Mechanical Subcontractor.
	8. When air balancing is required, the air balancing report prepared by the Mechanical Subcontractor (or commissioning agent, when applicable), and accepted by the design Registered Professional Engineer. Note: AHJ also need to review.
	9. When smoke control/fire emergency ventilation system is required, the test report prepared by the Mechanical Subcontractor (or commissioning agent, when applicable), and accepted by the design Registered Professional Engineer.
	10. Evidence of test and approval for Dept. of Environmental Protection (DEP) and Dept. of Public Health (DPH), when applicable.
	i. <i>DCAMM PM to add any additional tasks</i>
6.3	Designer's Closeout Submittals
	a. The Designer shall provide (via transmittal to the DCAMM PM) the following "closeout submittals":
	1. Certification, from the design Registered Professional Engineer, stating that the fire protection systems have been installed in accordance with the approved fire protection construction documents and meet the requirements of 780 CMR 903.1
	2. Review and acceptance of the HVAC balancing report
	3. The Structural Engineer-of-Record's (SER's) final report, as required by 780 CMR 1705.3
	4. Certification from the Design Registered Professional Engineer, stating that the emergency lighting and power systems have been installed in accordance with the approved electrical construction documents
	5. List of deficiencies noted by the Commissioning Agent during functional performance tests on all building systems and the resolution of these deficiencies.
	6. LEED documentation for certification.
	7. Utility rebate submittals and approvals
	b. <i>DCAMM PM to add any additional tasks</i>
	Deliverable: Close Out Submittals including updated CAMIS equipment, building and site information; reviewed as-builts, O&M manuals, equipment schedules; final site survey; sub-contractor evaluations
6.4	Final Inspection
	a. Upon completion of the Work for which a permit has been issued, the DPS building official shall conduct a final inspection pursuant to 780 CMR 115.5.
	b. Temporary (Beneficial) Occupancy is allowed under 780 CMR 120.3 and is frequently granted to allow a User Agency to set up and test its own equipment in select building areas. It does not allow for use and/or occupancy of the general public when, in fact, the building cannot function for the use(s) it is intended to accommodate, nor when there are outstanding items that affect health, and/or safety.

	<p>c. Partial (beneficial) occupancy of building areas will initiate the guarantee period for completed work of Divisions 2 through 14 of the Contract Documents for those building areas so used and occupied, exclusive of remaining work indicated on associated punch lists. Use of systems provided under Divisions 15 and 16 of the Contract Documents for temporary services and facilities shall not constitute Substantial Completion, or Final Acceptance of work by the User Agency, and shall not initiate the guarantee period.</p> <p>d. It is DCAMM policy to disallow beneficial occupancy if fire alarm and suppression systems are inoperative.</p> <p>e. <i>DCAMM PM to add any additional tasks</i></p>
6.5	DCAMM Certificate of Substantial Completion/Use and Occupancy (E-1)
	<p>a. Prior to requesting a DCAMM Certificate of Use and Occupancy (E-1 Form) the DCAMM RE should procure and have ready and available the following approved items (referred to as Closeout Submittals):</p> <ol style="list-style-type: none"> 1. O & M manuals and written operating instructions for the various systems 2. The DCAMM RE should be provided with all closeout submittals from the Contractor and approved by the Designer. 3. Catalog data sheets for each item of mechanical or electrical equipment actually installed including performance curves, rating data and parts lists 4. Catalog sheets, maintenance manuals, and approved shop drawings of all mechanical and electrical equipment controls and fixtures with all details clearly indicated, including size of lamps 5. The Balancing Report 6. The names, addresses, and telephone numbers of repair and service companies for each of the major systems installed under the construction contract 7. A signed DPS Certificate of Occupancy per 780 CMR 120.0 8. Licensed Builder Final Affidavit/Report 9. Designer and Consultants Affidavit of Compliance 10. Monetized punch list of the remaining Work that must be done before Final Acceptance <p>b. Record drawings should be completed (both electronic and Mylar files if required) and ready to be transferred over to the DCAMM PM. As-built documents shall consist of, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. Drawings (in BIM/AutoCAD ver.14 or latter format) 2. Contract drawings, for all disciplines, marked-up clearly to indicate the as-built condition 3. All clarification and/or changed condition sketches 4. Specifications (in MS Word format) 5. All construction specifications 6. All addenda 7. Shop drawings, submittals, etc. (electronic format) 8. All approved shop drawings, submittals, etc. <p>c. The DCAMM PM shall attach the monetized punch list to the DCAMM Certificate of Agency Use and Occupancy, indicate the official date of Use and Occupancy, establish the date upon which all remaining punch list items must be completed (normally 30 calendar days), and procure appropriate signatures on the original and seven (7) copies</p> <p>d. After receipt of signatures, the DCAMM PM shall distribute the signed copies with a copy to the Designer.</p> <p>e. <i>DCAMM PM to add any additional tasks</i></p>
6.6	DCAMM Certificate of Final Release and Acceptance (E-2) Prerequisites
	<p>a. Prerequisites for DCAMM certificate final inspection release and acceptance (E-2 Form):</p> <ul style="list-style-type: none"> - Upon receipt of the DCAMM Certificate of Agency Use and Occupancy, and the monetized punch list, the Contractor shall complete all of the punch list items within timeframe required by the certificate. - If the Contractor fails to complete the remaining monetized punch list work within the timeframe required by the certificate, DCAMM may, after seven (7) calendar days written notice, elect to complete the work with separate forces and charge the Contractor. - At the end of the Contractor's one (1) year guarantee period, the Contractor shall transfer manufacturers' equipment and material warranties that are still in force to the User Agency. <p>b. <i>DCAMM PM to add any additional tasks</i></p>
6.7	Project Evaluation
	<p>a. Designer shall organize a project 360 team meeting to discuss and capture lessons learned of the recently completed project in order to provide guidance for future projects.</p> <ol style="list-style-type: none"> 1. Meeting shall include ODC and OP staff, Design Team, GC/Contractor, User Agency representatives 2. Prepare document to represent lessons learned 3. Perform a Facility Performance Evaluation (if requested) 4. Prepare data analytics and key metrics (DTC, ECC and TPC at study phase and construction completion; cost/SF; change order list, etc.)

b. <i>DCAMM PM to add any additional tasks</i>
Deliverable: Meeting Minutes, Lessons Learned, FPE (if requested), Data Metrics

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP for the full document.



STUDY REPORT SUBMISSION CHECKLIST

* This checklist represents items typically included in this submission and may not include all contractual requirements. Refer to the approved Work plan

Project #:		Date:	
Project Title:		Project Manager:	
		Director/Deputy:	
Project Location:		Procurement Type:	
		Designer:	
		CM (if CMAR):	

With the submission of this checklist, the Designer hereby certifies that all previous DCAMM and User Agency comments have been addressed, all items are complete and have undergone internal quality control review

Yes	No	N/A		Comments
			Cover Page	
			Project Name and Location	
			Mass State Project Number	
			Date	
			Firm name, DCAMM logo	
			Preface, Acknowledgements, Table of Contents	
			Standard DCAMM Study Preface	
			Acknowledgements	
			Table of Contents	
			Executive Summary (Typically 2-3 pages)	
			Overview	
			Project Justification (Explanation of Needs)	
			Preferred Alternative Recommendations	
			Summary Program List and SF	
			Scope of Work	
			Project Costs (ECC, TPC; key metrics)	
			Schedule	
			Diagrammatic Plan(s)	
			<i>Other items specific to this project:</i>	
			Design Excellence Section	
			Design - goals and project features	
			Value - goals and project features	
			Stewardship - goals and project features	
			Existing Conditions Section	
			Overall Summary of Existing Conditions	
			Site Existing Conditions Analysis Summary (detailed report in Appx)	
			Building Existing Conditions Analysis Summary (detailed report in Appx)	
			M/E/P/FP Systems Analysis Summary (detailed report in Appx)	
			Accessibility Analysis Summary	
			Building Code Analysis Summary (detailed report in Appx)	
			Existing drawings (site plan, floor plans, elevations, etc.)	
			Resources Data (Historic Energy Data, Energy and Water capacity)	
			<i>Other items specific to this project:</i>	
			Programmatic Requirements Section	
			Program Narrative Summary including goals, space needs (detailed report in Appx).	
			Utilization analysis	
			Adjacency Diagrams	

			Space Program Summary (detailed tabulated matrix in Appx).	
			EUI, Exec Orders, LEED goals determined	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Alternatives Section	Comments
			Alternatives Considered (include concept, scope, cost and schedule implications)	
			Evaluation Criteria	
			Rationale for Selection of Preferred Alternative	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Preferred Alternative Section	Comments
			Overview	
			Final Tabulated Program	
			Key SD drawings (site, building, elevations, etc.)	
			Summary Narratives (site, building, MEP/FP/IT systems, accessibility, etc.)	
			Summary of Code Analysis (including building codes, regulatory review, wetlands, hazmat, energy and other) and EO compliance	
			Cost Summary (construction costs, LCCA, energy, operating, utility rebates)	
			Project Schedule (including phasing and permitting requirements)	
			Sustainability Plan (including building performance metrics, LEED target, EO 594 Compliance for fossil fuel free or evaluation of alternatives and readiness for low carbon fuels, Resilience concerns and strategies to address vulnerabilities, Backup power, Thermal and electric redundancy, Facility recycling and composting plan and space requirements, EV charging location and infrastructure, Solar ready plan, and Materials including embodied carbon and sustainability)	
			Items Needing Further Consideration (if applicable)	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Appendix	Comments
			Survey Drawings	
			Full set of drawings (existing and proposed)	
			Full Program Analysis	
			Detailed Tabulated Space Program	
			Room Data Sheets	
			SD Finish and FFE Schedules	
			Full Existing Condition Narratives (site, building, MEP/FP/IT systems, accessibility, etc.)	
			Full Code Analysis (include building codes, regulatory review, wetlands, hazmat, energy and other) and EO compliance	
			Full Accessibility analysis	
			LCCA and Energy Model	
			Resilience Checklist	
			Outline Specifications	
			Detailed Cost Estimate	
			Operating Cost Worksheet (developed with DCAMM)	
			Investigations, Testing Reports	
			Major Presentation materials	
			<i>Other items specific to this project:</i>	

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP for the full document.



SCHEMATIC DESIGN SUBMISSION CHECKLIST

* This checklist represents items typically included in this submission and may not include all contractual requirements. Refer to approved Work plan

Project #:		Date:	
Project Title:		Project Manager:	
		Director/Deputy:	
Project Location:		Procurement Type:	
		Designer:	
		CM (if CMAR):	

With the submission of this checklist, the Designer hereby certifies that all previous DCAMM and User Agency comments have been addressed, all items in this checklist are complete and have undergone internal quality control review.

DRAWINGS

Yes	No	N/A	Title sheet	Comments
			Facility name, User Agency, consultant names, location map (use DCAMM standard title sheet)	
			List of drawings	
Yes	No	N/A	General Notes Sheet	Comments
			All legends, symbols, abbreviations, general notes	
Yes	No	N/A	Building Code Sheet	Comments
			Building code & ADA/MAAB analysis (include analysis for: egress path of travel and egress capacity, building access from parking to programmed space, construction type, height and area limitation, fire separation, sprinklers, plumbing fixture counts, energy code, earthquake provisions, chemical inventory & storage, if applicable)	
Yes	No	N/A	Site Design	Comments
			Site Survey Plan	
			Proposed site plans (include buildings, roadways, parking, drainage, site features & other program criteria)	
			Civil design plans	
			Landscape design plans	
			Site and landscape standard details	
			Utility plans (electricity, gas, oil, water, steam, telephone, CATV, fire alarm, sanitary & storm drainage).	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Building Design	Comments
			Demolition &/or Existing Condition plans for all trades	
			Floor Plans (include room name, dimensions, fire rated & smoke partitions, structural grid, building core, door swings, built in FFE, major equipment, finish floor elevations, etc.)	
			Roof plan (include proposed system type, skylights, equipment, access, solar)	
			Reflective ceiling plans (include lighting, diffusers, sprinklers, etc.)	
			Furniture Plans	
			Enlarged plans of toilet rooms, stairs, specialty rooms (labs, classroom, cell, etc)	
			Interior elevations of key spaces	
			Exterior elevations from the main orientation points of view	
			Structural, M/E/P/FP design floor and system plans	
			Full height wall sections indicating floor heights, identify program spaces	

			SD finish & FFE schedule	
			<i>Other items specific to this project:</i>	
OTHER SUBMITTALS				
Yes	No	N/A	Building Design	Comments
			Perspective aerial view showing project massing within site context	
			(2) rendered eye level perspective drawings	
			BIM model for the proposed project design developed in accordance with DCAMM standards	
Yes	No	N/A	Specifications	Comments
			Comprehensive & complete outline specifications that address all relevant components/sections of the work including equipment, capacities, & descriptions of structural, M/E/P/FP and other special systems that impact the project.	
			BOD that includes all design parameters that affect the design of the building systems.	
			Scope of work for each specification section	
			Complete table of contents (including Division 1).	
			Edited index of the standard specification.	
			Detailed list of any proprietary equipment and DCAMM sign off	
			Summary of all the changes made to the standard specification	
Yes	No	N/A	Cost Estimate	Comments
			Detailed estimate based on the SD documents & per the Cost Estimating Manual.	
Yes	No	N/A	Schedule	Comments
			Detailed schedule illustrating design, procurement & construction durations, including all required permits & testing. Note: coordinate with the CM (if CMAR) to ensure the best solution to the project regarding construction schedule & phasing.	
Yes	No	N/A	Interiors	Comments
			Color boards to illustrate proposed finish concept and materials.	
			<i>Other items specific to this project:</i>	
All elements below are to be incorporated into drawings and specifications and will be included in the Certifiable Study Report				
Yes	No	N/A	Design Excellence Statement	Comments
			Design - goals and project features	
			Value - goals and project features	
			Stewardship - goals and project features	
Yes	No	N/A	Final Program	Comments
			Final Space Summary	
Yes	No	N/A	Basis of Design	Comments
			Description of architecture, structural, civil, MEP/FP, data/IT requirements and how they will be met.	
			Target Metrics (EUI, fossil fuel use, window to wall ratio, effective R-value etc)	
Yes	No	N/A	Commissioning	Comments
			Outline of the Owner's Project Requirements addressing building performance criteria from planning to project closeout.	
Yes	No	N/A	Code Analysis	Comments
			Code Analysis Report	
			Confirmation that project is compliant with all applicable building codes	
			Energy code (applicable version) and compliance	
Yes	No	N/A	Inclusive Design (Universal Design/ADA/MAAB)	
			Inclusive Design Report	

			Confirmation that project is compliant with the ADA & MAAB for inclusive design providing access to all programs & services and have been illustrated & summarized in the SD documents (including at a minimum: site access from parking, related buildings & public transportation; entrance access equality; vertical circulation; toilet rooms; surface textures; signage)	
Yes	No	N/A	Sustainability and Resilience	Comments
			Executive Order 594 Compliance for fossil fuel free (new or substantial renovation) or evaluation of alternatives and readiness for low carbon fuels (renovation)	
			LEED Target and preliminary LEED checklist	
			Energy model	
			Utility meetings and understand incentives	
			Emergency power and demand response as required	
			Life Cycle Cost Analysis and Operating Cost Analysis (with clearly stated assumptions)	
			Resilience measures and completed checklist. Include any design decisions (e.g. hurricane rating of materials)	
			Water conservation measures	
			Stormwater plan	
			Building-level metering plan for continuous tracking	
			<i>Other items specific to this project</i>	
Yes	No	N/A	Environmental Analysis	Comments
			Evaluation of all environmental issues that affect the project (including subsurface, surface & existing structures).	
			Memo summarizing the analytical data & potential impacts with the certified laboratory data sheets. (note: selection of subsurface sampling & analytical methodologies shall be appropriate for the project & consistent with the MassDEP & USEPA policies & guidelines.	
			List of all testing & permits required	
			Hazardous Materials Plan (if applicable): outline of the Asbestos Abatement Plan & Hazardous Material removal.	
			Site Exploration (if applicable): based on information received from borings. Note: in SD phase, concentrate borings on areas of detrimental conditions discovered. Designer shall determine both the location & number of borings required.	
			MassDEP Submission	
			Conservation Commission Submission (if applicable): Prepare Request for Determination of Applicability (RDA) or Notice of Intent (NOI), if applicable, including appropriate technical details for the work.	
			PNF filed with MHC - required for all State projects	
			<i>Other items specific to this project:</i>	
			Other Deliverables	Comments

NOTE: This template is part of the DCAMM Designer Guidelines and Procedures (DGP).
Refer to the DGP for the full document.



DESIGN DEVELOPMENT SUBMISSION CHECKLIST

* This checklist represents items typically included in this submission and may not include all contractual requirements. Refer to approved Work plan

Project #:		Date:	
Project Title:		Project Manager:	
		Director/Deputy:	
Project Location:		Procurement Type:	
		Designer:	
		CM (if CMAR):	

With the submission of this checklist, the Designer hereby certifies that all previous DCAMM and User Agency comments have been addressed, all items are complete and have undergone quality control review

DRAWINGS

Yes	No	N/A	Title Sheet	Comments
			Title Sheet with facility name, User Agency, consultant names, location map, rendering (use DCAMM standard title sheet)	
			List of drawings	
Yes	No	N/A	General Notes Sheet	Comments
			All legends, symbols, abbreviations, general notes	
Yes	No	N/A	Building Code Sheet	Comments
			Building code & ADA/MAAB analysis (include egress path of travel analysis and egress capacity analysis, building access analysis from parking to programmed space, height and area limitation analysis, fire separation analysis, toilet count analysis), chapter 34 code, energy code	
Yes	No	N/A	Site Plans	Comments
			All legends, symbols, and general notes	
			Existing conditions site plan with benchmarks, boring locations	
			Site survey indicating all existing elements	
			Demolition plan (include C&D recycling, waste goals, waste exchange)	
			Site plan (include buildings with floor elevations, roads, parking, retaining walls, site features, etc.)	
			Contract limit line & storage area for construction materials	
			Existing and proposed contours (include floor elevations)	
			Utility service lines, systems & structures (electricity, gas, oil, water, steam, telephone, CATV, fire alarm, sanitary & storm drainage). Include location, elevation, composition	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Landscape	Comments
			All legends, symbols & general notes	
			Landscape Plan with preliminary planting schedule	
			Stormwater plans	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Architectural	Comments
			All legends, symbols, and general notes	
			Demolition plans including C&D recycling	
			Asbestos & HAZMAT demolition plan	
			Mobilization & phasing plans (temporary trailers, parking, storage & fences)	
			Floor Plans (include room name, dimensions, fire rated & smoke partitions, structural grid, building core, door swings, built in FFE, major equipment, finish floor elevations, etc.)	
			Furniture Plans	

			Roof plan (include proposed system type, pitch & drainage, drains, gutters, scuppers, skylights, equipment, access, walkpads, ladders, lightning protection, solar, etc.)	
			Reflective ceiling plans (include lighting, diffusers, sprinklers, etc.)	
			Interior elevations of key spaces	
			Enlarged plans of toilet rooms, stairs, specialty rooms (labs, classroom, cell, media, etc)	
			Full height elevations of all exterior building faces (include floor elevations, fl to fl heights, column located on a centerline, materials, control joints, exterior grades, etc.)	
			Full building sections - min 2 (traverse, longitudinal. Label spaces. Indicate fl to fl heights, include stair)	
			Full height wall sections (include foundation, envelope, wall construction, etc.)	
			Schedules: finishes, partitions, equipment, door, window & frame details, etc.	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Structural	Comments
			Structural legends, symbols & general notes	
			Demolition Plan/existing conditions	
			Structural plans (foundation, framing for floors & roof), details, design loads	
			Structural connections to existing buildings (if applicable)	
			Construction & expansion joints	
			Schedules: lintels, beams, joists, columns, etc.	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Fire Protection	Comments
			Fire protection legends, symbols & general notes	
			Demolition plan/existing conditions	
			Fire protection plans (sprinkler head layout, piping mains, service location, hose racks, cabinets, tie-ins, standpipe, fire pump, etc.)	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Plumbing	Comments
			Plumbing legends, symbols & general notes	
			Demolition plan/existing conditions	
			Plumbing floor plans (include fixtures, rough-in locations, piping systems, equipment, etc.)	
			Plumbing schedules	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	HVAC	Comments
			HVAC legends, symbols & general notes	
			Demolition plan/existing conditions	
			HVAC floor plans (2 line ducts)	
			HVAC roof plan	
			Mechanical room enlarged plan (include space requirements & equipment location, shaft requirements, etc.)	
			HVAC piping plans (system locations, sizes, major equipment, etc.)	
			HVAC controls	
			Metering	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Electrical	Comments
			Electrical legends, symbols & general notes	
			Demolition plan/existing conditions	
			All electrical services (include light fixtures, switchgear & emergency generator, equipment, fire alarm systems, etc.)	
			Electrical risers, schedules	
			Back up power and demand response	
			Security, communications drawings (include chases, major equipment locations, etc.)	

			Lighting fixture schedule and lighting controls	
			Solar ready: determine if owned, PPA, solar-readiness	fix... in narrative... PPA or owned.
			EV charging	
			<i>Other items specific to this project:</i>	
OTHER SUBMITTALS				
Yes	No	N/A	Design Excellence Statement - Highlight revisions from SD	Comments
			Design - goals and project features	
			Value - goals and project features	
			Stewardship - goals and project features	
Yes	No	N/A	Specifications	Comments
			Draft specification of all required sections	
			Basis of Design narrative for architecture, structural, civil, MEP/FP, data/IT	
Yes	No	N/A	Cost Estimate	Comments
			Detailed Cost Estimate	
Yes	No	N/A	Schedule	Comments
			Updated Project Schedule	
Yes	No	N/A	Commissioning	Comments
			Commissioning Plan	
Yes	No	N/A	Final Program (if changes made)	Comments
			Updated space summary	
Yes	No	N/A	Building Code/MAAB, ADA Analysis (if changes made)	Comments
			Updated analysis prepared for the SD phase with more detail & changes that occurred during SD.	
Yes	No	N/A	Sustainability: All elements are to be included in drawings and specifications	Comments
			Design for compliance with Executive Order 594	
			LEED checklist updated (following meeting to review in DD phase)	
			Utility rebate analysis and filing	
			Emergency power and Demand response plan	
			Energy conservation scope plan	
			Updated LCCA for energy and water consuming equipment	
			Updated energy model calculations	
			Updated heat gain and loss calculations for HVAC systems	
			Updated total electrical load calculations	
			Water conservation measures	
			Landscape plan: native plantings and stormwater plan	
			Building level metering plan	
			Building automation	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Environmental	Comments
			Review of all environmental issues that affect the project	
			List of all testing & permits required	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Interiors	Comments
			Catalogue sheets, brochures, diagrams, schedules, performance charts, illustrations of materials, assemblies, systems specified. Update when a change occurs. Physical material samples of specified materials shall be furnished to DCAMM upon request. Coordinate all product choices with the specification, LEED requirements & the Cost Estimate. User Agency should approve the product submission.	
			Color boards to illustrate proposed finish concept and materials.	
			<i>Other items specific to this project:</i>	
Yes	No	N/A	Other Deliverables	Comments

GENERAL DRAWING REQUIREMENTS

GENERAL

- Designer shall follow CAD standards or BIM model for the proposed project design developed in accordance with DCAMM standards.
- Provide submission electronically in addition to paper submission (if requested by DCAMM)
- Drawings shall be submitted on a standard DCAMM 30" x 42" sheet with a standard DCAMM title block. (Refer to DCAMM CAD/BIM standards.)
- Margins shall be 1" on left side and ½" on all other sides
- General Dimensions and Notes shall be indicated.
- Graphic scale, key plan and north arrow shall appear on all drawings in lower right hand corner of each sheet
- Legends of materials, symbols, and abbreviations for each classification of drawings shall be included.
- Indicate general dimensions and notes
- Provide a complete floor plan of the building indicating the area renovated
- Minimum lettering size of 1/8" for notes and ¼" for titles; All lettering shall be in vertical capitals; text font type Roman
- Drawing numbering sequence to be in conformance with latest AIA standards

TITLE SHEET

- Include all information as indicated in the DCAMM CAD/BIM standards
- Include indexed list of drawings that includes individual sheet titles and numbers for all disciplines

TITLE BLOCK

- Title block on each drawing
- Include date on which the drawings were submitted to DCAMM

A/E STAMPS (FOR CD SETS)

- Designers may submit Construction Bid Set Plans and Specs Affidavits in lieu of stamped drawings for bid purposes. Stamped drawings are required when permits are pulled in which case every sheet including the title page shall have the applicable stamp and signature of the registered professional

SCALES

- Drawing scale must be shown on all drawings
- Each drawing must include graphic scale
 - o Floor Plans, reflected ceiling plans (1/8" = 1'-0");
 - o all plans to be oriented in the same direction
 - o Mechanical, Toilet rooms (1/4" = 1'-0")
 - o Elevations (1/8" = 1'-0")
 - o Building Sections (1/8" = 1'-0")
 - o Wall Sections (3/8", ½", or 3/4" = 1'-0")
 - o Roof Plans (1/8" or 1/16" = 1'-0")
 - o Site, Civil Plans (1" = 20' or 40')

REVISIONS

- Encircle the area to be clarified and indicate revision number
- Record the revision number, date, description of the change in the space provided above the title block

CLEARANCES

- Mechanical room drawings shall graphically show equipment access door swings on all equipment and coil filter removal clearances

CD DRAWING REQUIREMENTS

GENERAL

- Designers may submit Construction Bid Set Plans and Specs Affidavits in lieu of stamped drawings for bid purposes. Stamped drawings are required when permits are pulled.
- Two sets of drawings and specs shall be stamped "Approved" and signed by the appropriate State Building Inspector from the DPS
- The Plumbing drawings and specs shall be signed and stamped "Approved" by the Board of State Examiners of Plumbers and Gas Regulations Board
- Local Fire Chief shall approve, stamp and sign the FP, HVAC, and Electrical construction documents
- The Electrical Inspector shall approve, stamp and sign the Electrical construction documents
- Designer shall confirm with the DCAMM PM the number of paper sets to be provided for DCAMM and the User Agency in addition to electronic files

SITE

- Layout and location, with details, of all proposed work, including: buildings, structures, retaining walls, and other site improvements.
- Existing and proposed grades and contours, including: floor elevations, existing structures and topography, survey base line, bench marks, boring and test pit locations, and site profile sections.
- Landscaping and planting, including contract limit line and storage area for construction materials
- All utility service lines, systems and structures for electricity, gas, oil, water, steam, telephone, sanitary and storm drainage including size, composition, grades, and directions of flow. (Note: Use a separate site drawing to show utilities on projects with extensive layouts and details.)
- The Designer shall certify, in writing, to DCAMM that all applicable local and state officials have been contacted regarding each utility connection and that the department responsible for permits or connection approval has agreed to the system's use.
- Provide curb cuts to allow access for the physically handicapped. Indicate handicapped parking and signage when required to provide an accessible path of travel.
- Erosion control and sedimentation control drawings shall include: Engineering drawings, stamped by a professional engineer indicating the work. Erosion control plan consistent with DEP's best management practices
- Construction and demolition waste plan as required by LEED

ARCHITECTURAL

- Floor plans of each floor, with room and corridor dimensions, wall thickness, column locations, floor elevations, mechanical and electrical openings, door and window designations, and schedules.
- Room finish schedules that clearly designate types of finish and substrate materials and limits. Abbreviations may be used to indicate the materials.
- Roof plan showing openings, drainage, pitch, expansion joints, lightning protection, and all projections and penetrations, including equipment.
- Key plans on all floor plans and section drawings
- Reflected ceiling plans, perimeter details, and support details
- Legend of materials, abbreviations, and symbols
- Wall sections indicating dimensions, flashing, anchorage, reinforcing, coursing, cladding, and other details showing all conditions.
- Exterior and interior elevations and cross-sections including floor to ceiling heights. Designate all materials and coordinate with the specification; use the same terminology in both places.
- Details for roofing, flashing, insulation, windows, doors, entrances, interior and exterior walls, expansion, control or construction joints, water stops, stairs, handrails, millwork, and built-in equipment.
- Locations of all major mechanical and electrical penetrations through walls and floors.
- Access provisions for servicing mechanical and electrical equipment in mechanical rooms. Provide metal walkways, catwalks, ladders, etc., as required to provide access (Note: The installation of all metal walkways, catwalks, ladders, handrails and stairways shall be furnished and installed by the Miscellaneous and Ornamental Iron Subcontractor.

STRUCTURAL

	Coordinate the following items with the site plan: Boring plans with dates, ground elevation, water level, and bottom grades of footings and slabs.
	Foundation plan 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.
	Floor and roof plans of structural systems including framing, elevation of finished floors and depressed areas, with locations and dimensions for all openings. Indicate design floor loads.
	Complete foundation wall elevation and typical sections with reinforcing, indicating location, dimensions, and grades for all footings, steps, and wall openings.
	Complete details and sections with dimensions for all construction including expansion and construction joints, reinforcing and other embedded items.
	Schedules (with dimensions) for all lintels, beams, joists, and columns.
	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, bend point, 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."
	Roofs shall not be dead level. They shall have a minimum slope of $\frac{1}{4}$ " per foot to roof drains. This may be accomplished by either sloping the structure or by using sloped insulation. Two roof drains are preferable to one (in case of blockage of one drain), and, if a parapet is used, relief scuppers should be employed to limit the height of water build-up.
FIRE PROTECTION	
	Fire protection drawings shall indicate standpipe systems, sprinkler systems, access panels, fire pumps, and accessories.
	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 DCAMM.
	Fire protection system calculations and narrative report, as required by 780 CMR, shall be provided.
	Coordinate with Commissioning Agent
PLUMBING	
	All work done by the Plumbing Subcontractor shall include all water, gas, air, vacuum, sanitary and storm wastes, and accessories. Foundation drain lines are the work of the General Contractor, shall not be indicated on the plumbing drawings, and are required to be performed by a licensed plumber. Site utilities shall be indicated on the utility drawings.
	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 DCAMM.
	Trapping and venting of all plumbing fixtures including floor drains.
	Water and gas supply sources, storm and sanitary discharge mains.
	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.
	All accessories, valves, and fixtures, including all drinking fountains, grease traps for kitchen waste, and all necessary panels, identified as to type and size.
	Acid waste and vents for laboratories conforming to the requirements of the latest issue of the State Plumbing Code.
	Plumbing Legend and/or graphical symbols on the first sheet of the plumbing drawings in accordance with the National Standards Institute (ANSI).
	Plumbing riser diagrams for structures two or more stories in height above ground level.
	Domestic water booster pumps, boiler feed water, meter location, hose bibs.
	Hot water storage tanks, piping material, hanger details.
	Back-flow preventors in accordance with requirements of Dept. of Environmental Protection (DEP).
	Clean-outs in accordance with the Mass. State Plumbing Code. (Note: Typical illustrations are available at the office of the Board of State Examiners of Plumbers.)
	Coordinate with Commissioning Agent.
HVAC	
	Site utilities on the utility drawings.

	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 DCAMM.
	The location and size of all piping and ductwork systems
	All systems sized at all reductions, as well as all riser diagrams of piping and duct systems.
	All directions of flow, pitch on piping, and volumes for duct systems.
	Sufficient servicing and/or replacement space of all large items of equipment.
	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, etc.
	All cooling system pumps, chillers, cooling towers, air handling units, ductwork systems, dampers, fan details, temperature control system, air and hydronic balancing equipment, and schedules.
	The cooling tower design on the drawings showing site location, elevations and floor plan of equipment layout and typical flow diagram as related to the total HVAC system.
	That adequate ventilation is provided in utility tunnels and for exterior utility tunnels on the utility drawings
	That all fire and smoke dampers, access panels, and doors are installed in accordance with the latest edition of NFPA Code 90.A.
	Mechanical room designs, including the following details: Vent pipes for safety valves, relief valves, backpressure valves and tanks shall be extended above flat roofs in accordance with all governing authorities
	Motor starters: who provides? Who wires?
	In all designs for boiler and refrigeration plants, include a complete floor plan indicating location of all major mechanical equipment and sufficient service space.
	In all 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.
	All ductwork shall be shown double line unless otherwise approved in writing by DCAMM.
	Coordinate with the Commissioning Agent
ELECTRICAL	
	Indicate temporary power needs on the drawings when applicable
	Site utilities shall be indicated on utility drawings.
	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 DCAMM.
	General arrangement: Outline layout of each floor. Typical sections through the structure, floor and ceiling heights and elevations, and type of construction, including concrete pads shall be indicated.
	Motor starters: Identify Who provides; Who wires
	Interior lighting system: type of wiring, light fixture schedules, location and mounting heights of all fixtures, cable trays, receptacle and switch outlets, sizes and types of all lamps, conduits, all other accessories and riser diagrams shall be indicated on the drawings. Indicate details and method of supporting electrical fixtures, cable trays, 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.
	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 contract.
	Signal systems: locations and types of all outlets and equipment, service connections, wiring diagrams, and all other essential details.
	Services: location and details of all services, whether overhead or underground, feeder sizes, plans and elevations of switchgear and transformers, metering and service switchboard arrangements, wiring and ground fault diagram, and bus ducts.
	Generator and sub-stations: Provide the location, size, method of connection and protection of generators, transformers, exciters, rotor generators, switchgear, and associated equipment, along with current characteristics and equipment capacities. Indicate equipment connections by means of one line wiring diagrams, and schedule all major items of equipment and all instruments.
	Underground work: the sizes 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. All underground chambers, including manholes and pull-boxes, shall be constructed of cast-in-place or one-piece pre-cast concrete.

Pole line work: location, length, treatment and class of poles, guying, cross arms, insulators, circuiting, transformers, protective and switching devices, lighting arrestors, special structures, diagrams, current characteristics, and grounding.

Exterior lighting: location, size, and types of transformers, luminaries, poles, light standards, cables, ducts, and manholes, details of control equipment, and connection diagrams.

One line diagram indicating load in KVA, and available short circuit amperes at each transformer, switchboard, distribution panel board, branch circuit panel board, and at major pieces of equipment.

Rider diagrams for all systems



COST ESTIMATE REQUIREMENTS

REFER TO DCAMM COST ESTIMATING MANUAL FOR DETAILED REQUIREMENTS

	All margins & allowances necessary to produce a complete ECC (Estimated Construction Cost) or projected GMP (Gross Maximum Price) for CMAR procurement
	With the DCAMM PM's approval, the Estimate format may be CSI, instead of Uniformat II, if the Designer's Estimate and the CM's Estimate are fully reconciled before final submission for this Phase.
	For DD: the level for all work shall be Level 3 of Uniformat II Classification, Sections A-G inclusive, complete with a single line outline specification description for each item. The detailed unit rate or item cost buildup shall be provided as backup in each case.
	For CD:
	-Estimate shall be prepared at 60% drawings complete stage to the Uniformat II Elemental Classification to Level 3 (see description above).
	-A second & final Cost Estimate shall be prepared at 100% Drawing Complete as part of the final Bid Document submission. This estimate shall be in both Uniformat II Elemental Classification & CSI Masterformat.
	-Both estimates shall be of the same total and percentage allowances for OH&P, and any further allowances for escalation or other contingencies.
	General Conditions: Cost Estimates for General Conditions of the Contract, Contractor's Overhead and Profit, Insurances, Bonds & all other items included in the Bid Documentation package.
	CM General Conditions & Fees: Where DCAMM stipulates a CMAR Contract, these components are to reflect costs for this type of procurement. Where the exact CM Fees & General Conditions are fixed by Contract, these shall be incorporated into the Estimate.
	Contingencies & Allowances: Separate margins or allowances shall be identified for Estimating Contingency, Escalation Contingency, CM Contingency (where applicable) & Design Contingency. Where these margins are already fixed by Contract, these shall be incorporated into the Estimate.
	Gross & Net Floor Areas: Gross Floor Areas (GFA) & Net Floor Areas (NFA) for the design scheme must be measured in accordance with DCAMM's ASTM pro forma (refer to Appendix).
	Unit Rates for Cost Elements: These shall be derived for the GFA and NFA values provided in the Cost Estimate for both Uniformat II & Masterformat CSI formats.
	Unit User Cost: The DCAMM PM designates this cost, e.g., cost per cell, cost per classroom.
	Reconciliation with the (GFA) and (NFA): This will be determined at the Study Phase, including an explanation of significant variances.
	Reconciliation with the Uniformat II Cost Estimate: This will be done during Study Phase, including explanation of any significant variances, including Unit User Cost
	The Estimate shall be current at the date of Document Submission and include factors or amounts for:
	- For DD only: Provisional Allowances for work not sufficiently specified or designed at DD
	- For DD & CD: Construction Contingency & Escalation to the midpoint of construction as percentage rates
	Cost & Space Estimate: cost & space estimate shall be submitted in both printed & electronic format, with the information summed to project the total at each level in conformance with the electronic formats supplied in the Appendix.
	Estimator Deliverables for CMAR procurement:
	-Trade Packages: The Estimate shall be in CSI Format, aligned with the actual & projected Trade Packages let by the CM
	-CM General Conditions and Fees: The exact CM Fees and General Conditions are fixed by Contract and shall be incorporated into the Estimate.
	-Contingencies & Allowances: Where CM margins are fixed by Contract, these shall be incorporated into the Estimate.
	-Reconciliation: The Designer's Estimate shall be reconciled to the CM's Estimate.




STANDARD SPECIFICATIONS REQUIREMENTS

**The following shall be considered and provided as needed when documenting Standard Specifications:
REFER TO DCAMM STANDARD SPECIFICATIONS FOR DETAILED REQUIREMENTS**

	A summary of all the changes made to the Standard Specifications, indicating all additions or deletions to the specification at this phase.
	A complete edited copy of the DCAMM Standard Specification. This will allow DCAMM to concentrate on the revisions without re-reviewing the Standard Specification.
	Information necessary to prepare application for utility rebates, including, but not limited to lighting, motors, variable speed drives, and HVAC efficiency.
	LEED documentation & certification level.
	A complete description of the work in the Scope of Work section of the specification.
	Any information regarding filed Sub-Bids & Sub Sub-Bids (controls, insulation, fire protection, etc.).
	Related work in other sections
	Items supplied & installed by others.
	Test reports, asbestos, lead, hazardous materials, environmental & borings.
	Utility back charges if required.
	Factory finishes or field applied finishes (usually in the painting section).
	The extent of demolition; the standard is that abatement work occurs first, then utility disconnects & then GC demolition.
	An indication of whether the Subcontractor or the GC supplies the staging or lifts & which one supplies the temporary enclosure.
	Steel fire proofing tests for density & adhesion (the "pull" test).
	An indication of whether the cutting & patching is provided by the Subcontractor or GC.
	Determine if the HVAC controls, the fire alarm system & the security system are compatible with the existing type (digital or analog) & manufacturer; if there are compatibility issues, request a proprietary specification.
	Type in the date on which the Specifications were approved by DCAMM in the lower right hand corner of the Title Sheet. (Note: This date corresponds to the approval letter date for contract documents.)
	Describe the extent of the work, the materials & workmanship & 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 & distinct cross referencing between the Sections. Merely to state "by others" is not acceptable
	Provide for competitive bidding for each item of material to be furnished. Bidders shall not be required to submit proposed "or equal" products for approval prior to the bid date.
	Provide for either a minimum of three manufacturers of material or a description of material that can be met by a minimum of three manufacturers. If this is not possible, request a proprietary specification.
	Add the words "or equal" after at least three manufacturers and each acceptable trade name, plate, or catalog number.
	Specify materials mined or manufactured in Massachusetts whenever possible.
	Do not use general clauses intended to be all-inclusive in lieu of complete descriptions
	Do not duplicate standard requirements that are contained in the contract form
	Use consistency throughout. Use the word "will" to designate what the Commonwealth or the Designer can be expected to do & the word "shall" to designate what is mandatory for the Contractor to do
	Use the same term throughout for the same subject & ensure that each term is consistent on the drawings as well.
	Do not use the term "etc."
	Avoid such terms as "to the satisfaction of the Designer," "as directed by the Designer," "as approved," and "as required."
	Specify work in appropriate Sections according to local trade jurisdiction.
	In Sections for which filed sub-bids are required, refrain from using such terms as "the Contractor," the "Heating Contractor," or "the Plumbing Contractor," but where necessary for clarity refer to the "HVAC Subcontractor," the "Plumbing Subcontractor," or other Subcontractor.
	Do not give numbers both in words and figures. Numbers 10 & under shall be written in words; 10 & higher shall be written in figures. In expressing dimensions, figures such as 2 in., 16 in., 7 ft. 6 in., shall be used.
	Do not use Federal Specifications numbers without approval of DCAMM.

	Each filed Sub-bid Section shall detail all labor & materials required by that particular sub-trade and list, by number, 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 that trade.
	Do not specify that a product or system shall require pre-qualification for use prior to bidding
	Do not use words that preclude the use of recycled materials, i.e., "virgin materials."
	Specify that the Contractor shall provide inventory information for all major mechanical & HVAC, electrical, and special equipment, which includes the following: <ul style="list-style-type: none"> - Equipment type - Equipment description - Manufacturer - Model Number - Serial Number - Building and Location of the Equipment
	Equipment Specifications must be modified to the specific project. Delete sections & references that do not apply. All sections must be reviewed and edited to remove products not used.

 <h2 style="display: inline; margin-left: 10px;">SPECIAL SPECIFICATIONS REQUIREMENTS</h2>	
<p style="text-align: center;">The following shall be taken into consideration when documenting "special" or "non-standard":</p> <p style="text-align: center;">REFER TO DCAMM SPECIFICATIONS FOR DETAILED REQUIREMENTS</p>	
	Proprietary products shall not be specified except as provided by M.G.L. Ch. 30, S. 39M. The law states that a proprietary specification may be written for sound reasons in the public interest & shall be written in the public record of the awarding authority, after a reasonable investigation is conducted. Patented or proprietary products, if approved in writing by DCAMM, may be part of the base specifications or may be specified as an alternate. (Note: HVAC controls, elevator controls & lock hardware are common proprietary items specified.)
	Alternates, if approved in writing by DCAMM, shall be properly described & cross-referenced in the specifications & drawings.
	The use of Allowances is not permitted under Massachusetts's public bidding law.
	Unit price items, if permitted or ordered by DCAMM, shall be properly described in the specifications. A unit price proposal sheet shall be prepared for the GC's proposal. When a unit price item is the work of a Filed Sub-Bidder, information shall be included in the applicable section with instructions for the Sub-Bidder to insert the unit price amounts in the proposal sheet.

COMMISSIONING SCOPE OF WORK - ENCLOSURE

PHASE	Enclosure Commissioning Agents will be responsible for providing the following services and deliverables under the direction of the DCAMM Project Manager:
STUDY PHASE	
	Develop the scope of Cx for the project
	Research best practices from similar projects previously completed by the Commissioning Agent for other Users.
	Review the size & skill levels of the user's maintenance staff. Provide recommendations to fill any deficiencies, either through hiring additional personnel or contracting for professional services.
DESIGN PHASE	
	Cx Workshop – Conduct/attend a Cx workshop with the construction team to determine which envelope components are to be commissioned. The purpose of this workshop is to focus on specific key components within the building enclosure design or issues that occur during construction that may allow moisture and/or air infiltration.
	Peer Reviews - Conduct/attend all peer reviews within the timeframe allocated to scheduled owner reviews without impacting the design process. Conduct reviews during the 50% and 100% DD phases.
	Constructability Reviews – Perform a constructability review at the 60% CD submission. Review individual details, components and materials to assess compatibility within the confines of the system and to adjoining components or materials within the building enclosure.
CONSTRUCTION PHASE	
	Cx Workshop – Conduct/attend a commissioning workshop with the CM and subcontractors for the various components of the building enclosure. Explain the enclosure commissioning plan and detail the various inspections and functional test procedures.
	Review of Submittals, Substitutions, and Shop Drawings - Review shop drawings during construction to determine whether the proposed details can be constructed according to the general design intent and issue related written comments and recommendations.
	Onsite Inspections – Review all documentation affecting the building enclosure and its assemblies with subcontractors and associated vendors. Develop inspection and test procedures to verify the proper installation of each building enclosure component in collaboration with subcontractors and associated vendors. Provide a copy of the test procedures to the CM and/or subcontractor(s) who review the tests for feasibility and warranty protection and issue related written comments and recommendations.
	Onsite Inspections – Review all documentation affecting the building enclosure and its assemblies with subcontractors and associated vendors. Develop inspection and test procedures to verify the proper installation of each building enclosure component in collaboration with subcontractors and associated vendors. Provide a copy of the test procedures to the CM and/or subcontractor(s) who review the tests for feasibility and warranty protection and issue related written comments and recommendations.

Company Letterhead

CONSTRUCTION BID SET PLANS AND SPECIFICATIONS AFFIDAVIT – PRIME DESIGNER

M.G.L CH. 149 PROJECTS

I, _____, a licensed Architect/Engineer in good standing in the Commonwealth of Massachusetts, hereby certify that I, in conjunction with the following subconsultants (collectively, the Design Team):

- 1.
- 2.
- 3.
- 4.

completed the set of plans and specifications titled _____ and dated _____ for Massachusetts State Project number _____ (the Project).

I hereby certify that said plans and specifications reflect a true, accurate, and buildable documentation of the efforts required of the general contractor and such other subcontractors and filed sub-bidders that will be contracted by the Commonwealth, by and through its Division of Capital Asset Management and Maintenance, to perform the construction work associated with the Project. I further certify that, pursuant to M.G.L. Ch. 149 Sec. 44F, the plans and specifications detail all labor and materials to be furnished under the contract for construction of the Project.

Furthermore, I certify that said plans and specifications reflect a true and accurate representation of the measurements, observations, marks, architectural, and engineering analyses performed by the Design Team for the project.

After bidding, the Design Team will submit a full set of construction documents stamped by the appropriate disciplines for permitting purposes.

Signed under the penalties and pains of perjury this ____ day of _____, ____.

Signature: _____

Printed Name: _____

Firm: _____

License #: _____

CONSTRUCTION BID SET PLANS AND SPECIFICATIONS AFFIDAVIT – SUBCONSULTANT

M.G.L CH. 149 PROJECTS

I, _____, a licensed Architect/Engineer in good standing in the Commonwealth of Massachusetts, hereby certify that I completed the set of plans and specifications titled _____ and dated _____ for Massachusetts State Project number _____ (the Project).

I hereby certify that said plans and specifications reflect a true, accurate, and buildable documentation of the efforts required of the general contractor and such other subcontractors and filed sub-bidders that will be contracted by the Commonwealth, by and through its Division of Capital Asset Management and Maintenance, to perform the construction work associated with the Project. I further certify that, pursuant to M.G.L. Ch. 149 Sec. 44F, the plans and specifications detail all labor and materials to be furnished under the contract for construction of the Project.

Furthermore, I certify that said plans and specifications reflect a true and accurate representation of the measurements, observations, marks, architectural, and engineering analyses performed by the Design Team for the project.

After bidding, the Design Team will submit a full set of construction documents stamped by the appropriate disciplines for permitting purposes.

Signed under the penalties and pains of perjury this ____ day of _____, ____.

Signature: _____

Printed Name: _____

Firm: _____

License #: _____

QUALITY CONTROL FOR SUBMITTALS

	Specifications & drawings are coordinated
	Notes on drawings do not conflict with DCAMM standards specifications
	All structural, MEP/FP do not conflict with architectural plans or specs
	All schedules are coordinated with the drawings & the specification.
	All symbols & nomenclature are consistent from drawing to drawing, & drawing to specification. (e.g. do not indicate plywood & sheathing as the same specified item).
	Differentiate between existing & new construction
	Room names and numbers are coordinated between all disciplines.
	All details are cross referenced to the correct plan sheet
	Structural dimensions match architectural drawings
	Column orientation, grid lines, & bearing wall locations match architectural drawings
	Column locations are coordinated with all other disciplines
	All discipline drawing sets indicate phasing.
	Finish grade elevations are coordinated between all disciplines
	All toilet room interior elevations showing all wall & partition mounted equipment shall be indicated. Do not use typical drawings. (e.g. Indicate toilet paper holders & grab bars & their mounting location.)
	Confirm that there are no beams or columns protruding horizontally/vertically into stairwells & other interior spaces.
	Interstitial ceiling space clearances on a typical floor will not create a conflict of trades
	Size of the mechanical room shall accommodate the equipment with space for access for service & future expansion. The location & size of vertical shafts for utilities & all roof top equipment shall be addressed & coordinated with LEED requirements
	Vertical shaft size & location are adequate for utilities & roof top equipment
	All equipment shall be indicated & connected to a source, including User Agency supplied equipment, kitchen equipment; equipment plan coordinates with architectural plans
	All filed sub-bid items of work shall be clearly identified on both drawings & in the specification. All trades shall be identified on their respective drawings only. (e.g. Plumbing roof vent stacks shall not indicate roofing work. The roof work associated with the vent stack shall be indicated on the architectural roof plan.)
	BIM clash detection analysis of all major equipment, ductwork, framing, etc.
	Commissioning agent review
	Verify the submittal is coordinated with any early-bid packages, if applicable.
	Civil earthwork grading & excavation plans are coordinated with architectural & landscape plans.
	Materials/soil terms used in the Earthwork specification is coordinated with architectural, structural & civil specifications & plans.
	Coordinate paving details, specifications & landscape design to mitigate frost heaving at paved areas.
	Coordinate paving & landscape patching with civil utility & plumbing work.
	Seismic detailing coordinates with architectural drawings.
	Slab depressions are indicated in the structural drawings & coordinated with the architectural finishes & plumbing drawings.
	Verify coursing dimensions at vertical masonry construction.
	Room wall/floor/ceiling construction coordinated with the finish schedules.
	Coordinate thermal insulation & thermal breaks between conditioned interior spaces & unconditioned exterior spaces.

	Coordinate access to mechanical & plumbing systems & architectural finishes. Confirm that requirements for access panel sizes & locations are coordinated between architectural & MEP/FP drawings & specifications. Indicate access panel sizes & locations in the drawings.
	Locations of emergency equipment (fire alarm control panel, Knox box, fire extinguishers, etc.) are indicated in plans & elevations, & coordinated between disciplines. Recessed equipment is coordinated with finishes.
	Coordinate outside air intake opening locations & any hazard or noxious contaminants as described by 780 CMR: Mass. State Building Code.
	Mechanical equipment power requirements & physical locations, including special information as to who mounts, connects, tests, etc.
	Coordinate roof plans with MEP drawings; indicate all roof top systems, access, walk pads & guardrails.
	Coordinate Solar Readiness areas on roof plans, structural & electrical/plumbing drawings.

ITEMS FREQUENTLY OVERLOOKED WHEN PREPARING FOR E-1

	Properly colored and positioned exit signs
	Properly located emergency lighting fixtures
	Complete or, by agreement, schedule personnel training
	Final building cleaning
	Designer and consultant affidavits
	Ventilating system cleaning issues:
	Clean permanent filters and replace disposable filters if units were operated during construction
	Clean ducts, blowers, and coils if units were operated without filters during construction
	Leave pipe and duct spaces, plenums, furred spaces, and the like clean of debris and materials
	Provide a properly working lock for the medical environmental closets (if applicable).
	Assure that exterior and interior egress doors are operating properly and have the proper hardware.
	Assure all doors and frames that require fire-rating labels have been labeled.
	Assure that smoke barriers are properly installed and located.
	Assure a spare set of each type of sprinkler head along with a head removal tool have been provided.
	Assure that floors drain properly.
	temperature set on building master controllers of hot water shall apply as follows:
	Hot water shall be: toilet rooms (110 degrees F) and janitors closets (140 degrees F)
	Hot water to individual tubs or showers shall be controlled, in addition to the master controller above, with thermostatic valves set to furnish hot water at a temperature not exceeding 110 degrees Fnd equipped with anti-scald feature
	Hot water rinse water to dishwashers shall be controlled at 180 degrees F
	Assure that proper water pressure is provided for the sprinkler system
	Assure that low-consumption (LC) toilets have been installed (1.6 gpf or less)
	Re-lamp if permanent lighting system was used during construction
	As-built marked-up drawings should be completed and transferred over to the Designer

STUDY PREFACE

This study was prepared for the Office of Planning of the Division of Capital Asset Management and Maintenance and Maintenance, Commonwealth of Massachusetts, in accordance with Massachusetts General Laws Chapter 7C, Section 59. It is intended to investigate agency capital needs, evaluate alternatives, and recommend a solution that corresponds to the current needs for the **[insert user agency name here]**.

The study provides a clear and detailed frame of reference for the design and implementation process and recommends a solution that can be accomplished within the appropriation or authorization for that project. It includes a space program which reflects the user agency's needs, a description of the project requirements, an accurate estimate of capital costs, and an implementation schedule.

Conceptual building designs, where included, are not intended to constrain the final design, but rather to illustrate functional relationships, demonstrate the practical operation of design criteria and conformance with applicable codes and standards, and serve as the basis for developing an accurate cost estimate.

Before DCAMM can enter into a contract for final design services, this study must be certified by the Commissioner of DCAMM. Thereafter no substantial changes can be made to the extents of improvements during the implementation process. In subsequent phases, the gross square footage may not change by more than 10% of the number specified in the study or the study will need to be recertified.



COMMOM ACRONYMS

A&F or ANF	Executive Office for Administration and Finance
AG, AGO or OAG	Office of the Attorney General
AMP	Affirmative Market Program
APSA	Account Project Set Aside
BIM	Building Information Modeling
BSOB or BSB	Bureau of State Office Buildings
BSH	Bureau of the State House
CAMIS	Capital Asset Management Information System
CCR	Clarification Change Request
CM	Construction Manager
CMAR	Construction Manager at Risk
COMMbuys	Purchasing
CSI	Construction Specifications Institute (work breakdown)
CTR or OSC	Office of the State Comptroller
Cx	Commissioning
CxA	Commissioning Agent
DBE	Disadvantaged Business Enterprise
DCAF	Deputy Commissioner's Authorization Form
DCAMM	Division of Capital Management & Maintenance
DCPO	Division of Capital Planning and Operations
DCR	Division of Conservation & Recreation (Formerly MDC)
DSB	Designer Selection Board
EFT	Electronic Funds Transfer
EMT	Executive Management Team
EOHHS	Executive Office of Health and Human Services
EPP	Environmental Preferred Products
ESA	Energy Services Agreement
FAD	Fiscal Affairs Division
FEIN	Federal Employer Identification Number
FOI or FOIA	Freedom of Information Act
GSA	Government Services Administration
IG, IGO or OIG	Office of the Inspector General
ISA	Interdepartmental Service Agreement
ITD	Information Technology Division
ITP	Intent to Publish
M/WBE	Minority and Women-Owned Business Enterprise
MBE	Minority Business Enterprises
MIS	Management Information Systems
MMARS	Massachusetts Management Accounting and Reporting System
NCN	Non-Compliance Notice
NOI	Notice of Interest
O-C Agreement	Owner Contractor Agreement
OSD	Operational Services Division
ODC	Office of Design & Constructoin
OFA	Office of Finance
OFMM	Office of Facilities Maintenance & Management
OGC	Office of General Counsel
OP	Office of Planning
OREM	Office of Real Estate Management
OSA	Office of the State Auditor
OSC or CTR	Office of the State Comptroller

OSD	Operational Services Division
OSSP	Office of State Surplus Property
OVM	Office of Vehicle Management
PIC	Procurement Information Center
PMAS	Project Management & Administration System
PMT	Procurement Management Team
POS	Purchase of Service
PSSA	Project Set Aside by Appropriation
QA	Quality Assurance
RFI	Request for Information
RFP	Request for Proposal
RFQ	Request for Quotations
RFR	Request for Response
SOMWBA	State Office of Minority and Women Business Assistance
SOW	Scope of Work
SWC	Statewide Contract
TIN	Tax Identification Number
UFR	Uniform Financial Report or Uniform Financial Statements and Independent Auditor's Report
WBE	Women Business Enterprise