

Design Consultant Guide



LETTER FROM THE COMMISSIONER

Dear Colleagues,

Welcome to our new and updated Design Consultant Guide. This is an important tool for working with the New York City Department of Design and Construction to create and renew the public buildings that serve the needs of all who live, work, and visit here.

Since its creation in 1996, DDC has successfully delivered many of the City's most important municipal projects and taken a leading role in guiding New York through times of crisis. With these accomplishments comes an increased responsibility to deliver quality projects more effectively and efficiently. In 2019, DDC issued its Strategic Blueprint for Construction Excellence, a detailed plan to streamline the capital construction process at every level. In addition, the Public Buildings Division issued Public Buildings: Embracing Change, an internal document which highlighted our design phase process improvements. We've sought to improve, streamline, and better collaborate within the Division and across the agency, and have set high expectations for ourselves and our design consultants to deliver functional, enduring projects on time and within budget, improving the character of our communities.

Our policies and practices must also change to ensure that projects are designed and constructed to enhance public safety in the face of a global pandemic, climate change and other challenges. Through every hurdle, DDC remains committed to building a sustainable, healthy, and equitable urban environment.

A key part of that vision is also the creation of meaningful business opportunities for Minority- and Women-Owned Business Enterprises (M/WBEs). Through a focused plan of outreach and support DDC has become a top-performing agency in the City's M/WBE program and has successfully lobbied for State legislation that will further expand prospects for these businesses.

You, our Design Consultants, are crucial partners in this endeavor. Together, we have been charged with achieving the best value for the public by providing excellence in design and construction, a timely process, and a cost-effective product. Successful design is fundamentally collaborative. This Guide seeks to make DDC's expectations clear by providing an overview of our goals on a phase-by-phase basis and detailing related deliverables. We hope it will prove to be a valuable resource as we strive to deliver the best possible design and construction work on our City's public buildings. Let's get to work...

Sincerely,

Tom Foley, PE, CCM, DBIA, NAC

Commissioner

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CHAPTER 01

INTRODUCTION

- A. THE DEPARTMENT OF DESIGN AND CONSTRUCTION
- B. THE DIVISION OF PUBLIC BUILDINGS
- C. PROJECT EXCELLENCE
- D. THE PROJECT TEAM
- E. THE DESIGN CONSULTANT GUIDE

A. THE DEPARTMENT OF DESIGN AND CONSTRUCTION

The New York City Department of Design and Construction (DDC) was established in 1996 to provide project management services for the City of New York's capital construction projects. Serving 28 Sponsor Agencies through its two Divisions, Public Buildings and Infrastructure, DDC builds and renovates public buildings, streetscapes, plazas, and subgrade infrastructure.

B. THE DIVISION OF PUBLIC BUILDINGS

Design opportunities throughout DDC's Division of Public Buildings range from major new public buildings to retrofits and upgrades of existing buildings. Regardless of scale or scope, every project represents an opportunity to enhance the public realm and achieve the highest quality of design and construction for the City's public buildings and spaces. The design process is a collaborative effort between the Consultants, the DDC Project Team, the Sponsor Agencies, and Regulatory Agencies, to fully explore programmatic requirements, site conditions, context, budget, and other factors leading to the development of a creative, responsible, and functional design in full compliance with all applicable codes, local state and federal laws, specifications, standards, and project objectives.

As well, our public projects must respond and adapt to the recent global pandemic to ensure public health while ensuring public value. Along with our City agency and industry partners, we have begun to develop best practices and procedural modifications that promote the health, safety and welfare for the public in order to mitigate the risk of viral transmission within a facility and/or active construction site.

DDC projects include cultural institutions, libraries, government offices, laboratories, sanitation facilities, emergency shelters, transportation facilities, firehouses, health clinics, senior centers, child care centers, courts, correctional facilities, police precincts, and emergency medical stations. Sponsor Agencies currently include: Department of Cultural Affairs (DCLA), Department of Parks and Recreation (NYC Parks), Brooklyn Public Library (BPL), New York Public Library (NYPL), Queens Library (QL), Department of Environmental Protection (DEP), Department of Health and Mental Hygiene (DOHMH), Office of the Chief Medical Examiner (OCME), Department for the Aging (DFTA), Department of Youth and Community Development (DYCD), Administration for Children's Services (ACS), Agency for Childhood Development (ACD), Department of Citywide Administrative Services (DCAS), Department of Homeless Services (DHS), Department of Consumer Affairs (DCA), Human Resources Administration (HRA), Office of Court Administration (OCA), Department of Transportation (DOT), Taxi and Limousine Commission (TLC), Department of Sanitation (DSNY), Department of Correction (DOC), Fire Department (FDNY), Police Department (NYPD), Department of Information Technology and Telecommunications (DOITT), Department of Education (DOE), Department of Probation (DOP), the Mayor's Office of Criminal Justice (MOCJ), and NYC Emergency Management (NYCEM).

The specific project goals of each Sponsor Agency are served by individual DDC Program Units. The Program Units make up the principal organizational framework of the Public Buildings Division, and are supported by technical, design, budget, and contract processing resources within DDC. The Program Units are directly responsible for managing projects from the initial program requests by the Sponsor Agency through design, construction completion, and acceptance for occupancy. Each Program Unit is headed by a Program Director whose primary responsibilities are to guide and oversee the implementation of a Sponsor Agency's capital construction program.

C. PROJECT EXCELLENCE

The City of New York is committed to achieving excellence in design and construction across its portfolio of public works by delivering quality infrastructure and public buildings that contribute to a thriving, equitable, sustainable and resilient city for all New Yorkers. As part of this commitment, the Department of Design and Construction's Project Excellence program builds on a strong tradition of innovation in architecture and engineering through strategies and practices that balance aesthetics, functionality, cost, constructability, and durability to bring form and meaning to public space.

Project Excellence encompasses all aspects of project delivery, from capital project planning through design, construction, commissioning, and close-out, to ensure on time and on budget delivery of exemplary civic projects. Integrated project delivery practices include enhanced project initiation and management tools, Quality-Based Selection (QBS) and best value procurements, performance evaluation and management, knowledge sharing, and continuing education. Together, these strategies ensure that all capital projects delivered to the City are inspiring, enduring, practical, constructible, and economical.

Achieving Project Excellence requires all team members to engage collaboratively in the capital project delivery process, prioritizing strategies that make responsible use of public funds and offer the best value for the City. DDC's project managers, technical reviewers, and support staff work to guide projects through complex and demanding project delivery processes in partnership with the most creative and experienced design and construction professionals. DDC and our partners share a commitment to Project Excellence in the public realm as characterized by the following overarching concepts:

Project Excellence utilizes the power of design and construction to positively transform our public space, inspiring pride in the people and City of New York. The design of public buildings and infrastructure must be guided by a civic consciousness and social responsibility to provide spaces that promote discourse, exemplify accessible government, and inspire pride in our communities. The design and construction process must reflect a collaborative effort that is inclusive of all stakeholders, including sponsor, partner, and regulatory agencies, and the community.

Project Excellence shapes the city we envision for today and the future by creating enduring and inclusive public spaces. With design and construction of public projects comes the responsibility of shaping the City for generations to come. Dignified, universally accessible, and community-oriented, public spaces must make all New Yorkers feel welcome and valued, comfortable and secure. By thoughtfully responding to surrounding context, including neighborhood character and natural systems, the design must create and reinforce a sense of place that is enhanced by strong connections to existing community resources and mobility networks. The design and construction process must engage relevant stakeholders and experts to consider cultural context and integrate artwork wherever possible in support of meaningful public spaces.

Project Excellence protects the legacy of our public space by carefully considering practical solutions that address the needs of our City. Public projects must be well suited for their intended use and adaptable to future needs. Our public buildings and infrastructure must meet the needs and aspirations of New York City's public agencies as expressed in their individual missions, goals, standards, and requirements. The design must seek a creative balance between functional and programmatic requirements, operational and maintenance protocols, construction practices, and performance and innovation. Sustainable, resilient, durable, and easily maintained, the project must be guided by a holistic view of the capital asset over its expected lifespan. The design must consider solutions to long-term and emergent risks and opportunities, such as changing climate and public health and safety conditions, as well as new technologies and ways of living, working, and connecting.

Project Excellence strengthens the character of our public space by delivering constructible capital projects with safety and integrity. Building New York City requires the ability to execute projects in a safe, effective, and timely manner while maintaining the integrity of the design throughout construction. The design of our public buildings and infrastructure must be represented by complete, comprehensive, and accurate contract documents that are clearly detailed and coordinated across disciplines, and that meet or exceed requirements of code, zoning, accessibility, and local laws. Specifications must be carefully coordinated with drawings and material schedules and be tailored to the requirements of each project. Materials and systems must be proven, readily available, and achievable with local construction practices to minimize lead times, eliminate cost overruns, and prevent construction delays.

Project Excellence supports the value of our public space by employing an economical approach that leverages City resources to build lasting community assets. Design and construction by and for the City requires conscientious attention to schedule, budget, and operational costs to ensure that public funds are well spent, and communities well served. The project must incorporate a life-cycle cost analysis approach and prioritize selection of long-lasting systems and assemblies that are achievable within the allocated budget. Systems must perform to the highest standards of human health, comfort and efficiency, meet or exceed energy requirements, and operate as designed. The project must be calibrated to reduce construction and operating costs and complexity, positively impact the health of people and the environment, and use natural resources wisely. Using City-wide and agency standards and best practices, innovative methodologies, and appropriate technologies, the design must add value and do more with less.

To support Project Excellence, DDC seeks architects, landscape architects, planners, designers, engineers, construction managers, contractors, and design-build teams who are dedicated, responsive, and collaborative, and who possess the management skills necessary to complete work on time and on budget. DDC's partners must have a proven track record of delivering quality projects while resolving complex requirements and navigating unforeseen circumstances. Team-oriented and adept at balancing competing demands, these professionals must go beyond the creation of contract documents to serve as facilitator, mediator, and interpreter, building trust among the many stakeholders throughout the life of a project.

D. THE PROJECT TEAM

The Project Team includes:

1. **THE CONSULTANT TEAM, INCLUDING ALL REQUIRED SUB-CONSULTANTS.**
2. **REPRESENTATIVES OF THE SPONSOR AGENCY.**
3. **THE DDC PROJECT TEAM:**
 - a. The DDC Project Manager, who will act as the main point of contact for the Project Team. The DDC PM will also coordinate communications with the internal DDC Units that support the Consultant and the project including the DDC Project Controls Unit, Office of Environmental and HazMat Services (OEHS), Office of Geotechnical Investigations (OGI), and M/WBE Compliance Unit.
 - b. The Design Liaison, who ensures that the project meets the civic design requirements of Project Excellence and shepherds projects through the Public Design Commission review and approval process.
 - c. The DDC Architecture and Engineering (A&E) Review Team, led by a Team Leader of the appropriate discipline and including Team Members representing each trade as applicable, including Architecture; Structural, Mechanical, Electrical, Plumbing and Civil Engineering; Accessibility; Landscape Architecture; Historic Preservation; Public Art; Sustainable Design; and Commissioning.

- 4. A COMMISSIONING AGENT CONSULTANT, WHEN REQUIRED, UNDER DIRECT CONTRACT TO DDC.**
- 5. A CONSTRUCTION MANAGER, WHEN REQUIRED, UNDER DIRECT CONTRACT TO DDC.**

E. THE DESIGN CONSULTANT GUIDE

DDC undertakes a wide variety of projects in support of its Sponsor Agencies, making each project unique and standardization of project delivery methods a challenge. This Design Consultant Guide outlines qualitative expectations and describes broad requirements that pertain to all projects.

Descriptions of goals and deliverables are intended to help the Consultant, DDC, and Sponsor Agencies understand expectations and evaluate the acceptability of completed tasks. A detailed chapter on Design Criteria is provided to describe the basis of DDC's evaluation of the Consultant's work product.

Many of DDC's design projects are initiated through Requirement Contracts for design services. The Requirements Contract is necessarily generic regarding specific project scopes since the projects to be undertaken are not known at the time of contract initiation. The Task Order will state all the parameters of the specific project and incorporates the Project Objectives (PO) which includes the Scope of Work. All tasks shall be carried out as directed in this Design Consultant Guide unless the Task Order or other written documentation from DDC explicitly states otherwise.

The Guide describes the design criteria of the Agency, the goals, services, and deliverables expected, and necessary approvals and procedures.

In addition to this Guide, Consultants should familiarize themselves with Sponsor Agency design guides, requirements, manuals, specifications, or standards. These should be reviewed to ascertain any potential conflicting goals or objectives. The resolution of conflicts is the responsibility of all parties involved.

CHAPTER 02

OVERVIEW OF THE

DESIGN PROCESS

- A. PROJECT DELIVERY STAGES
- B. PROJECT PLANNING AND INITIATION
- C. PROJECT DELIVERY TRACKS
- D. DESIGN PHASES
- E. DESIGN PHASE PROCESS AND MILESTONES
- F. CONSULTANT SERVICES DURING PROCUREMENT
AND CONSTRUCTION
- G. PROFESSIONAL RESPONSIBILITY

A. PROJECT DELIVERY STAGES

There are four stages in the delivery of capital projects from initiation to the completion of construction:

1) PROJECT PLANNING AND INITIATION

During the Project Planning and Initiation stage, DDC evaluates the capital project scope and budget to ensure the project has adequate funding. DDC develops a baseline schedule template, prepares the specific project's requirements, selects the Consultant, acquires funding from the Office of Management and Budget (OMB), registers the task order with the Comptroller, and issues the Notice to Proceed (NTP) to the consultant.

2) DESIGN

a. Documentation

This stage typically includes the Schematic Design phase; Design Development phase, and Construction Documents phase. Design may at times also include a Pre-Schematic phase prior to Schematic Design or at times consist only of a CPSD (Capital Project Scope Development) study. For more information, see Chapter 03: Design and Construction Phase Deliverables.

b. Bid / Award

This phase includes the bid period, selection of the Contractor/s and the registration of construction contract/s. For more information, see Chapter 03: Design and Construction Phase Deliverables.

3) CONSTRUCTION

Construction contracts are awarded either through a competitive bid process, in which the lowest responsible and responsive bidder is selected or through pre-awarded requirements contracts managed by DDC's Job Order Contracting Service (JOCS).

B. PROJECT PLANNING AND INITIATION

The Project Planning and Initiation stage begins when the Sponsor Agency submits a Project Initiation (PI) request, which includes a general description of the project, a summary of the required work, and information on funding. DDC's Front End Planning (FEP) Unit reviews and evaluates the scope and budget to ensure the project is viable.

In order to verify that scope and budget are aligned, DDC's FEP, along with technical support from A&E, conducts a preliminary project investigation to review site constraints, identify requirements for compliance with codes, local state and federal laws, and other City obligations, explore construction logistics and so forth, to demonstrate a design approach that is achievable within the budget. FEP's findings are compiled into a report along with a baseline schedule and the Project Objectives. This report details the scope of work and identifies the track for design delivery (see Section C in this chapter). Upon initiation of the project, the complete Front End Planning Report will be issued to the Consultant assigned to the project. When a test fit is included in the Front End Planning Report, it indicates one possible solution that was developed to determine project viability. It does not represent a preferred scheme, nor is it required to be among the options proposed by the Consultant during Schematic Design.

The Project Planning and Initiation stage includes the identification of the key members of the DDC Project Team, including the Front End Planning Program Executive, the Project Manager, the A&E Team Leader, and the Design Liaison. The DDC team discusses the project in detail while taking into consideration various regulatory pathways as well as design services procurement options based upon project scope, schedule and budget. All decisions made during this stage are vetted by DDC's Strategy Board.

Once Strategy Board recommends the project for initiation, the Design Liaison coordinates with DDC's Agency Chief Contracting Officer (ACCO) to procure design services. For all projects, large and small, Consultants are invited to attend a site visit to become familiar with the site and scope of work. The design procurement process requires Consultants to identify how they will meet M/WBE participation goals established for the project.

Simultaneously, the Project Manager prepares a Certificate to Proceed (CP) request for submission to OMB to obtain funding approval for the project and subsequently prepares the Agreement, which includes the FEP Report and Project Objectives, for submission to the Comptroller to register the contract. Upon approval of the CP, selection of a Consultant, and registration of the Task Order, a Notice to Proceed (NTP) is issued to the consultant and a design kick-off meeting is scheduled by the Project Manager.

C. PROJECT DELIVERY TRACKS

1) PROJECT TRACKS AND TYPES

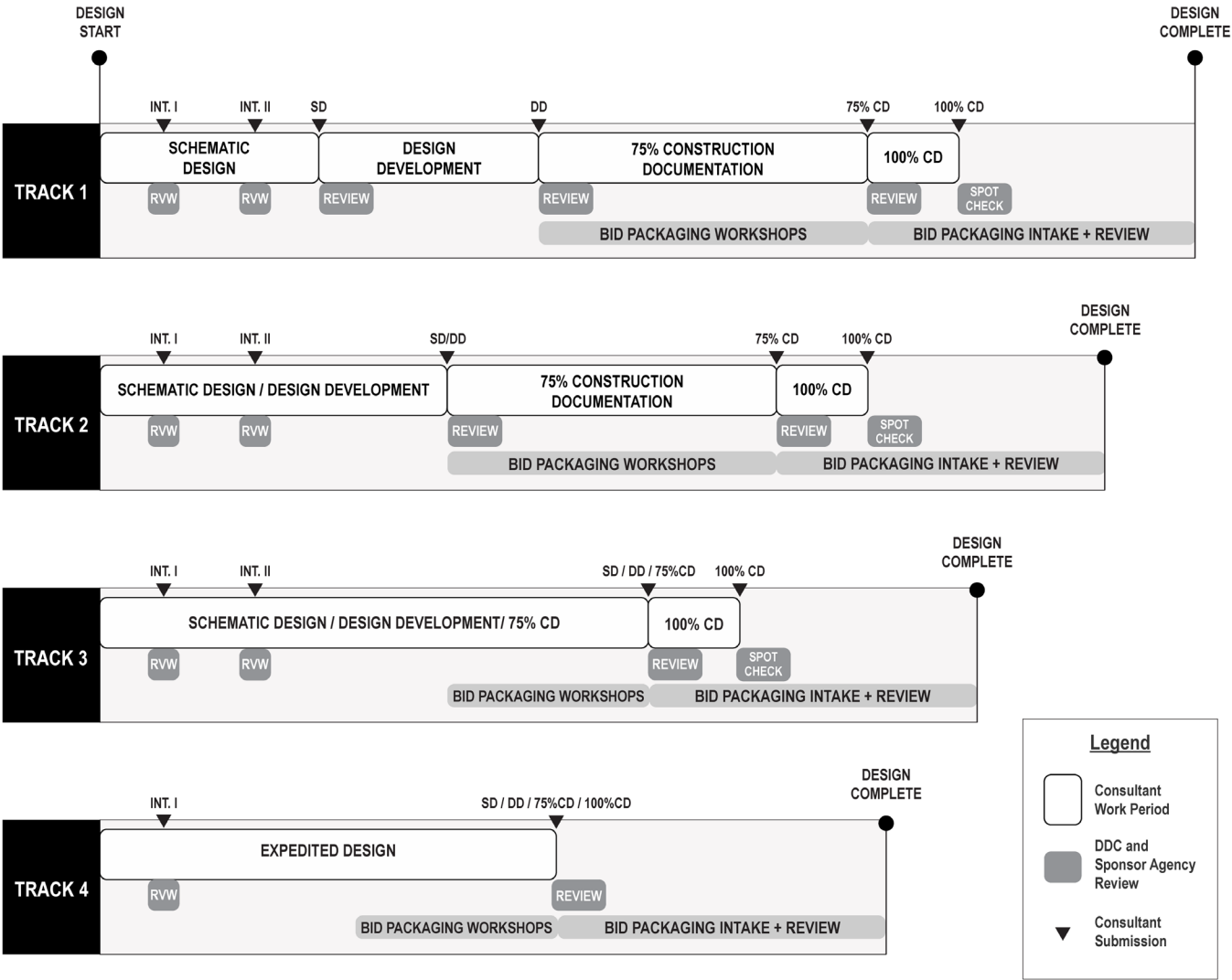
Projects follow one of four project delivery tracks according to the type of work and level of complexity. The project track will be identified in the FEP Report and Project Objectives (PO).

- a. **Track 1** includes new construction, major renovations, and additions. Track 1 encompasses all phases, which include Pre-Schematic Phase (optional), Schematic Design, Design Development, 75% Construction Documents phase, and 100% Construction Documents phase.
- b. **Track 2** includes complex building system upgrades involving more than one system, such as building envelope or HVAC system reconstruction/rehabilitation. It has a combined Schematic Design and Design Development Phase, 75% Construction Documents Phase, and 100% Construction Documents phase.
- c. **Track 3** includes simple building system upgrade projects. It includes Schematic Design, Design Development and 75% Construction Documents combined into a single phase, followed by 100% Construction Documents Phase.
- d. **Track 4** is for projects with very limited scope. In this very expedited track, Schematic Design, Design Development, 75% and 100% Construction Documents are combined into a single phase.
- e. **Capital Project Scope Development (CPSD)** studies are sometimes required to enable the City to identify advanced portfolio planning, project scope and cost prior to capital commitment. CPSD services may be requested for any type of City project including but not limited to buildings, structures and facilities, site work, etc. A CPSD study may also include large-scale portfolio planning, master planning, space programming, design standards and technical research. Since the extent of each CPSD will vary, design services will be specific to the nature of the project and may include such items as the investigation of existing conditions, analysis of regulatory pathways, analysis of zoning and code, analysis of the

Sponsor Agency's operational requirements and programming, as well as the study of design alternatives to promote efficiency and control costs. This study concludes with a report by the Consultant and a review by DDC. No construction phase services are included in this type of project.

2) REQUIRED PHASES BY PROJECT TRACK

The chart below is a general illustration of requirements for various project types in the Division of Public Buildings. A Front End Planning (FEP) Report and Project Objectives (PO) are provided for each project. These describe project-specific requirements and obligations of the design professionals, and identify which phases and submissions will be required, including any noted as optional.



D. DESIGN PHASES

The Design Phases can be configured differently depending on the scope of the project. If the project requires preliminary services, such as site selection or program definition, the Front End Planning Report and Project Objectives (PO) will call for a Pre-Schematic phase. Otherwise, a typical project will consist of three phases that build upon each other: Schematic Design, Design Development, and Construction Documents. Deliverables for each phase can be found in Chapter 03: Design and Construction Phase Deliverables. All submissions shall be made in accordance with the project schedule; see Chapter 04 for details. The goals of the Design Phases for most projects are as follows:

1) PRE-SCHEMATIC DESIGN

A Pre-Schematic phase may be required prior to Schematic Design when an investigation is necessary to clarify the programming requirements, or other specific uncertainties must be resolved before Schematic Design can begin. The goal of Pre-Schematic Design is to establish a defined scope of work acceptable to all stakeholders to transition into Schematic Design without ambiguity related to the basis of design. The Pre-Schematic scope may include programming, or limited investigations relative to site analysis/selection and shall be accompanied by associated cost estimates. The phase concludes with a report for review. For information on requirements of the DDC Design Reviews, see the information in section E.5 of this Chapter.

2) SCHEMATIC DESIGN

The goal of schematic design is to establish an integrated design direction that synthesizes approaches towards zoning, life safety, accessibility, building systems, sustainability, resiliency, energy code compliance, site/community context and civic design criteria.

Prior to developing design options, it is critical to demonstrate a thorough understanding of the project site and surrounding context, and to identify questions to explore in the options phase. This analysis must examine the project site's existing conditions, the proposed facility program, the Sponsor agency's operational requirements, code and zoning requirements, and any other issues that may influence the design, cost, schedule, and overall delivery of the project.

Studying design options allows the Project Team to explore and compare various approaches to the project design, testing each to weigh benefits, expose flaws, and challenge assumptions. Even when the range of viable approaches is narrow, this process is critical. Ultimately, the consultant is expected to deliver a design that meets the city's budget, needs and satisfies the project's objectives; the study of alternative approaches, conducted collaboratively with the entire Project Team, ensures that the most appropriate solutions are adopted.

This work is intended to encourage creative problem-solving in order to find consensus amongst the entire project team on major issues affecting the project. At the conclusion of studying options, a single design scheme must be documented that reflects this consensus and includes approaches to the topics explored such as satisfying regulatory requirements, integration of scope and program, the project's exteriors and site design, and engineering systems and services.

The Schematic Design phase normally includes two interim submissions for DDC review. The review of the Schematic Design Interim Submissions occurs without stoppage of the Consultant's work.

As is the case with all Consultant deliverables, the Project Team will review the submission and generate written comments, which must be addressed and resolved by the Consultant in the advancement of the project. For information on requirements of the DDC Design Reviews, see the information in section E.5 of

this Chapter. The Schematic Design phase concludes with a submission consisting of a Schematic Design Final Report, including engineering narratives and a cost estimate.

Approval by the Public Design Commission (PDC) and/or Landmarks Preservation Commission (LPC), depending on which is applicable, may be required at this phase. For more information, see Chapter 10, Regulatory Approvals.

3) DESIGN DEVELOPMENT

The process of advancing a scheme to Design Development must validate, develop, and refine the project, including all design elements, building systems, materials, details, equipment, maintenance and operational requirements, and life-cycle costs, demonstrating that all decisions are justifiable on the basis of value. These elements must be fully coordinated across all disciplines. Any open issues regarding zoning, code compliance, and neighboring property access should be resolved and if determinations from DOB are required for the proposed design, the Consultant must obtain written responses prior to submittal of the final DD package.

The Consultant shall notify DDC if they believe that the project scope cannot be achieved within the approved budget, but this does not relieve the Consultant of their responsibility to deliver a project that adheres to the budget. At the end of the Design Development Phase, all major design decisions are made final.

This phase concludes with a submission consisting of a Design Development Report (including updates and development to the contents of the Final Schematic Design Report), architectural and engineering drawings, outline specifications, and a cost estimate. For information on DDC reviews, see the information in section E5 of this Chapter.

4) CONSTRUCTION DOCUMENTS

During this phase, the Consultant prepares final Construction Documents, including drawings and specifications, for regulatory approval and public bidding or award to a pre-qualified contractor under DDC's Job Order Contracting Services (JOCs). Detailed design intent for all construction elements and assemblies must be fully integrated with the entire project scope and must reflect full regulatory compliance

There are two submissions during this phase: one at 75% CD and one at 100% CD. In addition to the drawings, a cost estimate, engineering calculations and specifications are required for review by DDC at the 75% and 100% submissions.

Final submissions to PDC and LPC must be made during this phase. Submission to the DOB is required prior to the 75% CD submission. Any objections from the Plan Examiner should be resolved prior to the 100% Submission, or a copy of the outstanding objections must be submitted to DDC with this package.

DDC construction contracts are awarded through a sealed competitive bid process, in compliance with State and local laws, through which the project is awarded to the lowest responsive and responsible bidder. It is not permissible for the Consultant to collaborate with the contractors to develop design intent prior to the bid. Therefore, the Consultant is advised that the success of the bid and award process, as well as the construction process itself, can be greatly enhanced through their efforts to produce bid documents that are clear, complete, and thoroughly coordinated.

Delegated Design is not permitted except as expressly authorized by the Commissioner in writing.

E. DESIGN PHASE PROCESS AND MILESTONES

Every Design Phase shares the following basic organizational structure:

1) KICK-OFF MEETING

Every project begins with an official Kick-Off Meeting. The Kick-Off Meeting is attended by the Consultant, sub-consultants, Sponsor Agency representatives, the DDC Project Team (see Chapter 01, paragraph D) and additional DDC team members as may be required. At this meeting important project requirements shall be discussed, including but not limited to:

- a. Requirements of the Agreement.
- b. Identification of responsibilities, expectations, contact information, and establishment of protocols for all stakeholders.
- c. Project Intent, including, but not limited to:
 - i. Project Scope and Goals (as defined in the Front End Planning Report and Project Objectives)
 - ii. Commissioning. See Chapter 07: Commissioning.
 - iii. Sustainable Design and Resiliency goals. See Chapter 08: Sustainability and Resiliency.
 - iv. Percent for Art, if applicable. See Chapter 09: Percent for Art.
- d. Design Phase milestones and expectations for submissions of deliverables, including the BIM Execution Plan if applicable.
 - i. Review Protocols
 - ii. Design Compliance Forms
- e. Sponsor Agency standards, if applicable
- f. Budget
- g. Site Data, including information about site surveys and borings
- h. Hazardous Material Testing
- i. Schedule
See Chapter 04: Project Controls
- j. Thereafter, all the following phases will commence with a kick-off meeting that will lay out the expectations for that phase.

2) PROGRESS MEETINGS

Bi-weekly progress meetings, held at DDC, shall be conducted throughout all phases. These meetings are expected to be constructive exchanges of information and ideas to advance the project. The DDC Project Manager schedules progress meetings and workshops. Meetings and workshops shall be indicated on the Consultant's schedule and may include issues such as programming, landscape, site conditions,

engineering systems, historic preservation, sustainability, active design, accessibility, cost estimating, design value, technical specialties, specifications, and permits and approvals. Additional meetings may be required with the Community Board or group, LPC, PDC, and the Sponsor Agency.

- a.** The Consultant must prepare a detailed agenda for each Progress Meeting. The agenda must identify issues to be discussed by discipline and assign a time slot to each issue in order that the required subject matter experts may utilize their time efficiently. The meeting agenda must be shared with DDC at least 3 days ahead of the meeting.
- b.** The Consultant must prepare draft minutes for distribution to the attendees within three days of the meeting or workshop. Once comments have been received from attendees, the Consultant must issue the final minutes to the Project Manager. When recording minutes, the Consultant shall number each meeting consecutively and record the date, place, and attendees. The minutes shall include the agenda, all items discussed, conclusions, and questions for resolution.
- c.** Unresolved issues must continue to appear in the minutes until they are resolved. The party responsible for the resolution of open issues, the date the resolution is due, and the actual date of resolution shall also be noted. Similarly, corrections and approvals of minutes shall be recorded.
- d.** An updated Progress Schedule shall be provided to the Project Manager at each bi-weekly meeting. See Chapter 04: Project Controls.
- e.** Direction informing major project goals and constraints shall be recorded in the Owner's Project Requirements (OPR). See Chapter 03: Design and Construction Phase Deliverables.

3) PRESENTATIONS

Throughout each phase, the Consultant shall make presentations to the Project Team to identify issues, present options, demonstrate progress, etc. Public presentations may also be required. The Consultant shall coordinate with the DDC Project Manager and Team Leader concerning all materials and information to be included in the presentation documents. Sub-consultants shall attend per phase requirements outlined in Chapter 03: Design and Construction Phase Deliverables.

4) SUBMISSIONS

Each of the phases requires a submission of drawings, data, reports, calculations and material samples along with other relevant documents (see Chapter 03: Design and Construction Phase Deliverables for the base deliverables which may be supplemented by the FEP Report and Project Objectives.) The Consultant will submit their deliverables to the Project Manager, who will distribute them as required to the various DDC Units, as well as the Sponsor Agency.

5) DESIGN REVIEW COMMENTS

Following each submission, the Design Review Team, Project Manager and Sponsor Agency shall conduct a thorough review of the deliverables and provide the Consultant with written comments. While written responses are not required for any discipline other than Commissioning, the Consultant is required to thoughtfully resolve all review comments in the development of the project, addressing the spirit of the comments as well as the specific issues. The Consultant shall attend a comment review meeting to facilitate the resolution of any open design issues and comments. The Consultant may present additional drawings, specifications or data as required for clarification or resolution of outstanding design issues or

comments. Notwithstanding any of the above, the Consultant shall proceed to the next phase according to the Project Schedule. Any corrections shall be made concurrently to the work needed to keep the project on schedule with no additional time allowed.

The DDC review will be conducted utilizing collaborative, cloud-based software, such as Bluebeam, available to the Consultant team as a free download. The Consultant is required to utilize the system in the design review process.

Alongside these comments, the DDC Design Review Team will issue a summary that advises the entire project team on the submission's level of development with respect to the current design milestone. This will include an overall evaluation of the coordination of the documents across disciplines, code and regulatory compliance, the presence of major discrepancies, risks, or scope omissions, and whether the current submission reflects the incorporation of the City's previous comments. The summary may also identify specific areas of concern, per discipline, to summarize comments that can be found in the detailed design review itself.

6) 75% CD, 100% CD AND BID PACKAGING REVIEW

At the commencement of the Construction Documents phase, DDC will initiate Bid Packaging workshops with the Consultant. For more information, see Chapter 05, Bid Packaging Requirements.

- a.** Upon submission, the 75% CDs, including both drawings and specifications, are reviewed by the A&E Review team and/or the Construction Manager to ensure that the project requirements are fully detailed and clearly communicated. Review comments will be provided as per Design Review section E.5 in this Chapter. At this stage, the technical specifications are reviewed for accuracy, completeness, and coordination with the drawings. Upon successfully resolving all open issues, the Consultant shall submit the 100% CD documents in compliance with all comments for a final spot check.
- b.** The PM will forward the final technical specifications, cost estimate, and other documents, referred to collectively as the Bid Package, to the Bid Packaging Unit for review (see Chapter 05: Bid Packaging Requirements). The technical specifications are reviewed for compliance with contract language requirements, coordination with other components of the Bid Package, and format. The Consultant shall modify the documents as required to comply with comments from the DDC Bid Packaging team review.
- c.** Once all review comments from the DDC Bid Packaging review team have been resolved, Construction Documents are transmitted to DDC ACCO. DDC Law reviews the documents for compliance with applicable law. The Consultant shall revise the documents as directed. Upon satisfactory completion of all such revisions, DDC will deem the documents to be acceptable for bid and designates final acceptance. DDC must approve 100% Construction Documents as-to-form prior to advertisement of the bid.

F. CONSULTANT SERVICES DURING CONSTRUCTION

1) BID AND AWARD

During this phase the Consultant shall interpret plans and specifications when requested by DDC in response to inquiries by prospective bidders and prepare and issue all necessary addenda, amendments, and drawings required for the clarification of plans and specifications. Such documents shall be issued through DDC. The Consultant shall also attend Pre-Bid Meetings to answer questions from bidders and to assure that all parties clearly understand the intent of the Contract Documents. Pre-Bid Meetings are held at the project site to ensure that all bidders become familiar with existing conditions. Agenda items include highlights of the contract emphasizing any unusual work.

Once bids are received, the Consultant shall assist in the analysis and evaluation of bids, and within three calendar days of the bid opening make written recommendations and reports on the disposition of bids and the award of Contracts. The Consultant shall also assist in the review and evaluation of special experience qualifications of the contractors and/or subcontractors proposed by the Prime Contractors.

The Consultant is required to attend a Pre-Award Meeting with the Contractor(s), the Sponsor Agency representative and members of the DDC Project Team. At the Pre-Award meeting, the Consultant shall answer questions and provide additional support and analysis in the understanding of the intent of the Contract Documents.

Consultant services during this phase include attendance of bi-weekly job-site meetings; site visits and issuance of Field Inspection Reports; review of submittals including shop drawings, samples, cut sheets and mock-ups; review of schedules of items and costs; interpretation of Contract Documents and related clarifications by drawings issued as Bulletins; review of Contractor coordination drawings; resolution of design errors or omissions; issuance of the construction punch list; LEED certification as applicable; and revision of documents as necessary to obtain sign off documentation from the Department of Buildings. For more information, see Chapter 10: Regulatory Approvals.

G. CONSULTANT OBLIGATIONS

1) GENERAL

At all times throughout the design process, it is the Consultant's responsibility to maintain the project schedule and adhere to the approved project budget. If the Consultants believe the project is underfunded, they must so advise DDC in writing. If the scope of work is to be modified, DDC will advise the Consultant in writing. The Consultant shall study the implications of such changes and advise DDC in writing of any resulting impacts on the project budget and schedule. If the Consultant is directed to proceed with the modified scope, the budget and schedule will be adjusted accordingly.

Despite the DDC review protocol, the Consultant retains complete responsibility for the quality of the documents and compliance with building code, as well as local state and federal law.

2) DESIGN VALUE

The Consultant shall deliver a design that is within the approved budget allocation for the project. The Consultant must evaluate life-cycle, operational and maintenance costs for the overall project, as well as all major systems. The Consultant must demonstrate that alternatives have been considered for all major systems and materials, and that the final options selected are as economical as possible. For more information, see Chapter 04: Project Controls.

3) BID DOCUMENTS

The City's ability to successfully bid, award, and build the Consultant's work is contingent upon a commitment to produce clear and complete bid documents. Drawings and specifications must conform to DDC's standards, many of which are legally prescribed. The Consultant shall take care in the preparation of specifications. Specifications will not be accepted if incomplete or uncoordinated, if they contain sections not specific to the project, or contain language not in conformance with DDC requirements. The Consultant is advised to clarify these requirements as necessary with its specification writers, to review the specifications carefully, and to expeditiously deliver all required specification revisions to the DDC Project Manager.

4) CONSTRUCTION AND CLOSE-OUT

The Consultant shall provide timely and proactive responses during the construction phase to ensure documentation on file with the Department of Buildings is kept up to date with any changes made in the field so that the project may be properly closed out in a complete and efficient manner.

5) PERFORMANCE EVALUATIONS FOR DESIGN CONSULTANTS

Consultants will be evaluated at the completion of all project milestones, or as needed, based on their ability to provide quality products and services on time, within budget, and in conformance with contractual requirements. Performance evaluations serve to provide Consultants with feedback on their performance throughout the lifespan of a project and DDC with a record of performance for all Consultants providing design services. DDC will review previous performance evaluations when evaluating proposals for new projects and consider the past performance of a vendor in its selection.

6) PUBLICITY/AWARDS/PRESS

- a.** Consultant (and their employees, sub-consultants, subcontractors, etc.) shall not issue any press release or other public announcement (on any social media platform or outlet) or otherwise make any public statements, written or oral, without the prior written consent of DDC.
- b.** If any media outlet (including blogs) reaches out to the Consultant (and their employees, sub-consultants, subcontractors, etc.), the Consultant will immediately contact the appropriate person at DDC (DDC's Public Information Officer) and will not respond until DDC has approved in writing.
- c.** If the Consultant is interested in seeking an award on a DDC project, the Consultant shall first get DDC's written permission and agree to work with DDC's Public Information Officer on how the application and/or nomination may be presented.
- d.** Consultant will not include photographic or artistic representations of the design of the DDC project in Consultant's promotional or professional materials, on any website, social media platform, or outlet, without prior written consent from DDC.

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

- A. PROJECT DELIVERABLES
- B. GENERAL INFORMATION

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

DDC has identified a detailed list of deliverables by phase in support of the design process and goals outlined in Chapter 02: Overview of the Design Process. All deliverables shall be developed in accordance with the detailed design criteria provided in Chapter 06: Design Criteria. Project Objectives (PO) will be issued to the Consultant for their specific project and made part of the Contract. The Project Objectives will define the project's scope and may further refine the deliverables, as applicable, for both typical capital projects and Capital Project Scope Development (CPSD) projects.

These documents are considered the baseline for a complete and comprehensive submission, but consultants are encouraged to develop materials beyond this baseline in order to properly document the project. Similarly, what follows is a description of the minimum requirements for what the DDC will review for compliance, but it remains the consultant's responsibility to document the project per regulatory requirements and per industry standards of care.

1) CAPITAL PROJECT DELIVERABLES:

As described in Chapter 02: Overview of the Design Process, each of DDC's Capital Projects will be initiated under a Project Delivery Track that defines the project's applicable design phases. Each design phase has associated milestones with deliverables summarized in the chart and further described below.

Note: unless specifically modified in the Agreement, the submittal requirements for a milestone in an expedited track are inclusive of the deliverables of previous phases. For example, Track 2's combined Schematic Design/Design Development submittal includes all items listed under both Schematic Design and Design Development.

Summary of Deliverables by Phase:

		Pre-Schematic	SD-1	SD-2	SD-F	DD	75% CD	100% CD	Bid Documents	Issue for Construction *	Permit Records **
Contents	Report: Narrative and Presentation Drawings	X	X	X	X	X					
	Technical Drawings		X		X	X	X	X	X	X	
	Technical Calculations						X	X			
	Specifications					X	X	X	X	X	
	Project Controls	X	X	X	X	X	X	X	X		
	Design Compliance Forms		X	X	X	X	X	X	X		
Format	PDFs	X	X	X	X	X	X	X	X	X	X
	Digital Drawing Files (ex. CAD, BIM)	X	X	X	X	X	X	X	X	X	X
	Printed Copies	X	X	X	X	X	X	X	X	X	X
Regulatory Coordination	PDC			X	X		X		X		X
	LPC					X		X	X		X
	DOB						X	X	X		X

* See Bid and Award Deliverables for more information on the Issue for Construction set.

**See Construction Administration Services for more information on the Permit Records set.

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

- a. Pre-Schematic Design
- b. Schematic Design

a. Pre-Schematic Design

i. Report: Narrative and Presentation Drawings

The Pre-Schematic Design Report shall contain descriptive data and graphics in support of recommendations made concerning the project. The Report will serve as a record in support of project decisions. The report shall contain:

- 1. Executive Summary
- 2. Site Analysis

The site analysis, if required by PO for site selection, indicates assets and constraints of the site, including those determined by legal, zoning, code, location of all existing structures on adjacent properties, and accessibility requirements as well as physical, ecological, and historical characteristics.

- 3. Space Program

Note the functions, space allocations, occupancy, staff, visitors, and size of new facilities. The report shall list usable net area and gross area tabulations, complete for each of the functional requirements of the proposed project. The net area tabulations shall be indicated for all distinct program spaces.

- a. Space standards and requirements as provided by Sponsor Agency:

Determination and listing of space requirements for all program spaces including special uses, common use functions, and building services.

- b. Adjacencies and Flow Diagrams:

Indicate the required circulation patterns and physical relationships of both internal and external activities.

- c. Programmatic Inventory and Use:

Of all existing spaces, indicating anticipated growth or diminishment of use, adjacency of work space requirements, special purpose areas, facilities to be shared, support areas, and building service requirements.

- d. Master Plan Report (if required by PO):

See Topic: 2. Capital Project Scope Development (CPSD) Deliverables, Sub-Topic: e. Master Plan for information needed for master plans.

- 4. Progress Meeting Minutes
- 5. Project Controls (See Chapter 04: Project Controls)
 - a. Pre-Schematic Cost Estimate

- b. Schedule: update the detailed project schedule as approved after the Kick-Off Meeting (see Chapter 02: Overview of the Design Process). The schedule must remain current during each phase and include any new relevant details.

b. Schematic Design

i. Schematic Design: Interim I

- 1. Report: Opportunities and Constraints:

Provide a narrative summary that evaluates the project-specific analysis for the proposed work and future functions of the project, as outlined below. This analysis serves as the basis for exploring options and advancing design.

The Opportunities and Constraints Analysis must examine the project site's existing conditions, the proposed facility program, the Sponsor agency's operational requirements, code and zoning requirements, and any other issues that may influence the design, cost, schedule, and overall delivery of the project.

a. Urban Analysis: Neighborhood Characteristics

Provide materials that evaluate and analyze the context surrounding the project site within a 0.25 to 0.5-mile radius or as otherwise appropriate. Report should include a narrative that summarizes the surrounding context for the proposed work and future functions of the project highlighting opportunities, constraints, and recommendations. Urban analysis must include but is not limited to:

i. Built Characteristics:

Built characteristics of the neighborhood including scale of existing buildings, use groups and zoning districts, and cultural, demographic, and historic information.

ii. Resources:

Public amenities and shared cultural resources, such as parks or libraries.

iii. Transportation and Site Access:

Location, type, and distance to all forms of transportation networks including public transit, pedestrian routes, bike lanes, roads, parking, etc.

iv. Natural Systems:

Natural systems, including geographic features and ecosystems.

v. Planning and Development:

Planning studies, zoning changes, current or future development that could impact the project.

b. Project Site Analysis: Investigations

Provide materials that evaluate the physical conditions of the project site within the project boundary. Report should include a narrative that summarizes the existing site conditions for the proposed work and future functions of the project highlighting opportunities, constraints, and recommendations. Site analysis and investigations must include but are not limited to:

i. Site Characteristics, Generally:

Include analysis of such things as:

1. Physical impacts of the immediate site adjacencies, including whether existing development or possible future development would impact or constrain the project by foundation underpinning, changing access for maintenance or egress, added construction costs, etc.
2. Types, functions, and uses of other facilities immediately adjacent to the site.
3. Solar and wind exposure.
4. Site access and circulation, including pedestrian, vehicular, parking, etc.
5. Views to and from the project site

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

b. Schematic Design

i. Available Documents:

Provide the following, and analyze any supplementary materials provided by the DDC to identify opportunities and constraints with features including but not limited to:

1. Site Survey:

Provide and evaluate any provided Site Survey documents for information about built conditions, topography and spot elevations of any relevant building or landscape features, location of utilities including stormwater infrastructure, and trees.

2. Geotechnical Report and Subsurface Conditions, if applicable:

Provide and evaluate any provided materials for geological conditions applicable to the project area, including recommendations for civil and structural engineering design and construction purposes.

3. Arborist Report, if applicable:

Provide and evaluate any provided materials including review of species, condition, expected lifespan, required maintenance, and if any infestation of invasive pests or pathogens exists.

Identify existing and any additional requirements for street trees.

4. Underground Storage Tanks (Fuel Tanks) and other Environmental HAZMAT, if applicable:

Provide, review any provided reports, and make recommendations for the removal and/or replacement of tanks (for heating oil, diesel fuel, gasoline, etc) and contaminated soil. Describe condition, age, and requirements for testing.

5. Utilities and Capacity, if applicable:

Provide, review any provided information, and make recommendations for capacity of existing site utilities as applicable to the project, such as available electric service, storm and sanitary capacity, water main capacity through hydrant flow test, etc.

ii. Existing Site Infrastructure:

Describe existing site infrastructure, adjacent structures and related underpinning requirements.

iii. Existing Systems and Services :

Describe the existing building structural system and condition, electrical, mechanical, and plumbing systems, fire alarm and/or fire protection systems, and security systems (as applicable).

iv. Additional Investigations Report :

Identify information relevant to the project that cannot or has not yet been documented. Include justification for this investigation, location and dimensions of work, recommended testing methodology (e.g. destructive or non-destructive, probes, field surveys, archival research), scope of remediation to restore the construction to functional and code-compliant

use (as applicable), and any other analysis or remediation required specific to the probe described.

c. Proposed Project Analysis

Provide materials that analyze and evaluate the requirements for the project, highlighting opportunities, constraints, and recommendations. The areas of investigation must include but are not limited to:

i. Zoning Analysis:

Identify all applicable sections of the NYC Zoning Resolution as they related to the proposed project, including but not limited to setbacks, height limitations, etc. and identification of any required or recommended variances or Mayoral Zoning Override.

ii. Building Code Analysis:

Identify all applicable designations and relevant sections within the NYC Building Code including construction classification, occupancy, accessibility, egress compliance, fire separation, energy code requirements, live load requirements, etc. Identify potential needs for clarification or determinations from DOB.

iii. Filing Strategy:

Identify applicable pathways to DOB approval and include all other Authorities Having Jurisdiction (AHJ), that reflects the path to regulatory compliance

iv. Americans with Disabilities Act (ADA) and Accessibility Analysis Narrative (the "ADA Analysis Narrative" or "Narrative"):

Identify all applicable sections of the 2010 ADA Standards for Accessible Design (or the most current ADA Standards for Accessible Design), Chapter 11 of the NYC Building Code regarding accessibility, including the ADA Path of Travel obligations associated with alteration work, and all other applicable laws, rules, and regulations (collectively, the "Accessibility Standards" as defined in Chapter 06: Design Criteria). This analysis must address the entirety of the project and must be updated at each phase as the project develops.

v. Project Program Analysis:

Provide diagrams, a table, and/or a narrative that identifies the relationships between all program elements described in the Project Objectives, including such factors as square footages, adjacencies, and critical performance requirements. Include any proposed program elements not listed in the project requirements.

vi. Construction Phasing and Staging:

Identify any construction phasing or staging requirements, including the need for swing space and related operational requirements.

d. Sustainability and Resiliency

Include Sustainable and Resilient Design Deliverables as described in Chapter 08: Sustainability and Resiliency.

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

b. Schematic Design

2. Technical Drawings - Existing Conditions

Unless otherwise indicated in the Agreement, the Consultant must:

- a. Provide Existing Conditions Drawings of all parts of the building to be affected by the proposed work. Field measurement and probing the building may be necessary. Include documentation of engineering systems as applicable to the project.
- b. Provide tree survey and arborist report, if applicable.
- c. Existing conditions site plan must indicate features within the right-of-way adjacent to the project area, including curb line, curb cuts, street trees and tree pits, light poles, and street furnishings.
- d. Review Existing Conditions Drawings prepared by others and provide a statement with regard to their adequacy and accuracy, verifying with field measurements and probes if necessary.
- e. Reconcile Existing Conditions Drawings with other documents listed in the Agreement, or issued by the DDC Project Manager, and prepare a statement with respect to their correlation.
- f. Augment Existing Conditions Drawings prepared by others, to provide a complete set to meet the stipulations of the Agreement and the Code.
- g. If BIM is applicable to the project, provide Existing Conditions Model per the DDC BIM Guidelines
- h. Existing Conditions Drawings with photographs of existing conditions in lieu of reconciled and augmented actual existing conditions drawings are not acceptable. Photographs to enhance the existing condition drawings are welcome.

3. Project Controls

See Chapter 04: Project Controls.

4. Design Compliance Forms

Design Compliance forms listed below are initially submitted with SD-Interim 1 and are updated throughout the design phases, as described per milestone below and as discussed at the design-kick off meeting.

a. Project Performance Matrix:

Provide a preliminary Project Performance Matrix that responds to the considerations listed as "Major Design Considerations" and "Project Goals" included in the DDC Front End Planning Report and/or Project Objectives. Identify and list any additional Project Goals that have been determined to be significant upon review of the project requirements. This matrix will be resubmitted at future phase milestones with updated descriptions as the project develops.

2. Compliance Approach Worksheet:

List the regulatory requirements and applicable laws that are anticipated to have significant impact on the Project, including those identified in the DDC Front End Planning Report and/or Project Objectives. Identify and list any additional requirements that have been determined are applicable and

significant upon review of the project requirements. This worksheet will be resubmitted at future phase milestones to describe specific approaches to compliance as the project develops.

3. Elements Approach Worksheet:

List major construction elements, systems, and/or performance requirements as preliminarily described in the DDC Front End Planning Report and/or Project Objectives. Identify and list any additional considerations that have been determined significant upon review of the project requirements. This worksheet will be resubmitted at future phase milestones to describe specific approaches to construction element and systems design as the project develops.

ii. Schematic Design: Interim II

1. Investigation of Options:

The study of Design Options during this phase allows the Project Team to explore and compare various approaches, testing each to weigh benefits, expose flaws, and challenge assumptions. Even when the range of viable approaches is narrow, this process is critical. Proposing three options for each key issue is required; however, do not limit this study to three if additional ideas warrant exploration; likewise, the team should not waste time on options with little merit simply to satisfy this requirement. Ultimately, the Consultant is expected to deliver a design that meets the city's needs and satisfies the objectives stated in the Agreement. The study of alternative approaches, conducted collaboratively with the entire Project Team, ensures that the most efficient and cost-effective solutions are adopted.

It is the responsibility of the design consultant to structure the biweekly progress meetings to identify key issues required for resolution, propose and present options for feedback, identify the meaningful implications of each option, and make recommendations for selection.

The Consultant must document the selections made by the Project Team during the design process using materials submitted during biweekly progress meeting and/or any additional materials generated through the decision-making process.

If applicable to the project and in development with DDC's Design Liaison, these materials will be utilized for a submission to the Public Design Commission for Conceptual Review. See Chapter 10: Regulatory Approvals for more information.

a. Options (to be presented at progress meetings):

Proposed design options should demonstrate and compare the investigation of the following topics:

i. Regulatory Requirements:

Propose options for regulatory compliance paths and identify their impacts on the project design in areas such as project schedule, phasing, or construction elements. This may include alternative Filing Strategies, Occupancy or Construction Classification, or Local Law compliance highlighting different sustainability or resiliency goals.

ii. Scope and Program:

Propose options for the building and site elements using massing, stacking, adjacency, and circulation configuration diagrams. Identify their impact on

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

b. Schematic Design

the project design in such areas as construction elements and material selection, zoning and regulatory requirements, or public and private user access.

iii. Exteriors and Siting:

Propose options for the location of elements within the project boundary including overall footprint, massing, and building orientation. Include points of access to the building and site for all applicable groups and systems such as pedestrians, utilities, and vehicles. Propose conceptual options for the materiality of major horizontal and vertical exterior elements. Identify any implications of the options on the project design including areas such as sustainability goals, traffic, or visual impact to the neighborhood context.

iv. Systems and Services:

Propose options for all major engineering systems and identify the implications of each alternative. Include consideration of building or site layout, utility connections and points of access, sustainability goals including water or energy use, level of effort required for maintenance and operations

v. Existing Structures:

Prioritize options that do not create impacts on existing structures on adjacent properties and, similarly, do not create potential impacts on the project due to possible future development on adjacent properties. The siting of buildings on or in proximity to property lot lines should be avoided; where such is unavoidable, advise and consult with the Project Team and DDC Law prior to committing to any such scheme.

vi. Building Envelopes:

For projects involving building envelopes, alternative facade and fenestration treatments are to be provided.

b. Preferred Scheme

A single design scheme should be documented that reflects consensus achieved through the biweekly meetings.

2. Schematic Design: Interim II Submission

a. Report

- i. Statement of Project Scope (Executive Summary): Brief statement of no more than 1-3 pages that describes the overall design intent of the project, including City-wide objectives and Agency initiatives, the community and neighborhood context, and funding sources and scheduling constraints.
- ii. Narrative Summary of proposed design, including the specific advantages and disadvantages to each option explored, and the path to consensus on a preferred scheme.
- iii. Diagrams, narratives, or other means of indicating how the preferred scheme is in conformance with zoning requirements, building code, Accessibility Standards, in particular the ADA Path of Travel requirements, and other site and building constraints. If vertical or horizontal circulation is of critical importance to the project, include diagrams describing these issues.
- iv. Project Program Matrix: Provide diagrams, a table, and/or a narrative that describes how the Program Elements described in the DDC Front End Planning Report, Project Objectives, or otherwise developed during

the design process have or have not been addressed in the proposed design, including such factors as square footages, adjacencies, and critical performance requirements.

- v. Scope and Program: Prepare diagrams of floor plans with interior spaces and square footages identified that correspond with the Project Program Matrix. Include horizontal and vertical circulation and integrate main entrances and access points as noted in the investigations of Exteriors and Siting. Include blocking and stacking, massing, and site planning diagrams describing the resolved preferred scheme.

b. Presentation Drawings:

- i. Location plans or aerials at the borough and neighborhood level (400' radius from site) – indicate north arrow
- ii. Site photographs with key plans – no more than two photographs per page
- iii. Blocking and stacking, massing, and site planning diagrams identifying concepts, key relationships, efficiencies, design opportunities and constraints for each option

- iv. Existing and proposed site plans – indicate scale and north arrow. Existing and proposed site plans must accurately show the sidewalk, curb line, and all features within the right-of-way (street trees, curb cuts, light poles, street furnishings, etc.). Label all streets.

The site plan must include a schematic building footprint with sufficient detail to identify the project location within the project boundaries, lot coverage, and rough estimated roof area. Major access points for utilities, vehicles, and users (both staff and public as applicable) should also be identified.

- v. Existing (if applicable) and proposed building plans, including roof plan and, if applicable, landscape plans – no more than one plan per page, indicate overall dimensions, scale, and north arrow

These diagrammatic floor plans must show Systems zoning, major utility connections and access points, and the rough location of major pieces of equipment such as generators, condensing units, cooling towers, or any other machines of significant size and requirements.

- vi. Existing (if applicable) and proposed whole building sections – no more than two sections per page, indicate elevation or overall dimensions and scale

At least one section must indicate number of stories both above and below grade, conceptual roofing geometry, conceptual façade materiality as noted in the prior investigations, and any other relevant information identified during the decision-making process. Include floor to floor dimensions rounded to a whole number, and elevations relative to an established benchmark such as NAVD.

- vii. Existing (if applicable) and proposed exterior elevations – no more than two elevations per page, indicate elevation or overall dimensions and scale

These diagrammatic exterior elevations must include all major facades, including at a minimum one that contains the main entry and that locate areas of conceptual materiality. Preliminary percentages or dispositions of fenestration should also be included in these drawings.

- viii. Other drawings and materials as needed to present the proposal completely and concisely, such as massing and zoning diagrams, precedent images, and material palettes

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

b. Schematic Design

- c. Sustainability and Resiliency per Chapter 08: Sustainability and Resiliency
- d. Percent For Art: If applicable, this process will be introduced during Schematic Design for inclusion in the evaluation of alternative schemes. Refer to Chapter 09: Percent for Art.
- e. Appendix: Project Meeting Minutes and biweekly design progress presentations that documented the options explored and that led to the presentation of a resolved preferred scheme.
- f. Project Controls
See Chapter 04: Project Controls.

All options as well as the preferred scheme must be in compliance with the project requirements, and the cost and schedule implications of options must be presented for consideration to achieve consensus on a resolved preferred scheme.

g. Design Compliance Forms

Update the Design Compliance forms as described below:

i. Project Performance Matrix:

Provide an updated Project Performance Matrix that explains how the preferred, resolved scheme responds to all identified Project Goals. This matrix will continue to be resubmitted at future phase milestones as the project develops.

ii. Compliance Approach Worksheet:

Provide an updated Compliance Approach worksheet that explains how the preferred, resolved scheme responds to all the identified the regulatory requirements and applicable laws that are anticipated to have significant impact on the Project. This worksheet will continue to be resubmitted at future phase milestones as the project develops.

The response should demonstrate an understanding of the underlying principles of each requirement and present an approach that relates specifically to the opportunities and constraints of this project. An affirmative response without explanation, such as "will comply," does not responsively complete this section. If the proposed path to compliance requires obtaining a waiver, variance, or other type of regulatory exemption, this must be explained.

iii. Elements Approach Worksheet

Provide an updated Elements Approach Worksheet that explains how the preferred, resolved scheme addresses the major construction elements, systems, and/or performance requirements of the project. This worksheet will continue to be resubmitted at future phase milestones as the project develops.

The response should demonstrate an understanding of the underlying principles of each element design and note specific constraints and opportunities for each element. An affirmative response without explanation, such as "will comply," does not responsively complete this section. As an example, providing an engineering narrative that describes the approach to foundation design, including protection of adjacent structures, along with a description of potential foundation solutions suitable for the building on this particular site, would be suitable for this section.

ii. Schematic Design Final

Document the single design scheme submitted for Schematic Design Interim 2 as further informed by such things as additional direction by the Sponsor Agency, DDC, or other members of the project team. Information previously presented must be updated to reflect the additional development of the design.

If applicable to the project and in development with DDC's Design Liaison, these materials will be utilized for a submission to the Public Design Commission for Preliminary Review. See Chapter 10: Regulatory Approvals for more information.

1. Report:**a. Statement of Project Scope (Executive Summary):**

Brief statement of no more than 1-3 pages that describe the overall design intent, including City-wide objectives and Agency initiatives, the community and neighborhood context, and funding sources and scheduling constraints.

b. Narrative of Proposed Project Design, using presentation drawings to appropriate scale and photographs, as required and further described below:**i. Regulatory Requirements:**

Describe regulatory compliance path/s and identify their impacts on the project design in areas such as project schedule, phasing, or construction elements. Include Filing Strategies, Occupancy or Construction Classification, or Local Law compliance highlighting sustainability or resiliency goals.

ii. Scope and Program:

Describe the building and site elements using massing, stacking, adjacency, and circulation configuration diagrams. Identify their impact on the project design in such areas as construction elements and material selection, zoning and regulatory requirements, or public and private user access.

iii. Exteriors and Siting:

Identify the location of elements within the project boundary including overall footprint, massing, and building orientation. Include points of access to the building and site for all applicable groups and systems such as pedestrians, utilities, and vehicles. Identify the materiality of major horizontal and vertical exterior elements and any implications on the project design including areas such as sustainability goals, traffic, or visual impact to the neighborhood context.

iv. Systems and Services:

Describe all major engineering systems. Include consideration of building or site layout, utility connections and points of access, sustainability goals including water or energy use, level of effort required for maintenance and operations

v. Existing Structures:

Identify whether there are impacts on existing structures on adjacent properties and any potential impacts on the project due to possible future development on adjacent properties. The siting of buildings on or in proximity to property lot lines should be avoided; where such is unavoidable, advise and consult with the Project Team and DDC Law prior to committing to any such scheme.

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vi. Building Envelopes:

For projects involving building envelopes, a description of facade and fenestration treatments are to be provided.

- c. Exceptions Report: Document and summarize any approved changes in approach since the last submittal.
- d. Building code and zoning analysis, updated as required, and including a proposed filing strategy. Include any new utility service requirements and strategy for obtaining service upgrades if required.
- e. ADA and Accessibility Analysis: The ADA Analysis Narrative must be updated as required to reflect the Preferred Scheme and must include diagrams, narratives, and other means of indicating how each this option is in conformance.
- f. Project Program Matrix: Provide diagrams, a table, and/or a narrative that describes how the Program Elements have or have not been addressed in the proposed design, including such factors as square footages, adjacencies, and critical performance requirements. Include any proposed program elements not listed in the project requirements.
- g. Circulation Study: A diagrammatic circulation study showing horizontal and vertical circulation. The circulation study must include an analysis of ADA Path of Travel requirements, accessible routes and means of egress, a vertical transportation analysis and recommendations for the number of elevators, or escalators, type of elevator systems, and control systems.
- h. Narrative of the Owner's Project Requirements (OPR) and the Basis of Design (BOD). See Chapter 07: Commissioning for more information.
 - i. Owner's Project Requirements (OPR):

While developing the preferred scheme, record the primary design objectives and the rationale behind them in the OPR. This document should clearly outline the project goals and the intended operation of the building, including project scope, building use, occupancy information and schedules, budget constraints, energy efficiency goals, verifiable performance criteria, resiliency requirements and operations and maintenance requirements. It must address all systems impacted by the project.
 - ii. Basis of Design (BOD):

The Basis of Design explains how the proposed design will meet the requirements and expectations outlined in the OPR. It must describe the selected systems and explain anticipated facility operation. The BOD must document the rationale for the design, including codes and standards, direction from the Sponsor Agency, concepts, calculations, design methods, and software used. The BOD must include a history of revisions to the project, explaining the reasons for changes throughout the project phases.
- i. Phasing of Construction and Delivery Requirements: Provide a narrative description and diagrams for proposed phasing and staging, including requirements for swing space as required.
- j. Sustainability and Resiliency per Chapter 08: Sustainability and Resiliency
- k. Percent For Art: If applicable, per Chapter 09: Percent for Art.

- I. Presentation Drawings:
 - i. Location plans or aerials at the borough and neighborhood level (400' radius from site) – indicate north arrow
 - ii. Eight site photographs with key plans – no more than two photographs per page
 - iii. Existing and proposed site plans – indicate scale and north arrow
 - iv. Existing (if applicable) and proposed building plans, including roof plan and, if applicable, landscape plans – no more than one plan per page, indicate overall dimensions, scale, and north arrow. This must include a Life Safety Plan showing the preferred scheme in compliance with an updated Building Code Analysis.
 - v. Existing and proposed exterior lighting plan
 - vi. Existing (if applicable) and proposed sections – no more than two sections per page, indicate elevation or overall dimensions and scale
 - vii. Existing (if applicable) and proposed exterior elevations – no more than two elevations per page, indicate elevation or overall dimensions and scale
 - viii. Renderings of exterior, in context, from a pedestrian viewpoint
 - ix. If applicable, plant palette images and plant list
 - x. Model photographs (if applicable), minimum of (3) views
 - xi. Exterior Materials and Equipment
 - xii. Exterior materials list with name of manufacturer, color, and finish as well as indication of where each material will be used
 - xiii. Catalog cuts of exterior materials, equipment, lighting, fencing and screening, paving, and furnishings
 - xiv. Exterior material samples
 - m. Report Appendix
 - i. Project Meeting Minutes: All meeting minutes, including bi-weekly progress meetings, must be provided as an appendix to the Schematic Design Report
2. Technical Drawings
- Schematic Design documents must illustrate the resolution of the program requirements and must be dimensioned and scaled, showing floor-to-floor heights and room sizes.
- a. Key Plans: Key plans must adequately describe the project location and orientation.
 - b. Site Plan: As required by the nature of the project, a site plan must be fully labeled and must indicate materials, physical features and site furnishings, major grading, utilities, property or project limit, easements, buildings or structures on and adjacent to the project, and plantings. The site plan must indicate features within the right-of-way adjacent to the project area, including curb line, curb cuts, street trees and tree pits, light poles, and street furnishings.
 - c. Demolition Plans: Drawings for all affected areas within the project scope must show areas and elements requiring demolition, salvage, protection, impact

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upon design, neighboring property access, and integration with the proposed design.

- d. Floor Plans: Floor plans must be prepared for all floors within the scope of the project. Floor plans must indicate all program spaces. Corridors, stairs, elevators, exits, mechanical chases, and compliance with Accessibility Standards, must be evident.
 - e. Roof Plan: Roof plans must indicate, at a minimum, the stormwater drainage features, all roof-mounted equipment including strategies for screening from public view, and skylights. Top of roof and top of parapet elevations must be indicated. Requirements for Local Law 92-94 must be identified.
 - f. Exterior Elevations and Sections: Exterior elevations and building sections must indicate fenestration, entry, access, site features, and materials. This must include a schematic wall section of the exterior envelope assembly showing whole building from foundation to roof, suggested at 3/4" scale or as appropriate to the project.
 - g. Engineering Drawings: Engineering drawings must indicate all disciplines applicable to the project including structural, HVAC, fire protection, electrical and fire alarm system, and plumbing systems, indicating path of services, locations of stacks and risers, and equipment service room space requirements. Drawings must indicate point of entry for utility company services and connections to available services on site. In addition, HVAC/Fire Protection engineering drawings must indicate the following:
 - i. System types, capacities, and zoning
 - ii. Location and spatial layout of major equipment
 - iii. Main ductwork routing
 - iv. Site utilities: Conceptual design solutions for on-site utility systems and off-site utility work
 - h. Axonometric Drawing and Perspectives: Axonometric drawings, perspectives, and other sketches must be prepared as necessary to fully illustrate and document all major elements of massing, circulation, and systems design.
3. Project Controls
- See Chapter 04: Project Controls.
4. Design Compliance Forms
- a. Project Performance Matrix
- Provide an updated Project Performance Matrix that explains how the final Schematic Design responds to all identified Project Goals. This matrix will continue to be resubmitted at future phase milestones as the project develops.
- b. Compliance Approach Worksheet
- Provide an updated Compliance Approach worksheet that explains how the scheme responds to all the identified the regulatory requirements and applicable laws that are anticipated to have significant impact on the Project, including any changes as a result of the project's development. This worksheet will continue to be resubmitted at future phase milestones as the project develops.

c. Elements Approach Worksheet

Provide an updated Elements Approach Worksheet that explains how the scheme addresses the major construction elements, systems, and/or performance requirements of the project, including any changes as a result of the project's development. This worksheet will continue to be resubmitted at future phase milestones as the project develops.

c. Design Development

Advance the work of Schematic Design Final to a coordinated submission developed for all disciplines. It must reflect the regulatory approval processes to date, incorporate design development resulting from Project Team meetings, and include all scope items in the project.

i. Regulatory Approvals

Requirements identified in earlier submittals must now be coordinated with project design, and a clear path toward complete project regulatory approval must be demonstrated.

ii. Coordinated Project Design

Project scope and program should be fully coordinated with interior layouts, exterior materials, siting, systems, and services, to present a complete building and site design.

iii. Report

1. Executive Summary: The executive summary must identify and explain any differences between the scope of work described in the Agreement and the submitted design.
2. Project Fact Sheet with information including, but not limited to, net and gross area, block and lot number, zoning district, Community Board, Council District, and street address. List all applicable codes and laws, design guidelines, or other standards.
3. Zoning and Building Code Analysis, and Filing Strategy, updated as required to reflect design development, to include:
 - a. Zoning Data including diagrammatic resolution of urban design requirements.
 - b. Historic district including location within and limits of the district, as applicable.
 - c. Construction classifications, number of stories, occupancy classification, fire protection of the structural elements, overall building area and area by floor, building height, etc.
 - d. Life safety plans indicating egress paths, travel distances, occupant loads, fire rated enclosures, corridor widths, exit door and stair capacity, etc.
4. ADA and Accessibility Analysis: The analysis provided in Schematic Design Final must be updated as required to reflect the development of the design and must include diagrams, narratives, or other means of indicating how the design is in conformance.
5. Narrative of Proposed Project Design, using presentation drawings to appropriate scale and photographs, as required.
 - i. Regulatory Requirements:

Identify requirements for all authorities having jurisdiction and describe how and when these will be satisfied. Identify any variances, waivers, or

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CCD-I's that must be filed and provide a status update and projected schedule for the same.

ii. Scope and Program:

Provide a Program Matrix indicating all required spaces, required areas and adjacencies, as well as provided spaces, areas and adjacencies. Provide an efficiency analysis and Net/Gross ratio.

iii. Exteriors and Siting (as applicable):

Describe the benefits of the proposed massing and building orientation including points of access to the building and site for users, utilities and vehicles. Indicate how the materiality of major horizontal and vertical exterior elements supports the above. Identify any implications of the project design including areas such as sustainability goals, traffic, or visual impact to the neighborhood context.

iv. Systems and Services:

Describe all major engineering systems and identify the benefits associated with each. Include consideration of building or site layout, utility connections and points of access, sustainability goals including water or energy use, level of effort required for maintenance and operations

v. Existing Structures:

Describe any impacts on existing structures on adjacent properties and/or potential impacts on the project due to possible future development on adjacent properties.

vi. Building Envelopes:

For projects involving building envelopes, describe the benefits of the proposed facade and fenestration treatments.

6. Exceptions Report: Document and summarize any approved changes in approach since the last submittal.

7. Project Program Matrix: Provide diagrams, a table, and/or a narrative that describes how the Program Elements have or have not been addressed in the proposed design, including such factors as square footages, adjacencies, and critical performance requirements. Include any proposed program elements not listed in the project requirements.

Calculations for area and building volume must be prepared in accordance with DDC definitions of net and gross area below. Net square feet, gross square feet, floor to floor height, and gross cubic feet must be indicated for each program space and subtotaled for each floor. Building totals must also be included for each category.

Gross Area measured to the outside of the building walls, in square feet.

Net Area is the cumulative usable space within the partitions of each programmatic area. Not included are access and service spaces, shafts, wall thicknesses and structural elements.

8. Updated material selections for interior and exterior.

9. Renderings or Perspectives - or photographs of renderings and models, as appropriate to the project design.

10. Engineering Narratives: In coordination with the Element Approach Worksheet, provide for all disciplines applicable to the project such as Structural, HVAC, Fire Protection, Electrical and Fire Alarm, and Plumbing, as described in the sections that follow below:
 - a. Structural Narrative:
 - i. Provide a list of all applicable codes, design guidelines or other accepted standards used in the proposed design.
 - ii. Provide a written description of the structural systems to be used on the project including foundations, substructure, superstructure, lateral force resisting systems, exterior cladding support, etc. Provide sufficient technical detail and information to fully describe these systems for engineering review purposes.
 - iii. Material Information:
 1. Concrete:

Provide basic material properties for concrete to be used for all the structural elements. Include compressive strength, entrained air content, maximum aggregate size, allowable w/c ratios, unit weight or aggregate type, and anticipated admixtures, etc. Pozzolans must be used to substitute for cement to the maximum extent possible.

 - a. Reinforcement:

Provide the ASTM material designations for the type of rebar to be used. Provide the type and dosage of structural synthetic fibers to be used for shrinkage and temperature stresses.
 - b. Joints:

Provide information on the type and spacing of all expansion, contraction and construction joints.
 2. Masonry:

Provide ASTM designations for the types of masonry units and mortar to be used on the project, such as bricks, CMU, etc.
 3. Steel:

Provide the ASTM material designations for the steel to be used on the project. Itemize by the AISC shape as applicable, including material types, grades and sizes.
 4. Steel Deck:

Provide basic information for the type of deck to be used, including profile and depth, ASTM material designation, span conditions, coatings, and method of attachment. Indicate areas where shoring of the metal deck will be required.
 5. Wood and Engineered Wood Products:

Provide the grade and species for all products in addition to their design requirements, spacing, and any special treatments required (pressure treated, fire resistance, etc.). Identify the type of sheet goods (OSB, plywood, etc.) in addition to their thicknesses and locations for use.

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iv. Structural Loading Information:

The following information and its source must be provided in an easy to understand tabular format:

1. Dead and live loads for all floors and roof.
2. Snow load including:
Flat roof snow load (Pf), snow exposure factor (Ce), snow load importance factor (I) and thermal factor (Ct).
3. Wind loads:
Basic wind speed, wind importance factor (I), wind exposure (C), internal pressure coefficient (GCpi) and wind pressures for components and cladding.
4. Earthquake loads:
Seismic importance factor, occupancy category, mapped spectral response accelerations (Ss and S1), site class, spectral response coefficients (Sds, Sd1), seismic design category, basic seismic force resisting system, response modification factor (R), system over strength factor (Ω_0) deflection amplification factor (cd), redundancy coefficient (ρ) and analysis procedure used for design.

v. Building Performance Basis of Design:

1. Maximum allowable drift criteria.
2. Maximum floor and roof live load deflections
3. Floor flatness and levelness numbers.
4. Maximum allowable horizontal and vertical deflection for members supporting exterior cladding and materials.
5. Floor vibration criteria.
6. Proposed methods of corrosion protection, if applicable.
7. The fire rating assumed for design of structural components.

vi. Special reports such as Geotechnical, Geological Hazard, and Blast Design reports and analyses, if applicable. Geotechnical report must include soil investigation data and foundation recommendations.

vii. A description of any deviations from the structural systems as approved in the Schematic Phase.

b. HVAC and FP Narrative:

- i. Indoor and outdoor design conditions for all spaces. Indicate occupied, 24-hour, and unoccupied conditions.
- ii. Temperature and humidity level to be maintained in each space.
- iii. Provide a dew point analysis at design conditions.
- iv. Ventilation rates, dehumidification, and pressurization criteria for all spaces. Indicate occupied, 24-hour, and unoccupied conditions.
- v. Equipment capacities, weights, sizes, sound power, and power requirements.

- vi. Description of the air-side and water-side systems and the associated components including operating characteristics, ranges, and capacities, spaces served, and special features.
 - vii. Description of control strategy and sequence of operations for all spaces. Indicate occupied, 24-hour, and unoccupied conditions.
 - viii. Noise control evaluation for projects that incorporate new or replacement of exterior mechanical/electrical equipment, as required to comply with NYC noise control requirements.
 - ix. Corrosion protection for underground metallic piping, if required by the Geotechnical Report.
 - x. Updated fuel and utility requirements.
 - xi. Building fire suppression systems.
 - xii. Smoke control system(s), where applicable.
 - xiii. Fire pump selection and ancillary equipment.
 - xiv. Special fire protection systems (e.g., kitchen extinguishing system), where applicable.
 - xv. A description of any deviations from the HVAC and fire protection systems as approved in the Schematic Design Phase.
 - xvi. New Equipment Connected to Existing System - For existing buildings, the report must state if the new equipment installation is connecting to an existing system, and, if so, whether the existing equipment is to be refurbished before the new connections are made.
- c. Electrical Narrative:
- A written narrative describing the electrical and low voltage systems and equipment selection including:
- i. Description of alternative power distribution schemes:
 - ii. Compare the advantages of each approach. Include the source of power, most economical voltage and metering.
 - iii. Proposed power distribution scheme:
 - iv. Provide a detailed description and justification for the selected scheme. Address special power and reliability requirements, including emergency power and UPS systems, as applicable.
 - v. Proposed lighting systems:
 - 1. Describe typical lighting system features, including fixture type, layout, and type of controls.
 - 2. Describe special spaces, such as lobbies, auditoriums, dining rooms, and conference rooms.
 - 3. Describe exterior lighting scheme.
 - 4. Describe lighting control scheme and daylighting.
 - 5. Describe the energy usage of the lighting system.
 - 6. Describe interface with BMS system, if applicable.
 - 7. Methods proposed for energy conservation and integration with BMS system, if applicable.
 - 8. Engineering analysis for demand limit controls.

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- vi. Utility company available short circuit at the service entry point.
 - vii. Fire Alarm System:
 - 1. Describe building fire alarm systems.
 - 2. Interface of fire alarm system with BMS and security systems.
 - 3. Review of building for compliance with life safety requirements
 - viii. Description of each proposed signal system:
 - 1. Description of proposed security systems' features and intended mode of operation.
 - 2. Proposed zone schedule.
 - 3. Proposed card access controls, CCTV assessment, and intrusion protection system, if applicable
 - ix. Proposed telecommunications infrastructure:
 - 1. Systems proposed for infrastructure and cabling to accommodate the communication systems.
 - x. Code criteria.
 - xi. A description of any deviations from the electrical systems as approved in the Schematic Phase.
- d. Plumbing Narrative:
- A written narrative describing the plumbing system and equipment selection including:
- i. Updated description of plumbing system, including domestic cold and hot water, sanitary and storm drainage, and irrigation systems.
 - ii. Evaluation of alternate sources for reheating of domestic water (solar or heat recovery).
 - iii. A description of any deviations from the plumbing systems as approved in the Schematic Phase.
- e. Hazardous Materials Narrative
- Indicating probability or known extent of hazardous materials and necessity for abatement.
- f. Sustainability and Resiliency per Chapter 08:
- Sustainability and Resiliency Include demonstration of Appendix G compliance if the project is located within a Special Flood Hazard area.
- g. Percent For Art:
- If applicable, per Chapter 09: Percent for Art.
- h. Phasing of Construction and Delivery Requirements:
- Provide an updated narrative description and diagrams for proposed phasing and staging, including requirements for swing space as required.
- i. Report Appendix
- i. Finalized Owner's Project Requirements (OPR) and Basis of Design (BOD). Update these throughout this phase to reflect ongoing decisions. See Chapter 07: Commissioning for a more detailed description of these documents.

- ii. Project Meeting Minutes - All meeting minutes, including bi-weekly progress meetings, must be provided as an appendix to the Design Development Report

iii. Technical Drawings

1. Landscape Architectural/Civil Engineering Drawings:
 - a. Site removals and demolition plan identifying materials for reuse or recycling. Any invasive pest host species plants requiring pruning or removal must be indicated. Disposal protocols are mandated by New York State Department of Agriculture Markets (NYSDAM). Removal of invasive plant species may also be required.
 - b. Exterior paving including sidewalks, driveways, yards, curbs, and curb cuts.
 - c. Adjacent structures including walls, fences, railings, and buildings, including number of stories.
 - d. Landscaping including plantings and street trees. When street trees are in pavement include tree pit material, ground cover, and planting.
 - e. Grades to show the surface flow characteristics of the site. Indicate spot grades at entrances, property lines, walls, stairs, drain inlets, and major changes in site slope.
 - f. For new and existing buildings, indicate number of stories, clearance from building lines, finish floor elevations, building footprint, and overhangs.
 - g. Encroachments on site and all easements.
 - h. Show all basic surface and subsurface utilities, including drainage, lighting, electrical, water, irrigation, site utility systems, equipment, fixtures, controls, and any subsurface structures.
 - i. Integration of artwork as applicable.
 - j. A full planting list with Latin botanical names, common names, sizes and root containment types, assets, and constraints. This plant schedule must comply with the most current recommendations from the NYSDAM and NYC Parks regarding invasive pests and species or hosts.
 - k. All proposed site-related details, including site related structures and furnishings, their footings, foundations, and reinforcement. Include pertinent drainage structures, pavements, lighting, signage, other relevant materials, and all dimensions and finishes.
 - l. Sections and elevations of such key elements as fences, walls, gates, site furnishings, and significant new plantings. These must be coordinated with the appropriate architectural drawings. Buildings must be represented only with their volumes, windows, doors, omitting details unnecessary to site design.
 - m. Builders Pavement Plan must be initiated at this phase if required.
 - n. Stormwater Management design calculations and drawings.
 - o. Erosion and Sedimentation Control Plan must be included to prevent soil erosion, sedimentation of sewer systems, and airborne dust pollution during construction.
 - p. Demonstrate compliance with Accessibility Standards.

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2. Architectural Drawings:
 - a. Site Plans must include:
 - i. Current topographic and boring survey performed by DDC based on the approved boring plan generated by the Consultant.
 - ii. Site Layout Drawing must describe the entire site within the property lines, as well as sidewalks and other access ways outside of the lot lines as established by DDC. It must be fully labeled and based on a surveyed point of beginning.
 - iii. Project Limit Line, indicating the extents of the work area, and all areas outside the project boundary.
 - iv. Scale must be 1"=20'-0" unless otherwise approved by the DDC Project Manager.
 - b. Architectural Floor Plans must include:
 - i. Dimensions including room sizes, maneuvering clearances, and room areas, etc.
 - ii. Building lines, property lines and column grids.
 - iii. Room Names/Identification of Program Elements as programmed in the project requirements.
 - iv. Material indications as per conventional graphic standards indicating all new construction. New construction should be graphically distinct from existing construction to remain.
 - v. Built-in Furniture and Equipment must be indicated on all plans in order to confirm required egress and accessibility.
 - vi. Finished Floor Elevations must be indicated at every location where the floor elevation changes, such as at top and bottom of stairs, landings, and ramps. Floor elevations must also be indicated for the floor level in general.
 - vii. Integration of artwork if participating in Percent for Art.
 - viii. Fire ratings of walls, partitions, ceilings, shafts, roofs, and structural elements such as columns and slabs
 - c. Architectural Reflected Ceiling Plans must include:
 - i. Light Fixtures at all locations such as ceilings and walls, as proposed.
 - ii. Air Supply Diffusers and Return Grilles.
 - iii. Ceiling Heights at every location where the ceiling elevation changes.
 - iv. Materials.
 - v. Keying in of all building section and detail markers.
 - d. Architectural Exterior Elevations and Building Sections must include:
 - i. Exterior Elevations of all vertical exterior surfaces.
 - ii. Longitudinal and transverse Building Sections.
 - iii. Site Features such as walls, fences, trees, artwork, street furniture, and adjacent structures.
 - iv. Materials, fully annotated.
 - v. Finish Floor Elevations on building sections and elevations in coordination with plans.

- vi. Floor-to-Floor Heights on building sections.
- vii. Finished Grades on all elevations and building sections in coordination.
- e. Wall sections, typical for each exterior wall type, including foundations and roof assemblies:
- f. Partition types detailed and cross-referenced to floor plans.
- g. Preliminary Door Schedule: At a minimum indicating dimensions, operation, fire rating, and material.
- h. Interior Elevations, perspectives, and axonometric illustrations must include:
 - i. Interior Elevations, developed, if requested, into one-point perspective sketches to illustrate how all the elements and surfaces are coordinated, and how the ceiling, walls, and floor interface.
 - ii. Axonometric Illustrations, if requested, will detail sections through complicated connections and material intersections.
 - iii. Materials including trim, window treatment, registers, controls, textures, and colors.
 - iv. Built-in Furniture and Equipment indicating layout, configuration, and material.
 - v. Room Designations.
 - vi. Vertical Dimensions, floor elevations, and floor-to-ceiling heights.

3. Interior Design Drawings:

When indicated the Agreement, the Consultant is responsible for various tasks regarding the selection of furniture. "Preliminary Layout Drawings" of furniture and "Coordination of NIC Items are base services, as described below. If directed or required by the Agreement, the perform any of the other tasks, also described below:

- a. Preliminary Layout Drawings – Floor Plans

Prepare preliminary furniture layout plans to illustrate a conceptual understanding of the function of each room as per Sponsor Agency requirements. Layouts for systems furniture must be prepared with manufacturer's templates. The plans must incorporate all loose furniture, systems furniture, built-ins, and equipment, including kitchens and laboratory equipment, and must demonstrate compliance with egress and accessibility requirements.
- b. Coordination of Not-in Contract (NIC) Items

The Sponsor Agency is responsible for specifying and purchasing equipment such as photocopy machines, fax machines, and computers unless otherwise specified in the project requirements. It is the responsibility of the Consultant, however, to verify that all such equipment fits within the designated space, and to provide for mechanical, electrical, telephone service, and any other physical need for the operation of these items. Such items should be labeled NIC in the drawings.
- c. Furniture Cost Estimate

Provide a preliminary cost estimate for all furniture. The estimate must identify the vendor, item description, order number, quantity, and the costs.
- d. Furniture Selection

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4. Graphic Design and Wayfinding Design, as required
5. Vertical Transportation Drawings
 - a. Key Plans indicating all areas of work.
 - b. Floor Plan of elevator machine room showing all elevator control equipment, power equipment, and mechanical equipment.
 - c. Lobby and machine room plans.
 - d. Riser Diagram indicating elevator installation, floors, elevator travel, and openings.
 - e. Elevations and Sections of elevator cab.
 - f. Sketches for controls such as call buttons.
 - g. Demonstrate compliance with Accessibility Standards

6. Structural Engineering

The design must be developed from the approved Schematic Design Final Submittal. The design and the structural systems must have been developed and defined in accordance with the loads tabulated in the loading data. For rehabilitation projects, all structural work must be shown on separate structural framing plans and detail drawings independent of architectural drawings.

Drawings must clearly indicate the new members and the existing to remain and/or to be modified.

- a. Demolition drawings, along with support of adjacent structures, as applicable.
- b. Foundation Plans indicating:
 - i. All footings and/or pile caps with major sections and details referenced.
 - ii. The allowable soil bearing pressure for footings and the acceptable bearing strata for deep foundations.
 - iii. Footing/pile cap elevations.
 - iv. Major foundation sections and details indicating type, size, reinforcement and pertinent waterproofing details. Provide footing schedules with representation for grade beam and pile cap details, as applicable.
 - v. All structural slabs and slabs on grades to be detailed with proper subgrade compaction and necessary waterproofing details.
 - vi. All necessary supports for cladding (such as brick shelf, embedded plates, anchors, etc.), as applicable.
 - vii. Typical elevator and sump pit details.
 - viii. Slab-on-grade construction and contraction joints must be shown in a separate plan.
- c. Where underpinning is required:
 - i. Show on plan, and on the sections, the extent and details of any underpinning that may be required.
 - ii. All relevant information of the adjacent foundations must be shown. This information must have been confirmed by probes, test pits or other methods as necessary.
 - iii. Typical underpinning details must be shown for information.

- d. Framing Plans must indicate the following
 - i. Building expansion joints.
 - ii. Elevations, sizes, thickness and layout of all structural components (such as slabs, beams, columns, trusses, etc.)
 - iii. All slab edges, opening and penetrations must be located and dimensioned.
 - iv. Lateral load resistance system must be clearly defined. Elevations of the lateral system must indicate all applicable forces acting on the lateral system.
 - v. Column schedule.
 - vi. Weights and locations of major mechanical equipment and their supporting systems.
- d. Provide major typical details for structural components and their connections.

7. HVAC and Fire Protection:

Drawings submitted (site plan, floor plans, flow diagram, and control diagrams) must indicate new systems and existing systems to remain and/or to be modified. Submitting photographs in lieu of drawings showing existing systems is not allowed. However, photographs may be submitted in addition to drawings of existing systems.

- a. Demolition drawings, along with support of adjacent structures, as applicable.
- b. Site Plan
 - i. HVAC Floor Plan(s):
 - ii. Single line piping and ductwork schematic layout — with preliminary sizes indicated.
 - iii. Vertical risers, shafts, stacks, and chimneys.
 - iv. Drawings must show:
 - v. Interior zone terminal air units.
 - vi. Perimeter zone terminal units.
 - vii. Zoning.
- c. Quarter-inch scale drawings of mechanical equipment room(s) showing all mechanical equipment, ductwork, and piping, including equipment access and service requirements in plans, elevations, and sections.
- d. Roof plan showing all roof-mounted equipment and access to roof.
- e. Single line schematic flow and riser diagram(s):
 - i. Air, water, and steam riser diagrams.
 - ii. Airflow quantities and balancing devices for all heating/cooling equipment.
 - iii. Flow/energy measuring devices for water and air systems for all cooling, heating, and terminal equipment. Flow diagrams must be provided for new systems and existing systems being modified.
- f. Automatic control diagram(s):
 - i. Control flow diagrams showing all sensors, valves, and controllers (analog and digital).

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- ii. Sequence of operations for all systems that describes the control sequences during occupied, 24-hour operations, and unoccupied conditions.
 - iii. Control diagrams must be provided for new BMS systems and for new and existing systems when inter-phasing with new BMS system.
 - g. Schedules: Provide schedules of major equipment that includes chillers, boilers, pumps, air handling units, terminal units, cooling towers, and all equipment required for 24-hour operation.
 - i. All major Mechanical System equipment and components must be clearly identified with all operating performance requirements, utility requirements and operating efficiencies. Mechanical equipment schedules must include as a minimum for each entry: system equipment tag, description of service, physical size, operating weight, performance capacity, operating efficiency, motor brake horsepower, motor horsepower, electric voltage, amperage, phase, frequency, fossil fuel type, fuel consumption rate, fuel delivery pressure and/or temperature requirements, water and/or steam consumption rates, water and/or steam delivery pressure and/or temperature requirements, basis of design equipment manufacturer and model number.
 - ii. For existing equipment to be overhauled or replaced, make a complete schedule of all HVAC equipment. The schedule will list working condition, requirements for repair, and appropriate remaining potential useful life.
 - h. Air terminal devices.
 - i. Air balance relationships between spaces.
 - j. Fire protection floor plan(s) showing:
 - i. Equipment spaces for fire protection systems (e.g. fire pump, fire command center).
 - ii. Fire protection water supply lines and fire hydrant locations.
 - iii. Standpipes and sprinkler risers.
 - iv. Zoning.
 - v. Location of special fire protection requirements (kitchens, computer rooms, etc.)
 - vi. Existing equipment.
 - vii. Riser diagrams for sprinkler system.
- 8. Electrical Engineering:

Drawings submitted (site plan, floor plans, single line diagram, and riser diagrams) must indicate new systems and existing systems to remain and/or to be modified. Submitting photographs in lieu of drawings showing existing systems is not allowed. However, photographs may be submitted in addition to drawings of existing systems.

 - a. Demolition drawings, if required. Show on separate demolition plans electrical equipment required to be removed or relocated. Show source of power from which this equipment must be disconnected. Indicate staging plans, if required.
 - b. Electrical Service Room Plan and elevation of service entrance equipment and other electrical equipment, such as panel boards and fused switches.

- c. Site Plan:
 - i. Proposed site distribution for power and communications, proposed service entrance and location of transformers, generators, and vaults, etc.
 - ii. Proposed location of electrical service room, telephone service, property lines, manholes, hand-holes, duct banks for power, telephone, and cable television. Coordinate electric service room location and anticipated points of entry.
 - d. Floor Plans:
 - i. Proposed major electrical distribution scheme and location of electrical rooms and closets and communications closets.
 - ii. Equipment spaces for fire alarm panels and fire command center.
 - iii. Proposed major routing of major electrical feeder runs, bus ducts, communication backbone systems, and security systems.
 - iv. Plan layouts of electrical rooms, showing locations of major equipment, including size variations by different manufacturers.
 - v. Lighting layouts of typical rooms and spaces.
 - vi. Single line diagram of the building power distribution system.
 - vii. Motors and motor control center(s) locations.
 - viii. Typical power wiring – lighting, power, and controls.
 - ix. Site lighting and site electrical outlet systems, ISO foot-candle curves
 - e. Riser diagram for fire alarm system.
 - f. Single line diagram of signal system including telephone, data, security, public address, and others.
 - g. Security system site plan.
 - h. Proposed locations for CCTV, duress alarm sensors, and access controls for parking lots.
 - i. Security system floor plans:
 - j. Proposed locations for access controls, intrusion detection devices, CCTV and local panels.
 - k. Building grounding system.
 - l. Lightning protection system.
9. Plumbing Engineering:
- Drawings submitted (site plan, floor plans, single line diagram, and riser diagrams) must indicate new systems and existing systems to remain and/or to be modified. Submitting photographs in lieu of drawings showing existing systems is not allowed. However, photographs may be submitted in addition to drawings of existing systems.
- a. Demolition drawings, if required.
 - b. Site Plan:
 - i. Outside services exiting or entering the building and means of stormwater detention or retention.
 - ii. Related appurtenances, such as catch basins, inlets, manholes, and pipe routing.

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- iii. Fuel dispensers and fuel storage tanks, where applicable.
 - c. Plumbing floor plan(s):
 - d. Proposed building zoning and major piping runs.
 - e. Locations of proposed plumbing fixtures and equipment, including: tanks, sewage ejectors, sump pumps, interceptors, meters, backflow preventers, hose bibs, hydrants, water booster pumps, hot water heaters, hot water circulation pumps, stormwater storage tanks with all required pumps and filters.
 - f. Piping material and related equipment for the various systems.
 - g. Roof and site drainage and all related penetrations, drains, water retention, and typical details.
 - h. Systems schematics and flow diagrams.
 - i. Riser diagrams for the various systems.
10. Hazardous Materials Survey Documents:

Provide adequate documentation to DDC's Office of Environmental and HazMat Services (OEHS) unit so that the extent of project scope can be fully understood.

DDC's OEHS unit will then provide an environmental survey and report to be incorporated into the Construction Documentation. OEHS's work product includes the following: .

a. Accessible Hazards

A preliminary survey of the project site noting existing environmental conditions and properly defining the limits of accessible suspect hazards that may be disturbed, altered, demolished, or affected by the proposed work. Such environmental hazards may include, but are not limited to, asbestos building materials, lead-containing paints, PCBs from electrical transformers, underground storage tanks, and similar conditions.

b. Inaccessible Hazards

Identification and location of any inaccessible suspect-hazards and arrangements for exploratory probes, physical penetrations, sample collection, and analytical tests to determine whether suspect-hazards are present within the boundaries of the scope of work.

c. Assessment

- i. A comprehensive environmental survey and hazard assessment, with a subsequent formal report, to determine the presence and location of hazardous materials and/or environmental conditions. The survey report will document the materials and conditions found and expected to be impacted by the scope of construction. The report must include the following information:
- ii. A brief discussion of the services provided.
- iii. An inventory of environmental hazards including, but not limited to, asbestos, lead, soil contamination, PCBs, mold and biological hazards, or similar environmental concerns.
- iv. A written assessment of all hazards including cost of abatement or remedial work.
- v. Drawings or sketches showing approximate locations where samples were collected.

- vi. An estimate of the quantities and conditions of the hazards identified in the survey.
- vii. A summary of all samples, analyses, chains of custody, and laboratory certifications.
- viii. Diagrams, photographs, sketches, drawings, etc., as necessary to document the conditions.

v. Specifications

Outline specifications fully coordinated with project scope and intent (see Chapter 05: Bid Packaging Requirements). This can include a Table of Contents of division headings, as well as "Part 1" of the complete specification that is anticipated for each construction element (e.g. general information and summary).

vi. Project Controls

See Chapter 04: Project Controls.

vii. Design Compliance Forms

1. Project Performance Matrix

Provide an updated Project Performance Matrix that explains how the scheme responds to all identified Project Goals. This matrix will continue to be resubmitted at future phase milestones as the project develops.

2. Compliance Approach Worksheet

Provide an updated Compliance Approach worksheet, coordinated with the Zoning, Building Code Analysis, and Filing Strategy narrative in the Design Development Report, that explains how the scheme responds to all the identified the regulatory requirements and applicable laws that are anticipated to have significant impact on the Project, including any changes as a result of the project's development.

3. Elements Approach Worksheet

Provide an updated Elements Approach Worksheet, coordinated with the engineering narratives in the Design Development Report, that explains how the scheme addresses the major construction elements, systems, and/or performance requirements of the project, including any changes as a result of the project's development.

viii. Miscellaneous

1. Models

A presentation model is suggested for all new buildings and additions and is required if indicated in the Agreement.

- a. Models must be complete in scope, detail, and color selection
- b. Models must be titled with the names of the project, the Consultant, the Sponsor Agency, and DDC.

2. Renderings

Submit, if required by the Agreement, perspective renderings and other presentation materials suitable for reproduction. These renderings and other presentation materials belong to DDC and must be used at public meetings, in publication, and on the DDC website.

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d. 75% Construction Documentation

- a. Renderings must be titled with the name of the project, the name of the Sponsor Agency, and DDC Division of Public Buildings
 - i. Digital files are also required and may be transmitted electronically
 - ii. A signed release form must accompany all renderings and photographs
3. Material Boards
 - a. Exterior Materials

Boards must clearly show the relationship of all new and existing exterior materials and finishes. If submittal to other agencies such as PDC or LPC is required, see related Sections for submittal information.
 - b. Interior Materials

Boards must clearly show the relation of all new and existing interior materials and finishes. If submittal to other agencies is required, see related sections for submittal information.

d. 75% Construction Documentation

Document detailed design intent for all construction elements, and the resolution of all proposed pathways to regulatory compliance.

The work of all required disciplines must represent an equally advanced level of development and must be coordinated with no room for unreasonable additional interpretation. The submittal requirements below describe a minimum, and do not constitute any limitation on the documentation required to properly contract the construction of the project or limit the Consultant's liability for errors and omissions.

For multiple contract construction projects, the documents shall clearly indicate separation of contract work among the various contracts. See General Information: E: Multiple Contracts for more information Procurement.

i. Technical Drawings

As applicable to the project, including but not limited to:

1. Civil Engineering:
 - a. Utility connections
 - b. Site grading
 - c. Storm water management
 - d. Pavement and curb details
 - e. Builder's Pavement Plan
2. Landscape Architecture:
 - a. Site Plan with major grade elevations, land contours, materials, and dimensioned locations of primary site features. Site grading must indicate existing and new grade elevations and land contours, at appropriate intervals, adjacent to the building and around the site. Elevations must be given in feet with decimals to the nearest 1/100th.
 - b. Builder's Pavement Plan
 - c. Planting Plan

- d. Site demolition, protection, and removals plan
 - e. Site Materials Plan
 - f. Elevations of adjoining buildings and foundations
 - g. Storm drainage plan.
 - h. Site Lighting and Site Electrical Plan
 - i. Site Irrigation Plan
 - j. Details of all site design elements
 - k. ADA and Accessibility compliance
3. Architectural, Interior Design, and Graphics/Wayfinding:
- a. General Notes Sheet includes General Conditions and DOB notes, project scope, zoning analysis, code analysis, including occupancy and construction classification data and egress plans as applicable. ADA and accessibility compliance diagrams.
 - b. Phasing/Staging Plans as applicable.
 - c. Site Survey as provided by DDC to be incorporated in the Consultant's documents.
 - d. Demolition and selective removals plans showing all required removals, extents, limits, and protection.
 - e. Site Plan including property line, lot and block, adjacent properties and streets, etc.
 - f. Floor and roof plans, including column grid and dimensions.
 - g. Building sections and exterior and interior elevations as applicable, with materials shown.
 - h. Detailed wall sections and enlarged details.
 - i. Wall sections must indicate all wall assemblies, building conditions, insulation materials, ratings, assemblies, and characteristics complete in all details. Indicate fire ratings of walls, partitions, ceilings, shafts, roofs, and structural elements such as columns and slabs. Adjacent construction must be indicated for complete context.
 - j. Reflected Ceiling Plans showing all light fixtures, exit signs, air supply diffusers and return grilles, sprinkler heads, and smoke detectors, etc. Material and level changes must be indicated.
 - k. Door, Window, and Finish Schedules, at a minimum.
 - l. Graphic Design and Wayfinding schedules and details.
 - m. Furniture Layouts.
4. Vertical Transportation:
- a. Floor Plans of all equipment such as controllers, main disconnect switches, motor generator sets, inter-communication equipment, ventilation, and air-conditioning equipment.
 - b. Riser Diagrams
 - c. Indicating elevator installation, floors covered, all stop distances, total travel distance, buffer, and door openings.
 - d. Car Details

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- e. Provide details for internal finishes, construction of car, emergency exits, lighting (including emergency lighting), handrail, exhaust fan, flooring, and all accessory equipment.
 - f. Detail Drawings of hall buttons, lanterns, and car operating panel.
 - g. Emergency Recall
 - h. Shaft, footing, and structural calculations.
 - i. Sections and Details for elevator shaft, elevator door head, sill, jambs, etc.
 - j. ADA and accessibility compliance
5. Structural Engineering:
- a. Demolition or removal plans, where applicable
 - b. Full set of structural construction drawings including, but not limited to:
 - i. Drawings must be fully dimensioned, noted and detailed for construction.
 - ii. Basic wind speed, miles per hour, wind importance factor, building category, wind exposure, and the applicable internal pressure coefficient must be indicated.
 - iii. Foundation, Floor, and Roof Framing Plans. All major openings through primary structural members such as walls, floors, roofs, beams etc. must be fully dimensioned in the plans.
 - iv. Structural sections, details, and elevations.
 - v. Type and strength of all structural materials.
 - vi. Design Soil Bearing Value and pile type and capacity – soil bearing pressure and lateral earth pressure must be indicated.
 - vii. Bottom elevations of all footings, estimated pile lengths, and underpinning requirements.
 - viii. Joints
 - ix. Provide a plan clearly indicating and dimensioning all construction, control, and contraction joints.
 - x. Design Live Load
 - xi. Load criteria for all floor live loads, roof live load, roof snow load, wind load, earthquake design data, and special loads must be shown on drawings.
 - xii. Live load reduction of the uniformly distributed floor live loads, if used in design, must be indicated.
 - xiii. Required construction procedures.
 - xiv. Special shoring or bracing requirements.
 - xv. Seismic design criteria, such as seismic use group, special response coefficients SDs and SD1, site class, basic seismic-force-resisting system, design base shear, and analytical procedure must be indicated, and any additional information required by NYC Building Code.
 - xvi. Soil Boring Plan and soils analysis, provided by DDC and incorporated into the drawing set.
 - xvii. Boring logs, provided by DDC and incorporated into the drawing set.
 - xviii. Blast-resistant requirements, if applicable.
 - xix. Indicate the codes and standards used to develop the project.

- xx. Construction Tolerances - the Construction Documents must indicate specific tolerances for all structural components used in the project, which must be in accordance with ACI 117, AISC Code of Standard Practice and other national standards.
 - c. Schedules: Schedules for foundations, columns, walls, beams, slabs, and decks, as applicable.
 - d. Structural Details: All typical details must be shown on the drawings. Sizes, locations, and details of major structural elements and their connections, including equipment supports and site structures, base plates and anchor bolts, camber, shear stud types, and lengths.
 - i. Location and details of all construction, control, and expansion joints.
 - ii. Substructure waterproofing details – show extent of waterproofing and water-stop systems.
 - iii. Details for anchorage of building system equipment and non-structural building elements (may be shown on mechanical, electrical, or architectural drawings, as applicable).
 - iv. Criteria for the layout and details of small penetrations to be done in the field may be provided in the typical details. No new or additional openings through any structural member may be made in the field without the written authorization of the EOR.
6. HVAC and Fire Protection Drawings
- a. Demolition drawings, as applicable. Indicate all existing systems to be demolished.
 - b. HVAC Floor Plan(s) showing all components of all systems, including room-by-room duct distribution, diffuser, and register locations. Fully describe existing systems and/or integration of existing or new system:
 - i. Double line piping and ductwork layout criteria.
 - ii. Show interior zone terminal air units.
 - iii. Show perimeter zone terminal units.
 - iv. Show locations of automatic control sensors (e.g. temperature, relative humidity, CO₂, etc.).
 - v. Refrigerant pipe routing to and from interconnected pieces of equipment must be sized and shown on the HVAC plans. Indicate all filter dryers, solenoid valves, strainers, pressure relief valves, flexible connections, receivers, and sight glasses.
 - c. Roof Plan showing all roof-mounted equipment and access to roof.
 - d. Mechanical details
 - i. Quarter-inch scale drawings of mechanical equipment room(s) showing all mechanical equipment, ductwork, and piping, including equipment access and service requirements in plan, elevations, and sections.
 - ii. The Consultant shall clearly indicate the manufacturer's required access space or tube-pull space for all mechanical equipment criteria.
 - iii. Provide installation details of each equipment type used on the project.
 - iv. All valves must be shown. Indicate locations where temperature, pressure, flow, contaminant/ combustion gases, or vibration gauges are required, and if remote sensing is required.

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- v. Mechanical room piping, and ductwork layout must be double line.
All ductwork and piping 3" diameter and larger located in mechanical equipment rooms are to be indicated to scale.
- vi. Sections:
If the mechanical equipment room contains multiple pieces of equipment, provide at least two sections to show the elevations of all equipment, piping, ductwork, and structural supports. Scale for sections to be 1/4" = 1'-0" or larger. Ductwork to be shown in double line drawing.
- vii. Mechanical Equipment Room:
 - 1. Additional sections
Where mechanical equipment units, ductwork and piping are located in tight spaces, sufficient sections shall be developed to show elevations of all equipment, piping, ductwork, and structural support. All sections to be 1/4" = 1'-0" or larger.
 - 2. Composite drawings
For equipment rooms, congested corridors, and all areas involving the work of more than one trade, provide composite sections showing all new and existing equipment and conditions.
- viii. All dampers – both fire dampers and volume control dampers – must be shown. Ductwork ahead of the distribution terminal must be indicated in true size (double line).
- ix. Single line schematic flow and riser diagram(s):
 - 1. Water flow quantities and balancing devices for all heating/cooling equipment.
 - 2. Provide complete schematic flow diagrams for all systems, both new and existing to be modified, showing all necessary equipment and valves. Systems include steam, chilled water, condenser water, hot water, fire protection, and fuel oil.
 - 3. Airflow quantities and balancing devices for all heating/cooling equipment, air-handling, air-conditioning, and exhaust systems. The Consultant shall indicate all automatic controls, dampers, temperature sensors, control valves, return/relief air routing, and maximum and minimum air quantities for supply, return, and relief air. Provide control system legend.
 - 4. Show location of all flow/energy measuring devices for water and air systems for all cooling, heating, and terminal equipment, and their interface with the BMS.
 - 5. Refrigerant piping schematic flow diagrams.
 - 6. Flow and riser diagrams shall be provided for new systems and existing systems being modified.
- x. Automatic control diagram(s):
 - 1. Control flow diagrams showing all sensors, valves, and controllers (analog and digital inputs for controllers, front end equipment, and system architecture).
 - 2. Diagrams to show control signal interfaces, complete with sequence of operation of all heating, ventilating, and cooling systems during occupied, 24-hour operations, and unoccupied conditions.

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- c. Floor Plans:
 - i. Show lighting and power distribution (both on normal and emergency power), communications raceway distribution, and locations of fire alarm devices and annunciator panels.
 - ii. Floor plans must show detailed layout of major conduit runs to eliminate conflicts and interference with other trades.
 - iii. All home runs must be shown and properly indexed as to number and size of conduit, wires and destination.
- d. Riser diagrams and/or single line diagrams:
 - i. Single line riser diagram of primary and secondary power distribution must include: normal power, emergency power, and UPS. Single line power riser diagram must include distribution panels and downstream panelboards, major mechanical equipment, emergency panels, and transformers.
 - ii. Single line diagram for fire alarm system.
 - iii. Single line diagram of signal system including: telephone, intercom, data, security, public address, and other systems shown on the drawings.
- e. Lighting fixture details with details of construction and mounting support.
- f. Control Wiring Diagram, where necessary
- g. Details of underfloor distribution system
- h. Layout of electrical equipment spaces drawn to scale
 - i. Show all electrical equipment; include scaled detailed elevations of substation transformers, main switchboards, distribution panelboards, and disconnect switches within the electric service rooms.
 - ii. Schedule for switchgear, switchboards, unit substations, motor control centers, and panelboards. Schedules must include circuit destination, load in volt-amperes, overcurrent setting, load summary, connected, spare, and demand load.
 - iii. Grounding diagram
 - iv. Lightning protection system
 - v. Site lighting and site electrical outlet systems, ISO foot-candle curves
 - vi. Drawings submitted (site plan, floor plans, single line diagram and riser diagrams) must indicate new systems and existing systems to remain and/or to be modified.
 - vii. Complete phasing plan (if required) for additions and alterations
 - viii. Security system site plan:
 - ix. Final locations for all security devices and conduit runs
 - x. Security system floor plans:
 - xi. Layout of all security system devices
 - xii. Building grounding system
 - i. Lighting Fixture, control, and zoning schedules.
 - j. Utility company letters (electric, telephone, CATV, etc.) and utility company responses, including service layouts

8. Plumbing Engineering
 - a. Demolition drawings, if required.
 - b. Drawings submitted (site plan, floor plans, single line diagram and riser diagrams) must indicate new systems and existing systems to remain and/or to be modified.
 - c. Site Plan:
 - i. Connections
 - ii. Location of storm and sanitary sewers, connection to existing sewers, pertinent inverts, size and location of means for stormwater detention or retention, water services, domestic and fire, and the location of gas service, integrated with existing systems, indicated on the site plan and coordinated with floor plans.
 - iii. Grade elevations.
 - iv. Provide grade elevation of catch basins, manholes, and drains.
 - v. Gasoline and diesel systems.
 - vi. Fuel dispensers and fuel storage tanks, where applicable, including details and notes.
 - d. Plumbing floor plan(s):
 - e. Plumbing layout and fixtures, equipment and piping; large scale plans c. should be used where required for clarity.
 - f. Location and size of all roof drains, standard or interior piping for storm, sanitary, cold water, hot water, circulating, gas, fire standpipe, or removed systems or elements indicated on separate plans.
 - g. Size and capacity indicated for all oil separators, hot water storage tanks, sump pumps, sewage ejectors, and house pumps, circulating pumps, stormwater detention tanks, suction tank, and stormwater tanks.
 - h. Systems schematics and flow diagrams.
 - i. Riser diagrams for waste and vent lines.
 - j. Riser diagrams for domestic cold and hot water lines.
 - k. Riser diagrams for all other systems (gas, fuel, etc.)
 - l. Schedule: Plumbing fixture schedule.
8. Plumbing Engineering:
 - a. Demolition drawings, if required.
 - b. Drawings submitted (site plan, floor plans, single line diagram and riser diagrams) must indicate new systems and existing systems to remain and/or to be modified.
 - c. Site Plan:
 - i. Connections
 - ii. Location of storm and sanitary sewers, connection to existing sewers, pertinent inverts, size and location of means for stormwater detention or retention, water services, domestic and fire, and the location of gas service, integrated with existing systems, indicated on the site plan and coordinated with floor plans.
 - iii. Grade elevations.

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- iv. Provide grade elevation of catch basins, manholes, and drains.
 - v. Gasoline and diesel systems.
 - vi. Fuel dispensers and fuel storage tanks, where applicable, including details and notes.
 - d. Plumbing floor plan(s):
Plumbing layout and fixtures, equipment and piping; large scale plans should be used where required for clarity.
 - e. Location and size of all roof drains, standard or interior piping for storm, sanitary, cold water, hot water, circulating, gas, fire standpipe, or removed systems or elements indicated on separate plans.
 - f. Size and capacity indicated for all oil separators, hot water storage tanks, sump pumps, sewage ejectors, and house pumps, circulating pumps, stormwater detention tanks, suction tank, and stormwater tanks.
 - g. Systems schematics and flow diagrams.
 - h. Riser diagrams for waste and vent lines.
 - i. Riser diagrams for domestic cold and hot water lines.
 - j. Riser diagrams for all other systems (gas, fuel, etc.)
 - k. Schedule: Plumbing fixture schedule.
9. Hazardous Materials:

Unless otherwise determined by DDC, all Hazmat removal design work required will be performed through DDC OEHS (Office of Environmental and HazMat Services); documents will be provided to the Consultant.

The Consultant must be responsible to review and coordinate the Hazmat survey abatement scope with the project work scope and identify related or affected project scope items. The Consultant must incorporate the documents within the construction documents and coordinate with other required work.

ii. Technical Calculations

1. Structural Calculations

Submit a comprehensive set of structural design calculations, including any working drawings or sketches that may be required for their proper supplementation. If analysis software is used for the design of systems or members, DDC may request the submittal of analysis models as part of the review process. A narrative of the input and results for computer-generated calculations for the recommended structural concept should be contained in the calculations as well.

All calculations/design notes must be arranged in a logical sequence, with sheets sequentially numbered and properly indexed. Whenever a figure is obtained from some other page of the calculations, refer to that page number in parentheses next to the figure used in the calculation.

Provide sketches showing framing plans with dimensions and grid lines, freebody/force diagrams in support of the calculations. Refer to drawing numbers where the calculated items are shown on the drawing: for example, structural sizes, connection details, etc.

- a. The calculation package will include, but not be limited to:
 - i. Design load parameters.
 - ii. Building model indicating reactions from major loading combinations such as gravity, wind, seismic etc.
 - iii. Sample calculations of major structural components showing clearly the loads and load combinations used for the design of the members.
 - iv. Calculations for buildings located in flood areas must include flood design load parameters.
- b. Account for the following when preparing calculations:
 - i. Gravity loads
 - ii. Lateral loads
 - iii. Foundations
 - iv. Thermal loads, where significant
 - v. Vibration propagation
 - vi. Progressive collapse
 - vii. Supports for non-structural elements, including mechanical and electrical equipment on the roof and in equipment rooms, louvers, and other penetrations.
 - viii. Steel connections
 - ix. Blast analysis
- 2. HVAC and Fire Protection Calculations and Energy Analysis:
 - a. Heating and cooling load calculations.
 - b. Systems pressure static analysis at peak and minimum block loads for occupied and unoccupied conditions.
 - c. Building pressurization analysis for peak and minimum block loads for occupied and unoccupied conditions.
 - d. Acoustical calculations for peak and minimum block loads for occupied conditions.
 - e. Sound level calculations.
 - f. Breakdown of individual peak space loads and ventilation loads and a summary of simultaneous peak loads for equipment selection.
 - g. Preliminary hydraulic calculations.
 - h. Flow and head calculations for pumping systems for peak and minimum block loads for occupied conditions.
 - i. Final selection of equipment and cut sheets of selected equipment.
 - j. Psychrometric calculations of the selected HVAC systems at full and partial loads (partial loads at 25%, 50%, and unoccupied periods).
 - k. Energy consumption calculations and analysis.
 - l. Fuel consumption estimates.
 - m. Sizing of fuel storage and distribution system.
 - n. Sizing of vibration isolators for mechanical equipment.

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

d. 75% Construction Documentation

- o. Water consumption calculations and analysis of make-up water for HVAC systems.
 - p. For any fire modeling generated results, submit a copy of the input data and all pertinent program material and assumptions required to understand the output and the analysis. A narrative of the input and results must be part of the calculations.
 - q. Fire protection water supply calculations, including water supply flow testing data.
 - r. Fire pump calculations, where applicable.
 - s. Water reserve calculations for sprinkler system.
 - t. Smoke control calculations, where applicable.
 - u. Stairway pressurization calculations, where applicable.
- 3. Electrical Engineering Calculations:
 - a. Load calculations.
 - b. Calculations for lighting, power, and equipment summary.
 - c. Power density analysis for lighting in each area.
 - d. Emergency power design calculations, if applicable.
 - e. Life-cycle cost analysis of luminaire/lamp system and associated controls.
 - f. Emergency power calculations, including generator calculations and starter loads, where applicable.
 - g. Illumination level and lighting power calculations.
 - h. Lighting power densities.
 - i. Short circuit calculations.
 - j. Provide short circuit calculations for all affected points in the distribution system. Indicate AIC ratings of incoming service, panelboards and overcurrent protective devices. Indicate short circuit values on appropriate points of the single line diagram.
 - k. Provide voltage drop calculations for all affected points in the distribution system. Indicate voltage drop values on appropriate points of the single line diagram.
 - l. Where applicable, submit a protective device coordination study indicating selective coordination between the service switch or circuit breaker and the distribution switches and/or the switchboards, and downstream of the switchboard.
 - m. Arc Flash Study.
- 4. Plumbing Engineering Calculations and water analysis:
 - a. Include entire building, including drainage calculations and hot water heating calculations.
 - b. Water supply calculations, including pressure.
 - c. Sanitary waste sizing calculations.
 - d. Water consumption calculations and analysis, including make-up water for HVAC systems, domestic water consumption, and water consumption for irrigation.

iii. **Specifications**

See Chapter 05: Bid Packaging Requirements.

iv. **Project Controls**

See Chapter 04: Project Controls.

v. **Design Compliance Forms**

1. Regulatory Approvals

All correspondence, applications, objections, approvals, findings, test results, etc. received to date must be submitted with the documents for review. Submit a status report on all required submittals to the DDC Project Manager showing actual submittal dates, approvals received, and any unresolved issues including any objection issued by the regulatory agency. File the project with the Department of Buildings prior to the Construction Documents submittal. Refer to Chapter 10: Regulatory Approvals for additional information.

2. Load Letters:

Provide copies of connection or service upgrade requests to utilities, including load letters and preferred point of entry for new utilities.

3. Long Lead Items:

Prepare a separate list of all items that require early procurement. These long lead time items, which may significantly impact project duration and coordination, must have previously been discussed during project design.

4. Proprietary items:

Provide a separate list of all items that are proposed to be procured from a proprietary or sole source during construction. These proprietary items, which need to be approved by the Sponsor Agency and DDC, must have been previously discussed during project design.

5. Project Performance Matrix

Provide an updated Project Performance Matrix that explains how the scheme responds to all identified Project Goals. This matrix will continue to be resubmitted at future phase milestones as the project develops.

e. 100% Construction Documentation

Complete documentation of the project design Document detailed design intent for all construction elements, and the resolution of all proposed pathways to regulatory compliance.

Documents shall reflect any changes, revisions, clarifications, or additional information and/or details as a result of DDC review comments and recommendations, and all regulatory agency approvals. .

i. **Technical Drawings**

Completed for full project design in all applicable disciplines and updated to reflect all project progress.

ii. **Technical Calculations**

Completed for full project design in all applicable disciplines and updated to reflect all project progress.

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

f. Bid Documents

iii. Specifications

See Chapter 05: Bid Packaging Requirements. Technical specifications shall be developed to a 100% level of completion for every involved project discipline, including Commissioning specifications (see Chapter 07: Commissioning). The specifications must reflect any changes, revisions, clarifications, or additional information as a result of DDC review comments and recommendations, and all regulatory agency approvals.

iv. Project Controls

See Chapter 04: Project Controls.

v. Design Compliance Forms

1. Regulatory Approvals

At this stage of the project all submissions to DOB and other regulatory agencies and utility companies should be completed. All correspondence, approvals, findings, and test results shall be submitted with the documents for review and record. The Consultant shall submit a final status report on all required submittals to the DDC Project Manager showing actual submittal dates, approvals received, and any unresolved issues, including any objections issued by the regulatory agency.

2. 75% Construction Document Comment Response

DDC will issue design review comments based on the consultant's 75% Construction Document submission.

Prepare an itemized response to each comment that describes how the project design and documentation now addresses the concern identified in the review comment.

The response should demonstrate an understanding of the underlying principles of each requirement and present an approach that relates specifically to this project. An affirmative response without explanation, such as "will comply," does not responsively complete this section.

3. Project Performance Matrix

Provide an updated Project Performance Matrix that explains how the scheme responds to all identified Project Goals.

f. Bid Documents

After approval of the Construction Document drawings, technical specifications, and the Addendum to the General Conditions, the Consultant shall deliver electronic copies of drawings, specifications, and estimates in DDC approved format for permanent DDC records with the bid document submissions.

i. Technical Drawings

1. Drawings Format

Full size drawings shall be on reproducible media as directed by the Project Manager. They shall conform to the approved deliverables identified in the 100% Construction Documents.

2. Conformity with Comments

Drawings shall fully conform to 100% Construction Document Review Comments by DDC.

3. Sign and Seal

Include identification, professional seals and signatures of the Consultant and any sub-consultants on all drawings to meet the requirements of Article 27-157 of the New York City Administrative Code.

4. Approvals

Submit original of all drawings or documents bearing stamps of approval by each regulatory agency, including but not limited to DOB, LPC, and PDC.

ii. **Specifications**

See Chapter 05: Bid Packaging Requirements.

iii. **Design Compliance Forms**

See Chapter 05: Bid Packaging Requirements. Electronic file of final cost estimate in DDC approved format must be submitted.

g. Bid and Award Deliverables

i. **Summary of Deliverables**

During the period of bid advertisement and analysis, the Consultant shall prepare the following, as necessary:

1. Addenda

Addenda drawings and specifications shall be produced by the Consultant as required in response to Contractor questions and requests for information arising during the Pre-Bid Meeting or as otherwise necessary for the clarification of the Bid Documents. The Consultant shall submit all addenda, including drawings and specifications, to the DDC Project Manager and the DDC A&E Unit for review and approval. The DDC Project Manager will inform the Consultant of all format requirements, including the specific addendum number.

2. Filing and Signature

The Consultant shall sign and seal all necessary drawings. Drawings which need to be filed with, or presented to, regulatory agencies, including, but not limited to, the NYC DOB, shall be prepared and filed by the Consultant. The Consultant shall send regulatory agency approvals to the DDC Project Manager. Changes that require approval by the Landmarks Preservation Commission will be filed by DDC. Changes that require approval by the Public Design Commission will be filed by the Consultant at the direction of the DDC Public Design Commission Liaison.

3. Bid Tabulation Analysis

The Consultant shall attend the Bid Opening and review the Bid Tabulation available at the end of the Bid Opening to assist in discovering any bid anomalies.

4. Issue for Construction Set

The Consultant shall assemble and submit a complete set of Construction Documents that incorporates all addenda, RFI responses, sketches.

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

h. Construction Administration Services

h. Construction Administration Services

i. Basic Services during Construction

1. Field Inspection Report

- a. The Field Inspection Report shall be issued monthly at a minimum.
- b. The content of the Field Inspection Reports is essential to assuring the quality of the construction work being installed. Detailed observations on current work, field conditions, connections, clearances and Contractor capability will assist the DDC Construction Project Manager in quality control efforts. The Field Inspection Report is the vehicle by which the Consultant is empowered to assure that ongoing construction work complies with the design intent, details, and specifications, which form the basis of the Contract Documents.
- c. The Field Inspection Reports are to be prepared by members of the Consultant team who are thoroughly familiar with the project.
- d. The Field Inspection Reports are to be submitted in writing to the DDC Construction Project Manager within five working days of the site visit. This will enable the DDC Construction Project Manager to address the issues identified in the reports at the next project site meeting.
- e. The Field Inspection Reports shall be signed and sealed by the appropriate Registered Architect, Professional Engineer or Registered Landscape Architect.

2. Bi-Weekly Job Site Meetings and Minutes

a. Consultant Meeting Attendance

To facilitate completion of the work according to the standards of quality and the schedule set by the Construction Documents, the Consultant is required to attend all project meetings. Sub Consultants, as deemed necessary by the DDC Construction Project Manager, are also required to participate in the relevant portions of such meetings. These include the Construction Kick-off (Pre-Construction) meeting, job site meetings held every two weeks, and all meetings relating to the design.

b. Purpose of the Meetings

At the job site meetings the progress of the work is reviewed and the work coordinated between the various Prime Contractors. Attendees identify and confirm the next scheduled activities of work and eliminate, if possible, potential delays due to deliveries, field conditions, staffing or swing space conflicts.

c. Meeting Minutes

The DDC Construction Project Manager, or CM when applicable, will prepare and distribute the bi-weekly job site meeting minutes within three working days of the meeting. Copies shall be distributed to all meeting attendees and others as identified. The DDC Construction Project Manager, or CM, will prepare the meeting agenda and conduct the job site meetings.

3. Review of Shop Drawings, Samples, Cuts and Mock-Ups

The Consultant shall receive shop drawings, samples, cuts, and mock-ups directly from the Contractor for review and approval. The Consultant shall review, approve, and distribute submittals per procedures described in the General Conditions. If applicable, submittal review shall be coordinated with the Commissioning Agent, as described in Chapter 07: Commissioning Section of this Guide.

- a. Submittal Requirements (See Chapter 05: Bid Packaging, Section C)
The Submittal Requirements shall be presented to the Contractor at the Construction Kick-off (Pre-Construction) Meeting. Contractors shall be responsible for filling in the item submission dates and the delivery dates for approval by the DDC Construction Project Manager.
 - b. The Consultant shall receive copies of the Contractor prepared approved schedules for the submission of shop drawings and samples and shall review these lists every two weeks. The Consultant shall review and direct modifications if required. Updated copies shall be submitted to the DDC Construction Project Manager.
 - c. The Consultant shall ensure that the updated copies of the approved schedules for shop drawings and samples shall include all information necessary to indicate progress on processing submitted to the DDC Construction Project Manager.
 - d. Listed information shall include the names of subcontractors, the titles of shop drawings and the due dates in accordance with the approved schedules. These include dates of issue, receipt, checking, return for correction, resubmission and final acceptance, along with other pertinent information.
 - e. The Consultant shall act promptly and systematically to check all shop drawings, materials samples, and items exhibited in mock-ups to determine if the submittals are in accordance with the Contract Documents and specifications.
 - f. Sheeting, Bracing and Underpinning.
The Consultant shall review all necessary documentation for sheeting, bracing and underpinning.
 - g. Indicate Necessary Changes:
 - i. The Consultant shall indicate in writing on all submittals the changes necessary to conform to the Contract Documents and specifications within ten working days of the submittal. Responses by the Consultant shall be to both the submitter and the DDC Construction Project Manager.
 - ii. The Consultant shall make no changes to the design or changes causing additional cost or project duration without prior written approval from DDC.
 - h. LEED Submittals (see Chapter 08: Sustainability and Resiliency)
4. Review of Schedules of Items and Costs
The Consultant shall promptly examine, recommend adjustments to, or indicate approval of, the schedules of items and costs submitted by the Contractor. This will allow DDC to establish a reasonable basis for subsequent partial payments to Contractors.
 5. Recommendation of sub-contractor Qualifications:
The Consultant shall review the credentials of the proposed sub-contractors for compliance with the special experience requirements.
 6. Interpretation of Contract Documents:
 - a. Clarification/ Requests for Information (RFI)
The Consultant shall interpret Contract Documents, provide clarifications, and make recommendations, by drawing and in writing.

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. DESIGN AND CONSTRUCTION PHASE DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

h. Construction Administration Services

b. Prepare Supplementary Drawings

The Consultant shall promptly prepare any supplementary drawings that may be necessary for clarifying the contract documents.

c. Sealed and Signed

Supplementary drawings are to be sealed and signed by the Consultant or the sub-consultant, as appropriate, and shall issue revised or supplemental drawings to DDC as a Bulletin. All such issuances shall be recorded in a log by the Consultant.

d. Permit Record Set: Obtain Required Approvals

The Consultant shall obtain any approvals for supplementary drawings as necessary from applicable regulatory agencies and utilities. A complete set of the approved project documents from all regulatory agencies must be submitted to DDC. See Chapter 10: Regulatory Approvals for more information

7. Review of Contractor Coordination Documents

a. The Consultant shall review the Contractor's coordination documents and promptly report in writing to the DDC Construction Project Manager on issues relating to meeting the project schedule and achieving the quality of work specified in the Contract Documents.

b. The Consultant shall systematically monitor the progress of all construction work scheduled and promptly report to DDC any conditions that may cause delays in the completion of the work.

8. Resolution of Design Errors or Omissions

a. The Consultant shall promptly submit to DDC any necessary correspondence, supplementary or revised drawings, specifications, negotiated cost estimates and any other documentation or coordination material to resolve design errors or omissions.

b. Upon approval of the required changes in the contract documents by DDC, the Consultant shall promptly provide to the Contractors all the documentation necessary to execute the work as revised.

9. Installation of Furniture and Equipment

a. Site Visit

The Consultant shall conduct a site visit to survey the conditions at the site along the full path of the delivery, two weeks prior to the scheduled delivery. The Consultant shall identify problems such as unfinished ceilings, unpainted walls, and missing electrical work.

b. Efficient Furniture Installation

DDC must be notified immediately by the Consultant if there are any conditions which will prevent efficient furniture installation.

c. Room Furniture Layouts

The Consultant shall provide copies of individual room furniture layouts. These shall be posted, prior to delivery, at each respective room entrance.

d. Location of all Furniture and Equipment

The Consultant shall verify that all furniture and equipment is placed in the correct room and in the proper location as per contract room plans.

10. Construction Punch List

At Substantial Completion the Consultant shall participate in the preparation of Construction Punch Lists. The Consultant shall submit a list of items for the Punch List to the DDC Construction Project Manager within ten working days of the request of such a list. This list of items shall be based on a final site visit and Field Inspection Report, and on any unresolved problems that have been the subject of earlier reports or job site meetings. The Construction Punch Lists, prepared by the Consultant, the Contractor, and the DDC Construction Project Manager, will be compiled at a job site meeting and shall be part of the minutes of that meeting.

11. LEED Certification (see Chapter 08: Sustainability and Resiliency)

2) CAPITAL PROJECT SCOPE DEVELOPMENT (CPSD) DELIVERABLES

a. Interim Reports

The Consultant shall submit interim reports for review in graphic and descriptive form. As many interim reports shall be generated as may be reasonably required in the conduct of the study to effectively represent the effort and to obtain an approval from the DDC Front End Planning Program Executive representing acceptance by the Sponsor Agency, the A&E Review Team, and others as necessary.

b. Report Preparation

The Consultant should submit data for comments as directed by the Sponsor Agency, which also must approve the data before the Consultant prepares the final report.

c. Final Report

i. The Final Report shall contain:

1. Summary of Requirements
2. Graphic and Descriptive Documentation
3. Site Development Assets and Constraints
4. Space Requirements
5. Alternative Schemes
6. Order of Magnitude Construction Cost Estimate – for each alternative.
7. Project Schedule
8. Risk Assessment

ii. The Final Report should describe the required analyses and conclusions:

1. Existing Conditions Survey and Documentation
2. Zoning Analysis
 - a. Identify relevant issues.
 - b. Provide massing diagrams showing all height, set-back, and sky exposure plane requirements.

CHAPTER 03: DESIGN & CONSTRUCTION PHASE DELIVERABLES

A. PROJECT DELIVERABLES

2) CAPITAL PROJECT SCOPE DEVELOPMENT (CPSD) DELIVERABLES

3. Building Code
 - a. Identify all applicable codes, local, state and federal laws, including demonstrating compliance with the Accessibility Standards.
 - b. Identify building and space occupancy groups, construction classifications, egress requirements, fire separation requirements, energy code and other applicable code requirements.
 - c. Identify code requirements for live loads, ventilation, fire protection, light levels, emergency lighting and power, plumbing fixtures, environmental noise levels, etc.
 - d. Identify the applicability of local, state and federal environmental and regulatory processes and permits.
4. Site Analysis and Analysis of Existing Conditions
5. Space Programming and Planning
6. Anticipated Growth or Diminishment
7. Work Space Standards
8. Special Purpose Areas
9. Building Service Areas
10. Adjacencies and Work Flow Diagrams
11. Furniture and Equipment
12. Programmatic Inventory and Use
13. Engineering Requirements
14. Service Requirements
15. Sustainable Design Requirements (see Chapter 08: Sustainability and Resiliency)
16. Active Design Requirements
17. Risk Assessment

d. Master Plan

If the Agreement for a study calls for the generation of a Master Plan, the Consultant shall develop an accompanying Master Plan Report to include:

i. Scope of Study:

A Master Plan may encompass not only building design and construction, but also environmental, ecological, regional, land use, economic development, traffic, and community issues as well.

ii. Multi-Disciplinary Approach:

Because of the comprehensive, long-term nature of a Master Plan's scope, the approach to and implementation of the Master Planning process must be multidisciplinary throughout its duration. In addition to the standard design professionals, Master Planning may require sub-consultants from such specialized fields as historic preservation, demography, sociology, traffic and transportation, urban planning, environmental planning, and economic development.

iii. Inventory and Analysis:

Master Plans shall examine a project's ecological, microclimatological, urban design, historical, zoning, and regulatory characteristics, as well as the concerns of pertinent community-based groups and jurisdictional entities as they relate to the project site and any existing or proposed structures. Beyond these requirements, Master Planning requires broad data collection and evaluation to assess the long-term impacts such data would have upon the ultimate planning and design recommendations to be generated. Master Planners shall conduct their inventory to best synthesize data into planning and design issues. These issues must then be prioritized to guide recommended development options.

iv. Programming:

The Master Plan will investigate the known and anticipated growth needs of the Sponsor Agency in the years to be covered by the Master Plan.

v. Further Development:

After inventory, analyses, issue identification and prioritization, and the development of various proposals, the Consultant, the Sponsor Agency, and DDC will choose to pursue one recommended option. This option will be developed to document every phase of the multi-year plan, and will include a program for Phase One, and possibly Phase Two of the plan, based on available funding

vi. Progress Meeting Minutes.

B. GENERAL INFORMATION

Prepare and submit digital and printed copies of each required deliverable to DDC unless otherwise specified in the Agreement.

Ownership of Documents: All BIM, CAD files, and documents are the property of DDC and must be maintained as record documents by the DDC Project Manager for each project.

1) AGENCY CONTACT INFORMATION

a. Correspondence:

Unless specifically directed otherwise in the RFP, all correspondence must be:

i. Addressed to:

1. (Name of Project Manager)
Public Buildings Division
NYC Department of Design and Construction
30-30 Thomson Avenue
Long Island City, New York 11101

ii. Captioned With:

1. FMS ID Project Number
2. Project Title and Location Contract Number Correspondence Subject

b. Telephone:

The agency telephone number is 718-391-1000. All staff at DDC can be reached with this number.

2) REPORT SUBMISSION FORMAT REQUIREMENTS

a. Binding with a back and front cover

b. Clear organization with a Table of Contents

c. PDF Digital File

d. Two printed copies

3) DRAWING SUBMISSION FORMAT REQUIREMENTS

a. PDF Digital File of Project Drawings

b. Digital Drawing Files:

Furnish electronic files in addition to any prints or PDFs required at the end of each design phase. Provisions must be made for automatic quantity take-offs to be derived directly from the BIM models and CAD drawing files.

- i. Building Information Modeling (BIM): See "DDC BIM Guidelines" for requirements. BIM models must be provided to DDC at each design phase.
- ii. CAD Digital Drawing Files

c. 2 Hard (Printed) copies at ½ size

4) DRAWING STANDARDS

a. Standard Sheet Sizes:

Drawings must be on sheets sized 24x36 inches, with minimum borders of two inches on the left side to allow for binding and half inch on the right side, top, and bottom. Other sheet sizes will be permitted if required by specific project needs and approved in writing by DDC.

b. NYC DOB B-SCAN Requirements:

Drawings must be formatted to comply with the current version of NYC DOB's B-SCAN Drawing Standards, including requirements for such things as the Drawing Set, Drawing Sheet, title block standards, and discipline designations.

c. DDC Forms and Graphics:

Use DDC's standard title blocks, graphics, and blank forms, as provided by DDC.

d. Addenda Drawings

Addenda drawings are to be issued before bids are received and are to be numbered consecutively within each discipline or contract. Addenda shall bear the notation, "PRELIMINARY- NOT FOR CONSTRUCTION", prior to inclusion in the Contract Documents.

e. Supplementary Drawings

Supplementary Drawings are issued after bids have been received and are to be numbered consecutively within each discipline or contract. Supplementary drawings shall bear the notation, "PRELIMINARY- NOT FOR CONSTRUCTION", prior to inclusion in the Contract Documents.

5) MULTIPLE CONTRACTS - DIVISION OF RESPONSIBILITY IN WICKS LAW PROJECTS

If the DDC PM and Project Team identify the project to be procured under multiple contracts, the below is guidance on how to document certain elements of construction work. Please see Chapter 05: Bid Packaging for more information on methods of procurement.

a. Electrical Work Associated with HVAC And Fire Protection

- i. The Electrical Contractor shall furnish and install the power wiring to starters, motors and in-sight disconnects.
- ii. The HVAC/Fire Protection Contractor shall furnish, and the Electrical Contractor shall install, unless integral with the equipment, all starters and disconnects.
- iii. Furnishing and Installation of all control devices and all control and interlock wiring for equipment furnished under the HVAC/Fire Protection Contract shall be by that Contractor, including any power required for any control device. This power is to originate from a four circuit panelette in each mechanical equipment room. If there is no electric panel in the room, the Electrical Contractor is to furnish and install this panelette.
- iv. The Electrical Contractor is to provide a feed terminating in a junction box or disconnect. The HVAC/Fire Protection Contractor is to do all wiring from the junction box or disconnect to the boiler.
- v. Where the Electrical Contractor is to do power wiring to specific equipment, details of that electrical work are to be shown on the electrical drawings.
- vi. Motor Control Centers may be furnished by either the HVAC/Fire Protection Contractor or preferably the Electrical Contractor, but they must be installed and wired by the Electrical Contractor, except for external control wiring, which shall be installed and wired by the HVAC/Fire protection Contractor.
- vii. Sprinkler systems, including flow and temper switches are to be furnished and installed by the HVAC/Fire Protection Contractor. The Sprinkler Alarm Panel, and all wiring is to be furnished and installed by the Electrical Contractor and must be shown on the Electrical Drawings.

b. Electrical Work Associated with General Construction or Plumbing

- i. Power and control wiring for electrical equipment furnished under General Construction or plumbing contracts is to be furnished and installed by the Electrical Contractor and must be shown on the Electrical Drawings.
- ii. Luminous ceilings are to be furnished and installed by the Electrical Contractor.
- iii. Lighting fixture supports shall be furnished by the Electrical Contractor and installed by the General Contractor

c. Elevator Work

- i. The Elevator Disconnect near the machine room entrance, including the feeder and the controller, shall be provided by the Electrical Contractor. All other related elevator electrical and control work is to be provided by the elevator sub-contractor.

- ii. The Electrical Contractor is to provide an electrical outlet box and telephone junction box at the midpoint of the elevator shaft. The telephone junction box is to be connected with empty conduit to the nearest telephone strip box.

d. Standpipe and Sprinkler Responsibilities

- i. The Plumbing Contractor is to provide water service for the sprinkler, standpipe and combined standpipe /sprinkler systems, from the main up to and including the first Outside Stem and Yoke (OS&Y) valve and the detector check valve.
- ii. The Plumbing Contractor shall provide the standpipe system, including the fire pumps, but not the sprinklers.
- iii. The HVAC and Fire Protection Contractor is to provide the combined sprinkler/standpipe system and the separate sprinkler system from the detector check valve, including the fire and booster pumps. This work does not include the water service up to and including the detector check valve that is to be provided by the Plumbing Contractor.
- iv. The Electrical Contractor is to provide all related wiring.
- v. Coordinate all requirements with DDC as these requirements relate to union jurisdiction in New York City.

e. Fuel Tanks

- i. The HVAC and Fire Protection Contractor shall furnish and install the fuel tanks, associated piping and miscellaneous controls for heating oil or emergency generators.
- ii. The Plumbing Contractor shall furnish and install all equipment for gasoline or diesel fuel dispensers.
- iii. The Electrical Contractor is to provide power for any required pumps.
- iv. The General Contractor, HVAC/Fire Protection or Plumbing Contractor is to provide for excavation, gravel, backfill, support pads and manhole access. A determination as to which Contractor shall do the work is to be made by DDC in conjunction with the Consultant.

f. Contractor Responsibility

Each Contractor is to perform all necessary rigging, cutting and patching, excavation and backfill for the work of their Contract, unless otherwise specifically noted on the plans and specification by the Consultant.

g. Access Doors

Access doors are to be furnished by the respective trades for installation by the Contractor for General Construction

CHAPTER 04: PROJECT CONTROLS

- A. INTRODUCTION
- B. PROJECT SCHEDULE
- C. CONSTRUCTION COST ESTIMATING

A. INTRODUCTION

The Design Consultant is responsible for adhering to the approved project schedule and budget. The Design Consultant will identify in advance and gain DDC approval of any variance from the approved project schedule and budget. The Design Consultant will comply with the requirements found in this chapter addressing (B) Project Schedule, and (C) Construction Cost Estimating, along with the corresponding sections in DDC's Project Controls Guideline.

B. PROJECT SCHEDULE

The Design Consultant will receive a copy of the Integrated Project Schedule developed during Front End Planning by DDC to represent the total project duration from Initiation to Closeout, including the Design Phase, DDC Legal Review, which occurs after Bid Packaging Approval, the Bid and Award period, and the Construction Phase.

1) DESIGN PROJECT SCHEDULE

The Design Consultant is responsible for developing and maintaining the Design Project Schedule, which includes the Design Schedule, the Design Schedule Narrative, and the Risk Register. The Design Project Schedule will be updated and presented at every bi-weekly meeting and submitted for review monthly.

As part of each biweekly design meeting, the Design Consultant will provide the current schedule, identify upcoming activities, and clearly indicate any area where there is schedule slippage, or risk of delay. Should delays or schedule slippages be caused by the Design Consultant, DDC may require the Design Consultant to produce a recovery schedule and add additional resources to the project until the original Baseline dates are achievable once more.

The Design Schedule establishes target milestone dates and durations. The Design Schedule shall capture all design deliverables as defined in Chapter 03 and the Project Objectives. Consultants shall develop the schedule using the Critical Path Method (CPM) and industry standard project scheduling software; and may be required to develop the schedule using DDC's enterprise scheduling system. The Design Schedule shall be developed following the Association for the Advancement of Cost Engineering (AACE) Scheduling Best Practices, and will conform to the following:

a. Design Schedule

The Design Schedule shall separate the Design phase into the different subphases according to the assigned Project Delivery Track for the project, including: Pre-Schematic Design (PSD), Schematic Design (SD), Design Development (DD), 75% Construction Documents (75% CD), and 100% CD (including Bid Package approval). The Design Schedule shall also include:

- i. All activities with realistic durations occurring within each subphase, for the preparation and development of each of the design deliverables required of the project scope.
- ii. Field visits, surveys, investigations, probes and monitoring, material testing, hazardous material testing, and/or site analyses that must be performed for the development of the design deliverables.
- iii. All associated review activities and approvals related to each of the design deliverables by project stakeholders, including the sponsor agency and DDC A&E, CM (if applicable), and DDC Bid Packaging Unit.

- iv. All permitting and regulatory approvals required from outside agencies and entities (e.g., PDC, LPC, NYC DOB, FDNY, NYC DEP, Parks, Con Edison, etc.)
- v. All scheduled Design Progress Meetings and Milestone Submissions.
- vi. Critical decision-making that would impact construction schedule, such as phasing, swing space, etc.
- vii. Impacts to the design completion milestone date due to approved modifications to the original project scope as authorized by the DDC Program Unit. All such impacts must be differentiated from original project scope schedule activities.
- viii. Any additional activities as required by the DDC PM.

b. Design Schedule Narrative

The Design Consultant shall provide a monthly Schedule Narrative detailing the project scope, schedule milestones and explanation of variances between the baseline and forecasted milestone dates, changes to the project scope, and any risks or issues that may impact the project schedule. The monthly report shall also include the updated Design Consultants project-specific Risk Register.

c. Risk Register

A risk register is a formal record of identified risks, typically including additional summary information such as description, risk manager, risk owner, risk assessment, response strategy for treatment and control of the risk, and risk status. The Risk Register must also account for risks associated with project costs. See Section C.2.a. below.

d. Submission and Acceptance

The Design Consultant shall submit an electronic preliminary Design Project Schedule (native file in the format required by DDC) for review by DDC within fourteen (14) CCDs of Design NTP. DDC will provide comments on the Design Schedule Baseline within fourteen (14) CCDs. The Design Consultant must incorporate these comments into the baseline and resubmit within seven (7) CCDs. DDC will review this submission and, if acceptable, will establish these documents as the Design Schedule Baseline.

e. Updates

Once accepted by DDC, The Design Consultant shall update the Design Project Schedule monthly, using the last Friday of the month as the data date, and submit to the DDC PM/Project Team for review.

- i. Updates shall be provided to DDC in electronic native file format (as will be required by DDC) and modified based on project changes and per comments received by DDC's Project Team or DDC Project Controls.
- ii. The update will show the actual start date, actual completion date, and the percent complete of each activity. It will also include revised projections for future dates.

2) CONSTRUCTION SCHEDULE DURING DESIGN (CSDD)

For projects not supported by Construction Management services during design, the Design Consultant shall be responsible for the production of a Construction Phase schedule. This schedule, known as the Construction Schedule During Design (CSDD) will accurately represent the logical sequence and duration of the presumed Contractor's schedule. CSDD shall have a Schedule Narrative that provides details to the development of the schedule, to the extent that they are known during design, including:

- a. Overall period of performance of construction until Substantial Completion
- b. Assumptions made in the development of the schedule (e.g. construction phasing, sequences and constraints)

The CSDD and Schedule Narrative must align with the Design Consultant's cost estimate for each design phase. The schedule shall be developed following the Association for the Advancement of Cost Engineering (AACE) Scheduling Best Practices, according to the restrictions and constraints that the Contractor will be held to. Additionally, it shall conform to the following requirements:

- a. The CSDD must include the project Milestones required by DDC including:
 - i. Construction Notice to Proceed.
 - ii. Interim construction milestones.
 - iii. Construction Completion.
 - iv. Project Closeout.
- b. The intent is for the CSDD to progressively become more comprehensive with completion of each of the subphases of Design. Using AACE's 37R-06 "Schedule Levels of Detail – As Applied in Engineering, Procurement, and Construction," as a reference, the Design Consultant will be responsible for a CSDD deliverable that meets the following requirements during each subphase:
 - i. Schematic Design: The Design Consultant shall be responsible for the development of a Level 1 Schedule.
 - ii. Design Development: The Design Consultant shall be responsible for the development of a Level 1 or 2 Schedule, as directed by DDC.
 - iii. 75% Construction Documents: The Design Consultant shall be responsible for the development of a Level 2 or 3 Schedule, as directed by DDC.
 - iv. 100% Construction Documents:
 - 1. The Design Consultant shall be responsible for the development of a Level 2 or 3 Schedule, as directed by DDC.
 - 2. The Design Consultant shall develop the CSDD such that it will determine the overall duration to be used in the Construction Contract under Schedule A, and will be used by DDC during the review of the Contractor's submitted Preliminary and Baseline Construction Schedules.

C. CONSTRUCTION COST ESTIMATING

The Consultant shall maintain an accurate and up-to-date accounting of estimated construction costs. Detailed cost estimates shall be submitted at each phase of work in a format compliant with DDC requirements and at an appropriate level of development as indicated in Chapter 03: Design and Construction Phase Deliverables. The DDC Standard Construction Cost Estimate Template will be provided by the DDC Project Manager and is accessible via the DDC website.

Throughout the course of the project the DDC Project Manager will facilitate a series of Cost Estimating Workshops in which the Project Team and the Consultant's Cost Estimator shall participate. During these workshops, the Project Team will establish values for project-specific factors that impact cost but may not be reflected in the design documents. These include Overhead and Profit, Construction Contract Allowance, Bid Contingency, etc. as referenced in the DDC Standard Construction Cost Estimate Template. Initial values for these factors are included in the Front End Planning Report and must be verified and updated as needed throughout the course of the project. The Consultant should document these values and any revisions to them as may occur in the Basis of Estimate (BOE) submissions required in each phase.

2) CONSTRUCTION COST ESTIMATE CLASSIFICATION

The table below illustrates the characteristics of the construction cost estimate as it evolves through each relevant stage of design:

AACE Cost Estimate Classification	Maturity Level of Design Deliverables	Methodology	Expected Accuracy Range
Class 5	FEP - Front End Planning / Pre-Schematic Design	SF factoring, parametric models, judgement or analogy	L: -20% to -30% H: +30% to +50%
Class 4	SD - Schematic Design	Parametric models, assembly driven models	L: -10% to -20% H: +20% to +30%
Class 3	DD – Design Development	Semi-detailed unit costs with assembly level line items	L: -5% to -15% H: +10% to +20%
Class 2	50% - 75% Construction Documents	Detailed unit cost with forced detailed take-off	L: -5% to -10% H: +5% to +15%
Class 1	100% CD	Detailed unit cost with detailed take-off	L: -3% to -5% H: +3% to +10%

a. Class 5 Estimates

Factored or parametric model methodology can be an effective way to obtain rough cost estimates when limited design information is available typically during front end planning. It is typically a high-level unit-cost comparison utilizing historical cost data as a benchmark (e.g. cost per square foot for similar projects). Draw upon the estimator's experience with similar facilities and adjust for known project complexities and size or capacity differences.

b. Class 4 Estimates

Parametric models or assembly driven models can be used, typically during the schematic design stage. For example, the estimate may contain composite costs for each major element (e.g. cost per square foot for finishes, MEP, and structure).

c. Class 3 Estimates

Semi-detailed unit costs with assembly-level line items introduce composite unit costs for the various aspects of the project, typically during the design development stage of design.

d. Class 2 Estimates

Detailed unit cost with forced detailed take-off can be used when sufficient design detail is available to determine material take-offs for some project elements, typically at construction document design stage. Utilize a forced takeoff to determine quantities when the design is still missing a detailed material count (e.g. utilizing average pound per square foot for reinforcing steel in a concrete slab).

e. Class 1 Estimates

Detailed unit cost with detailed take-off can be used when sufficient design detail is available to determine material take-offs for all project elements, typically at the Construction Documentation design phase.

For more detailed information about the estimate classification system, please reference the Association for the Advancement of Cost Engineering (AACE) International Recommended Practice RP-56R-08 "Cost Estimate Classification System – As Applied for the Building and General Construction Industries."

2) DEVELOPING THE COST ESTIMATE

a. Cost Estimating Workshops:

Prior to the development of the first Cost Estimate for the project, the Project Team should communicate the overall output expectations and review the cost estimating process and methodology. Discussions should include the project scope and the documents that have been included with the cost estimate. The discussions and workshops should be ongoing throughout the Design phase and may also include:

- i. Key design features and potential cost-driving items not explicitly identified within the design documents.
- ii. Gap analysis that details the expected level of scope definition, including specific discipline completion percentages.
- iii. Risk Register.
- iv. Relevant historical cost data.
- v. Specific areas of change since the previous estimate.

- vi. Revisions made to the design specifically to address overruns identified in previous estimates.
- vii. Data sources, like labor, materials, and escalation.
- viii. Estimator's understanding of market conditions impacting bid costs.
- ix. Level of scope definition to ensure appropriate estimate class and range of accuracy.
- x. Class of cost estimate.
- xi. Work Breakdown Structure (WBS) requirements subject to approval by DDC. Multiple cost estimates must be produced as necessary to meet regulatory and capital eligibility requirements. For multi-scope and/or multi-location projects (or any non-contiguous spaces), separate the estimates by scope and location. Some examples (including but not limited to), a roof replacement and boiler replacement occurring in the same building require separate estimates; envelope projects with multiple facades require multiple estimates. DDC will review and approve the WBS. DDC may also provide the estimator with historical data that can be useful when preparing the cost estimates. Such data can include prior bid variance analysis and range of contingencies, overhead and profit, and escalation typically adopted in cost estimates of prior projects.

b. The Cost Estimate must be based on the following at a minimum:

- i. Project scope description and Work Breakdown Structure (WBS) requirements, if any.
- ii. Current versions of construction documents and specifications.
- iii. The Risk Register.
- iv. Equipment lists as well as mechanical, electrical, and plumbing (MEP) requirements
- v. Vendor quotes, where applicable.
- vi. Design Gap Analysis: A Gap Analysis should be developed and provided to the Estimator by the Design Consultant. A Gap Analysis is an evaluation of the design documents against the approved scope. It identifies areas of the design that require further development, as well as elements that will be required but have not yet been designed.
- vii. Project schedule, including the construction phasing plan.
- viii. Existing field conditions that might require demolition or protection, but that are not shown on the drawings.
- ix. Associated costs for coordination with the city's other vendors for items excluded from the construction contract. This includes any services or equipment provided by others and not included in the estimate. Examples could include furniture, fixtures, and equipment; telecommunications; audiovisual; specialized equipment; security systems; and third-party-provided items like electrical transformers and meters.
- x. Site logistics plans showing probable Contractor field trailer locations, laydown areas, access/congestion issues, traffic/road closure requirements and other relevant information.
- xi. Project requirements for phasing, working around current occupants, swing space, special security restrictions, after-hours work shifts, and project impacts on adjacent property owners.
- xii. Geotechnical information, including borings, anticipated levels of groundwater, and specialty needs like vibration, stress, or settlement monitoring.

- xiii. Environmental reports regarding lead, asbestos, contaminated soil, and other potentially hazardous materials.
- xiv. Unique design features or constraints, such as work on a landmark building, custom features, and materials from specialty or overseas suppliers. Assumptions on logistics cost impacts, including fees and permits for trucking large components, components that can be fabricated offsite, equipment requiring cranes for installation (e.g., rooftop HVAC units).
- xv. Safety considerations, which may include unusual PPE requirements, areas requiring use of confined space procedures, working in a lead dust environment, proximity of pedestrians and adjacent occupants, noise and dust control, and requirements for special safety training.
- xvi. Listings of expected allowances, both for field change orders and for project-unique allowances, such as for Con Edison service connection fees. Include an explanation detailing why these allowances are not treated as line items estimated by quantities or quotes.
- xvii. If available, recent actual bids for similar jobs and completed scope job costs.
- xviii. Results of any constructability or biddability reviews that identify efficiencies or local customs that should be implemented, as well as assessment of final incorporation of reviews into the documents.
- xix. A list of any value engineering efforts and lists of any analysis of alternates.

3) COST ESTIMATE DELIVERABLES

The cost estimate submittal should conform to the DDC Standard Construction Cost Estimate Template including the basis of estimate and the cost estimate submittal checklist. Submit the estimate in hard copy form (5 copies) and in an editable electronic format. Microsoft Excel is an acceptable format, utilizing a DDC-provided standard template provided.

The project cost estimate shall be submitted in accordance with the following:

a. Design Value and Options

The Consultant shall deliver a design that is within the approved budget allocation for the project. The Consultant must evaluate life-cycle, operational and maintenance costs for the overall project, as well as all major systems. The Consultant must demonstrate that no less than three alternatives have been considered for all major systems and materials, and that the final options selected are as economical as possible. The Consultant shall submit a report documenting this analysis as part of the Basis of Estimate.

b. Basis of Estimate (BOE)

The BOE Report is the cost estimating deliverable used to document the project scope, pricing basis, allowances, assumptions, exclusions, cost risk opportunities, and any deviations from standard practices. A BOE provides concise supporting documents for records of agreements made between the estimator and other project stakeholders. The BOE should allow a full understanding of the estimate, independent of any other supporting documentation.

c. Format and Methodology

The estimate shall follow the most current 6-digit CSI format and must be fully coordinated with the project specifications. Each item in the estimate must correlate to a specification section: every spec section must correspond to the appropriate line item(s) in the estimate.

The estimate should include, but is not limited to, the following fields: CSI number, line item description, and quantity. Class 3 to Class 1 estimates should separate unit costs and total costs into labor, material, and equipment.

While developing the estimate, apply cost-estimating methodology in a manner that agrees with the level of design detail available. When providing cost estimates, expert judgment is key to accurately predicting cost.

d. Final Submission

Refer to Chapter 05: Bid Packaging Requirements.

4) COST IMPACT FACTORS**a. Design Contingency**

The Consultant should utilize Design Contingencies, as needed in their professional judgement, to ensure that the estimate produced at each stage of development accurately represents the cost of the project. The Consultant should indicate in the Basis of Estimate either the aggregate Design Contingency used or itemized design contingencies per major specification division. In general, the Design Contingency amount should be identified by the Consultant, and decrease as the design progresses and areas of uncertainty are resolved.

b. General Requirements (Division 1)

The Consultant shall include an estimate of General Requirements, which include all costs that are not direct construction costs but are associated with the specific project. This includes all general condition items typically identified in the contract. General requirements should be project-specific and itemized to include at a minimum (refer to DDC Standard Construction Cost Estimate Template for itemized list):

- i. Costs for on-site Contractor and non-direct labor personnel like superintendents and project engineers.
- ii. Costs for field trailers, temporary restrooms, Contractor parking, site security, and trash disposal.
- iii. Costs for equipment not directly tied to a specific direct construction operation. For example, a tower crane needed for multiple trade use would be in general requirements, but a crane needed by the HVAC sub to lift mechanical equipment to the roof would be included in direct costs. Hoists for construction personnel and material would also be included in general requirements.
- iv. Costs for compliance with safety requirements, including job site orientation, PPE, and testing required to ensure conditions stay within required parameters when working with materials like lead dust or silica dust.
- v. Costs for typical General Contractor (GC) roles such as job site cleaning, snow removal, temporary heating, and dust control.

- vi. Costs for insurances such as Builder's Risk and Public Liability.
- vii. Building Information Modeling (BIM), shop drawing, and coordination costs for GC and sub-contractors.
- viii. Commissioning costs for GC and sub-contractors.
- ix. Costs for permits and fees.
- x. Cost for inspections, surveys, and other processes.

c. Overhead and Profit

The Consultant shall include an estimate of Overhead and Profit, which reflects the Project Team's assumptions for the amount the bidder will add to cover their operational costs and expenses. This cost does not include overhead costs assignable under General Requirements.

d. Cost Escalation

The Consultant shall include an estimate of annual escalation costs. The Cost Escalation includes inflation based on reference to various economics publications (RS Means, Engineering News Reports, etc.) and shall be calculated to the midpoint of the approved construction schedule. DDC typically recommends 4.5% per year as a standard rate of escalation. The Project Team may specify a different rate for the project, subject to approval, and shall provide rationale for any such rate in the Basis of Estimate (BOE).

The cost factors listed above (items 4.a-4.d) constitute the basis for the Consultant's Design Fee. Items 5.a-5.c below include additional project budget considerations carried "below the line" to be developed collaboratively by the Project Team and reviewed regularly at the Cost Estimating Workshops.

5) ADDITIONAL PROJECT BUDGET CONSIDERATIONS

a. Bid Contingency

The Consultant shall include bid contingency in the estimate to account for the successful bidder's risk exposure during construction not captured elsewhere. It reflects the bidder's evaluation of risk associated with the project, including risk transferred to the Contractor per DDC's contract terms and conditions. Bid contingency may include the following risks:

- i. Extended time lapse between contract award and Notice to Proceed, which increases escalation risk to bidders.
- ii. Uncertainties related to site logistics and project schedule delays.
- iii. Bidder's evaluation of challenges unique to DDC contracting, including anticipated delays in payments, change orders, and contract close-out.

The project Risk Register and Gap Analysis form the basis of calculating Bid Contingency. Bid contingency may be allocated by CSI Division.

b. Construction Contract Allowances

The Consultant shall include Construction Contract Allowances to estimate the amount that bidders will be directed to include in their bids. Construction Contract Allowances cover the cost of known but undefined contract work requirements, e.g., possible fees from Con Edison or NYC Parks. It also covers anticipated field conditions encountered that are different from the scope definition and specific areas of work difficult to quantify at time of bid, e.g., asbestos abatement, HazMat, mold, etc. Construction Contract Allowances are not intended for scope changes.

c. Construction Contingency

The Consultant shall include Construction Contingency to budget for anticipated cost growth in a project during construction due to unanticipated changes. This amount should also be adjusted to address the cost of unforeseen changes that were not addressed by Construction Contract Allowances. It also covers unique features that make determining final quantity or scope difficult. The amount assigned to Construction Contingency must exclude all items included in Construction Contract Allowances.

The DDC Project Manager will account for Consultant Design fees, CM fees, Commissioning fees, Special Inspection services and other soft costs in their overall project budget, and these items should not be included in the Construction Cost Estimate.

CHAPTER 05: BID PACKAGING REQUIREMENTS

- A. INTRODUCTION
- B. BID PACKAGE COMPONENTS
- C. ORGANIZING, FORMATTING AND PRESENTING
THE BID PACKAGE
- D. METHODS OF PROCUREMENT
- E. DDC SPECIFICATION REQUIREMENTS
- F. CONSULTANT WORK SESSIONS

A. INTRODUCTION

The Bid Packaging team is responsible for reviewing DDC Public Buildings' technical specifications and all other bid documents for compliance with a set of stringent legal requirements for public projects. These requirements differ significantly from those of any other public or private entity, and as such the Consultant must follow the special requirements in this chapter completely and thoroughly.

Compliance with DDC Bid Packaging technical specifications requirements is MANDATORY.

Failure to comply with these requirements will be reflected in the Consultant's performance evaluation and will affect the issuing of payments.

It is essential that the Consultant prepare documents that are complete, fully coordinated, and free from ambiguities or inconsistencies. The Consultant is obligated to:

- i. **Comply with all DDC and New York City requirements for bid document formatting;**
- ii. **Coordinate between the specifications and the various schedules in the Addendum to the General Conditions;**
- ii. **Review all documents, including those produced by sub-consultants, prior to submission to DDC to ensure that all the criteria listed below are met.**

Bid Documents are created by the systematic evolution of Design Documents into legally formatted, biddable and contractually executable drawings, specifications and other supporting documentation, required for the procurement of capital projects. Bid Documents include the Bid Drawing Set and the Bid Package. The Bid Drawing Set includes all Drawing Sheets signed and sealed by the Consultant, formatted in the standard DDC format. Coordinate with DDC PM for latest version of Drawing Sheet template. If the project scope includes Asbestos Abatement, Consultant shall incorporate the corresponding HazMat Drawings, available from the DDC PM and provided by DDC's Office of Environmental and HazMat Services (OEHS), see Chapter 06: Design Criteria for more information. The Consultant is also responsible for providing a Bid Drawing Set Title Page to be signed by DDC.

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B. BID PACKAGE COMPONENTS

The Bid Package comprises the Bid Drawing Set, Procurement requirements for bidders (via the City of New York's PASSPort system) as well as three distinct Contract Volumes:

- 1) **PASSPORT PROCUREMENT AND VOLUME 1: BID BOOKLET, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:**
 - a. MWBE Requirements
 - b. Proprietary Items List
 - c. Special Experience Requirements (SER)
 - d. Bid Form
 - e. Bid Breakdown (formatted from Consultant's cost estimate)
 - f. Pre-Award process
 - g. Project Reference Forms

- [illegible]

C. ORGANIZING, FORMATTING, AND PRESENTING THE BID PACKAGE

The following is a list of deliverables required by the Consultant for the final Bid Package. While several of these components will be needed prior to design completion, the final, formatted version will be necessary for bid. It is mandatory that the Consultant review all Bid Package deliverables and their corresponding formats (coordinate with DDC PM for latest versions), to facilitate a timely transition from Schematic Design and Design Development into Construction and Bid Documents.

1) ADDENDUM TO THE GENERAL CONDITIONS

a. Format

The Addendum to the General Conditions must be written in the standard DDC format. (Coordinate with DDC PM for latest version.) This document must be delivered to the DDC PM as an editable Word document.

b. Description

The Addendum to the General Conditions is required for all Bid Packages. The DDC General Conditions, which includes all Division 1 General Requirements sections, are included with every competitively bid project. Generally, the DDC General Conditions documents are not to be edited by the Consultant. If customization of the General Conditions is needed for a specific project, the Consultant must review the DDC General Conditions and use the Addendum to the General Conditions to revise or supplement the General Conditions articles for project-specific conditions.

- i. There are two versions of the Addendum to the General Conditions:

1. Addendum for Single Contracts
2. Addendum for Multiple Prime Contracts (Wicks Contracts)
- ii. The Consultant shall be provided with an editable Word document template of the DDC Addendum to the General Conditions. (Coordinate with DDC PM for latest version of the General Conditions and the Addendum to the General Conditions.) This document has highlighted fields which contain instructions to the Consultant for preparing each section. Only the highlighted areas of the document are to be edited, and the highlighted instructions shall be deleted for the final revised document.
- iii. The Addendum to General Conditions includes applicability of sections related to the DDC General Conditions, as well as Schedules A-E corresponding to the project scope. The Consultant must fill out the following Schedules as per instructions given in the Addendum to General Conditions, and noted below:
 1. Schedule A
The Consultant shall prepare Schedule A, which provides information on contract Requirements, such as contract duration, liquidated damages, retainage, etc.
 2. Schedule B
The Consultant shall prepare Schedule B, Warranty from Manufacturer, which lists Warranties that are included in the Consultant's specifications. The Consultant shall provide a list of the specifications sections for the material or equipment for which a warranty is required and include the length of the warranty period as specified.
 3. Schedule C
The Consultant shall provide a complete list of all Contract Drawings, including HazMat Drawings provided by DDC OEHS, if applicable.
 4. Schedule D
Requirements for electrical motor equipment may be included in the specifications. If applicable, the Consultant shall complete Schedule D as appropriate for the project.
 5. Schedule E
The Consultant shall prepare Schedule E (Separation of Trades) for Multiple Prime Contracts (Wicks) only. The Consultant shall review the specifications and the DDC General Conditions for each of the items listed on Schedule E and shall ensure that the correct information has been entered for each separate contract.

3) COST ESTIMATE

a. Format

The Consultant's Cost Estimate must be written in the standard DDC format. (Coordinate with DDC PM for latest version.) This document must be delivered to the DDC PM as an editable (unlocked) Excel document.

b. Description

The Consultant's Cost Estimate will be required for all Bid Packages. The Consultant's Cost Estimate shall be used as a basis for the Bid Breakdown to be filled out by bidders at the time of bid. Thus, the estimate must correspond exactly to the rest of the Bid Package documents (specifications, proprietary items, etc.) and include line items for all items in the project scope (See Chapter: 04 Cost Estimating).

4) UNIT PRICE SCHEDULE

a. Format

If the Project Team determines that a Unit Price Schedule is required for a specific project, the Consultant must fill out a Unit Price Schedule template in standard DDC format. (Coordinate with DDC PM for latest version). This document must be delivered to the DDC PM as an editable (unlocked) Excel document.

b. Description

A Unit Price Schedule may be required for some Bid Packages. Although the final bids shall be lump sum, a unit price schedule may be used to supplement the cost estimate. The Unit Price Schedule shall be for additional work only and is typically used for items with unknown quantities at the time of bid (such as for façade restoration or excavation work). If a Unit Price Schedule is to be used in a project, it will be a standalone, separate document. The Consultant shall not include references to unit prices within the technical specifications.

5) PROPRIETARY ITEMS

a. Format:

If the Project Team determines that Proprietary (sole source) Items shall be required for a specific project, the Consultant must fill out a Proprietary Items List in standard DDC format, as well as provide a justification for such items. (Coordinate with DDC PM for latest version.) These documents must be delivered to the DDC PM as follows:

- i. One editable Word document of Proprietary Items List.
- ii. One PDF document of Proprietary Items justification, on Consultant's letterhead.

b. Description:

Proprietary Items may be required for some Bid Packages. The use of sole-source proprietary items is not the default option, and the use of proprietary items will only be entertained when the Consultant has exhaustively determined that there are not three acceptable equivalent products available and that the product cannot be sufficiently described with a performance specification. Although New York City Procurement Policy Board rules do not permit specifying proprietary items, under limited circumstances, if required for specific project conditions, proprietary items may be required. All proprietary items must be approved in advance by DDC ACCO. Written justification must be provided early in the design process by the Consultant and/or the entity requesting the proprietary item(s). The Consultant shall provide the Proprietary Items Cost template in standard DDC format, as well.

- i. The Consultant must first fill out the Proprietary Items List, which shall list the product and manufacturer and the related specification section.
- ii. Additionally, the Consultant, often in conjunction with the Sponsor Agency, must compose a justification for the Proprietary Item(s), on their office letterhead, which states why a particular manufacturer and product is required for the project. Proprietary Items are most often justified for upgrades or modifications to existing systems (such as a Roof or Fire Alarm), or as part of a system-wide standard required by the Sponsor Agency. Proprietary Items shall not be approved for preferred products.
- iii. The DDC PM shall submit the Proprietary Items List and justification for review by the Bid Package Unit, and subsequently coordinate approvals with DDC ACCO. Upon submittal of all documentation, proprietary item requests may either be approved or denied.

- iv. If Proprietary Items are approved, proprietary specification sections must include only one sole-source manufacturer and product within Part 2: Products, and the text "No Substitutions Permitted." However, the remainder of the sections must be generic, and performance-based. Proprietary cut sheets from manufacturers are not allowed in the Bid Package (even for approved proprietary items).
- v. If Proprietary Items are not approved, specification sections which are not approved for proprietary items must include three manufacturers and the text "or approved equal".
- vi. If the design is based on a particular manufactured product, the Consultant may include the language "Basis of Design." The use of Basis of Design does not relieve the Consultant from identifying two additional manufacturers that offer comparable products based on the performance criteria described in Part 2: Products, and must not be used solely to indicate a preference.

6) SPECIAL EXPERIENCE

If the Project Team determines that Special Experience Requirements shall be required for a specific project, the Consultant must provide a justification for such requirements. (Coordinate with DDC PM for sample). This document must be delivered to the DDC as a PM PDF document of Special Experience Requirements justification, on Consultant's letterhead:

a. Description

Special Experience Requirements (or SER) may be required for some Bid Packages. Although New York City Procurement Policy Board rules do not permit specifying experience requirements exceeding three years, under exceptional circumstances if required for specific project conditions, special experience may be required. All Special Experience Requirements must be approved in advance by DDC Law and DDC ACCO. Written justification must be provided early in the design process by the Consultant.

- i. The Consultant shall assist the DDC Project Team in the specification of SER for the Contractor and/or sub-contractors and for all highly specialized trades, as well as for any specialized manufacturer. When finalized and approved, these requirements shall become part of the Bid Package. During the Bid and Award phase, the Consultant shall assist in the review and verification of the special experience qualifications submitted by the Contractor and/or proposed sub-contractors. Qualifications for the Prime Bidder(s) shall be determined at the time of bid; qualifications for sub-contractors and manufacturers shall be after award.
- ii. The Consultant, often in conjunction with the Program Unit, must compose a justification for the Special Experience Requirements, on their office letterhead, which states why a particular sub-contractor or manufacturer will need specialized experience for the project. SER is often justified for warranty requirements (such as for a Roof Installer), for historic experience (such as for a Mason on a landmark building), or for situations uniquely based on the project scope. Specific Contractors or sub-contractors may not be specified; however, Contractor or sub-contractor qualifications may be specified if approved.
- iii. There are several categories of Special Experience, and the Consultant must identify which category is required in their justification. Refer to the DDC Technical Specifications Instructions (TSI) for additional information and the standard levels of Special Experience.

- iv. The DDC PM shall submit the SER justification for review by the Bid Package Unit, and subsequently coordinate approvals with DDC Law and DDC ACCO. Upon submittal of all documentation, the request for Special Experience Requirements may either be approved or denied.
- v. If SER is approved, include "Special Experience Requirements Notice to Bidders" shall be included in the final Bid Package and shall indicate all applicable requirements. Refer to DDC TSI for additional information.

7) COMMISSIONING SPECIFICATIONS

a. Format

If the Project Team determines that a Commissioning Agent shall be required for a specific project, DDC shall retain a Commissioning Agent (CxA) to provide corresponding specifications. (See Chapter 07: Commissioning.) The Consultant must coordinate with the DDC PM and the CxA to incorporate their specifications into the technical specification set. These documents must be delivered to the DDC PM within the specifications as one single, combined original PDF document, included within the technical specifications.

b. Description

Consultant must incorporate and review Commissioning specification sections for format issues; in some instances, the Consultant may need to correct the issue date or other format change. Technical information within the specifications provided by the CxA should not be modified.

The Consultant shall ensure that the Commissioning specification sections are represented in the Table of Contents and in the Consultant's Cost Estimate as well.

8) ASBESTOS AND/OR HAZMAT SPECIFICATIONS

a. Format

If the Project Team determines that asbestos specifications shall be required for a specific project, the DDC PM shall provide the corresponding asbestos specifications, from DDC OEHS, to the Consultant. The Consultant must incorporate these specifications into the technical specification set. These documents must be delivered to the DDC PM within the specifications as a single, combined original PDF document, included within the technical specifications.

b. Description

Asbestos and/or other HazMat specifications may be required for some Bid Packages. Hazmat work includes, but is not limited to, asbestos abatement, lead abatement, petroleum storage, and handling equipment abatement and the lawful disposal of other hazardous materials regulated by Federal, State and City environmental protection authorities. DDC OEHS will conduct probes at pre-selected locations on the project site and determine what is required for bid.

Most commonly, asbestos specifications will be included in the Bid Package. Asbestos specification sections are typically required if the project involves any amount of demolition work. Prior to the submission of Bid Documents, Consultant must incorporate and review asbestos specification sections for format issues; in some instances, the Consultant may need to remove sections not applicable to the project. Technical information within the specifications provided by DDC OEHS must not be modified.

- i. The Consultant shall ensure that the asbestos specification sections are represented in the Table of Contents and technical specifications as follows:
 - 1. If the Project is a Single Contract, includes demolition scope, and asbestos has not been found, include:
 - a. 028013 Allowance for Incidental Asbestos Abatement for General Construction Work.
 - 2. If the Project is a Single Contract, includes demolition scope, and asbestos has been found, include:
 - a. 028013 Allowance for Incidental Asbestos Abatement for General Construction Work.
 - b. 028213 Asbestos Abatement.
 - 3. If the Project is a Multiple Prime Contract (Wicks), includes demolition scope, and asbestos has not been found, include:
 - a. 028013 Allowance for Incidental Asbestos Abatement for General Construction Work.
 - b. 220013 Allowance for Incidental Asbestos Abatement for Plumbing Work.
 - c. 230013 Allowance for Incidental Asbestos Abatement for HVAC Work.
 - d. 260013 Allowance for Incidental Asbestos Abatement for Electrical Work.
 - 4. If the Project is a Multiple Prime Contract (Wicks), includes demolition scope, and asbestos has been found, include:
 - a. 028013 Allowance for Incidental Asbestos Abatement for General Construction Work.
 - b. 028213 Asbestos Abatement.
 - c. 220013 Allowance for Incidental Asbestos Abatement for Plumbing Work.
 - d. 230013 Allowance for Incidental Asbestos Abatement for HVAC Work.
 - e. 260013 Allowance for Incidental Asbestos Abatement for Electrical Work.
- ii. Additionally, the Consultant shall ensure that the asbestos specification sections are represented in the Consultant's Cost Estimate as follows:
 - 1. Include the Allowance for Incidental Asbestos Abatement on the Summary Page after all markups. (For Multiple Prime Contract Bids, include all four Allowances per trade). Costs shall be as noted in Allowance for Incidental specification section(s) available from the DDC PM and provided by DDC OEHS.
 - 2. Include Asbestos Abatement, if applicable to the project, within their line item breakdown. Costs shall be as noted in Asbestos Report, available from the DDC PM and provided by DDC OEHS.

9) GEOTECHNICAL REPORT

a. Format

If the Project Team determines that a Geotechnical Report shall be required for a specific project, the Consultant must provide said report. The report may either have been done previously or will need to be conducted during the Design phase. This document must be delivered to the DDC PM as an Appendix to the specifications as a single, combined original PDF document, included with the specifications.

b. Description

A Geotechnical Report may be required for some Bid Packages, if the project requires extensive excavation or is located on a unique and possibly contaminated site, or for other reasons determined by the Project Team. Ensure that the Geotechnical Report is noted in the Table of Contents as an Appendix Document.

D. METHODS OF PROCUREMENT

1) SINGLE CONTRACT BID VS. MULTIPLE PRIME CONTRACT BID

Bids may be procured as either Single Contract or Multiple Prime Contract Projects. Consultant shall coordinate with DDC PM to determine how the project will be procured to prepare the appropriate documentation. It is imperative that the Consultant and Project Team establish how the project is procured prior to the Design phase, to avoid potential delays to the schedule later.

The following table lays out which projects can be bid as Single Contract, and which projects must be bid as Multiple Prime Contract:

Question 1: How much does this project cost?				
Above \$3 Million			Below \$3 Million	
Question 2: Where is this project located?				
City-Owned Property		Non-City-Owned Property	City-Owned Property	Non-City-Owned Property
Renovation	New Building			
Bid as RENOVATION PLA: Format all documents as one single contract. *	Bid as NEW CONSTRUCTION PLA: Format all documents as one single contract. A Feasibility Study shall be required to establish the applicability of project to the PLA. Determination should be established prior to the Construction Document Phase to avoid delays.	MULTI-CONTRACT WICKS: Format all documents as 4 separate contracts as follows: Contract #1: General Construction Contract # 2: Plumbing Contract #3: HVAC & Fire Protection Contract #4: Electrical	REVISED (SINGLE CONTRACT) WICKS: Format all documents as a single contract.**, **	

* DDC Policy requires all City Owned projects with estimated costs equal to or above \$2.5 million to bid as Renovation PLA, in case bids come in higher than expected (ie- above \$3 million).

** DDC Policy requires all Non-City Owned projects with estimated costs equal to or above \$2.5 million to bid as Multi-Contract, in case bids come in higher than expected (ie- above \$3 million).

- a. The first factor in determining whether the project shall be bid as Single Contract or Multiple Prime Contract is the cost. If the estimated project cost is less than \$3 million, the project will be bid as a Single Contract, regardless of location.
- b. If the estimated project cost exceeds \$3 million, the next step is to determine whether or not it is located on City-Owned property.
 - i. The project may use the Project Labor Agreement (PLA) and bid to a Single Contract, as long as the cost of project exceeds \$3 million and meets the criteria below. Although the threshold is \$3 million, if a project is estimated to cost at least \$2.5 million, it is anticipated that the bids may come in at or above \$3 million. As such, it is recommended for projects estimated to cost at least \$2.5 million to anticipate bidding to Multiple Prime Contracts

If the project involves the renovation of an existing building or structure, the project shall be bid using the PLA for Renovation.

1. There are currently two types of Project Labor Agreements:

- a. The PLA for Renovation:

If the project involves the renovation of an existing building or structure, the project shall be bid using the PLA for Renovation.

- b. The PLA for New Construction

If the project consists of building an entirely new structure, the project may be bid using the PLA for New Construction, assuming that the Project Team has conducted a Feasibility Study that has been approved by DDC Law.

Whereas renovation projects can use the PLA automatically, new construction projects must first be approved for PLA (and subsequently, for Single Contract) bid.

- ii. If a project is located on Non-City Owned property, it cannot be bid using the PLA, and must be bid using Wick's Law. Projects with costs that exceed \$3 million must bid as Multi-Contract Wick's Law, which separates out the four major trades (General Construction, Plumbing, Mechanical and Electrical Work).

1. There are two types of Wicks Law Projects:

- a. Revised Single Contracts

Used for projects whose total budget will be less than \$3 million.

- b. Multiple Prime Contract Projects

The threshold is \$3 million; however, similar to the PLA, if a project is estimated to cost at least \$2.5 million, it is anticipated that the bids may come in at or above \$3 million. As such, it is recommended for projects estimated to cost at least \$2.5 million to anticipate bidding to Multiple Prime Contracts.

- c. The DDC Project Manager and Team Leader will establish with the Consultant if the project shall be prepared as a Multiple Prime Contract Project or a Single Contract Project. For Multiple Prime Contract Projects, or where applicable, adherence to Wick's Law requires that the Consultant prepare separate sets of drawings and cost estimates for four separate contracts. The specifications shall be inclusive of all contracts but may reference the four separate Prime Contractors. The specifications and Table of Contents shall organize the sections as per separate contract. (Coordinate with DDC PM for latest version of drawing and table of contents for Multiple

Prime Contract Projects). These documents, unless directed otherwise by DDC PM, shall be organized as follows:

- i. Contract #1: General Construction work, including site work and vertical transportation.
- ii. Contract #2: Plumbing work, including standpipe system, if required.
- iii. Contract #3: Heating, Ventilating, Air Conditioning, and Fire Protection work, including sprinkler systems, as well as combined standpipe system, if required. Note: The sprinkler system work, which is part of Contract No. 3, shall be shown and detailed on drawings separate from all other work within that contract.
- iv. Contract #4: Electrical work, fire alarm, data & telecommunications systems, A/V systems.

2) OPEN COMPETITIVE BID VS. PRE-QUALIFIED LIST (PQL) BID

Bids may be procured to either the general public (as an open competitive bid) or to a select group, or list, of Pre-Qualified bidders. The Consultant shall coordinate with the DDC PM to determine how the project will be procured in order to prepare the appropriate documentation.

- a. Bids procured to the general public may require additional Special Experience requirements for the prime bidder(s). Special Experience requirements, as noted earlier in the chapter, must be approved by DDC Law and DDC ACCO, and the Consultant shall be required to provide appropriate justification.
- b. Bids procured to a Pre-Qualified List (PQL) of bidders will take the place of Special Experience requirements for the prime bidder(s). Since the bidders here have already been vetted and approved to work on City projects, the Bid and Award Phase may be significantly shorter. Pre-Qualified Lists may be for work on roofs, landmark buildings, or general construction projects (or others as may be applicable). The DDC PM, working with the Project Team and Consultant, shall decide which PQL is applicable to their specific project.
- c. In order to bid to a PQL, the DDC PM must seek approval from DDC ACCO. At this time, the DDC PM may require certain documents from the Consultant, including the cost estimate and detailed project description.

E. DDC SPECIFICATION REQUIREMENTS

Review all Bid Package contents in Section B. Bid Package Components.

1) DDC OMS (OFFICE MASTER SPECIFICATIONS)

As directed, the Consultant and all sub-consultants shall use DDC's Office Master Specifications (OMS) system, which utilizes a commercial software tool (Deltek e-SPECS) with DDC cloud-hosted project storage designed to generate project-specific technical specifications in compliance with DDC's requirements. DDC will provide the Consultant team with access to the system including log-in credentials, training materials, and technical support. All required software will be available as a free download. The Consultant and all sub-consultants shall comply with the requirements in the latest version of DDC's Technical Specification Instructions (TSI) which is fully coordinated with OMS.

2) SPECIFICATIONS AND TABLE OF CONTENTS

a. Technical Specification Instructions

It is the Consultant's responsibility to download, review and comply with the requirements in the latest version of DDC's Technical Specification Instructions (TSI).

b. Format

All technical specifications must comply with all requirements of this section. Specification sections developed from sources other than the DDC Office Master will not be accepted, unless approved in advance by the Deputy Director of Bid Packaging. The specifications must be delivered to the DDC PM as follows:

- i. One single, combined original PDF document printed directly from the e-SPECS software, and
- ii. Fully edited specifications accessible within the e-SPECS software / OMS system.

c. Description

Technical specifications (and their corresponding Tables of Contents) will be required for all Bid Packages.

- i. The DDC OMS specifications are Masterspec-derived and formatted per the most current CSI numbers and headings. They are generated with DDC formatted headers and footers. Section text has been edited to revise contract language in accordance with DDC standards. All submissions must include an issue date, which must be updated for each resubmission.
- ii. The specifications must be inclusive of all items in the construction contract; however, items which are not capitally eligible must be omitted. These items include (but are not limited to) maintenance agreements, movable furniture, and spare parts, unless required by code. Coordinate with DDC PM for full list of eligible and non-eligible scope items.
- iii. All Division 1 General Requirements sections correspond to the DDC General Conditions, which are included in Volume 2 as a reference for bidders with all contracts. As a result, Consultant must not include any Division 1 specification sections with the exception of Section 019119.43 "Exterior Enclosure Commissioning" for projects that require Building Enclosure Commissioning.
- iv. Similarly, all contract-related language (regarding payments, indemnification, bidding procedures, etc.) are included in Volume 2 as a reference for bidders with all contracts. Specifications are to be technical in nature; Consultant must review and be knowledgeable of the Standard Construction Contract and the Information to Bidders by coordinating with DDC PM for latest versions.
- v. All specifications must include performance information for products, and all sections that call out manufactured products must include at least two additional manufacturers that offer comparable products, followed by the term "or approved equal." They must comply with governmental and legal requirements regarding public procurement; these include, without limitation, the Competitive Bidding Laws of the State of New York, the NYC Procurement Policy Board, Rules of the City of New York, and the DDC General Conditions. To ensure compliance, it is essential that Consultants prepare specifications that are clear, accurate, and in accordance with the criteria set forth below. Accordingly, specifications shall:
 1. Permit maximum competition
 2. For Multiple Prime Contracts (Wicks), permit the separate, competitive sealed bidding of each prime construction trade.

CHAPTER 05: BID PACKAGING REQUIREMENTS

E. DDC SPECIFICATION REQUIREMENTS

3. Clearly describe the City's requirements without favoritism toward any Contractor, supplier, or manufacturer, or to a supplier's goods and/or services.
4. Emphasize functional or performance criteria. Requirements establishing the significant qualities related to type, function, in-service performance, physical properties, as well as other special features and requirements must always be clearly described in Part 2 of the specifications. Because DDC awards contracts to the lowest responsible bidder, it is important that functional/performance specifications are tightly written using acceptable commercial standards to help ensure the quality of the job.
5. Unless approved in advance by DDC ACCO, sole-source proprietary items are not permitted. Refer to Section C5 of this chapter for additional information.

vi. Nomenclature

Incorrect nomenclature from the private sector or other government entities is not acceptable for documents submitted to DDC. Specification text in the OMS has been pre-edited to remove such references. Any new text must conform to the same requirements as described below. Refer to the Technical Specifications Instructions (TSI) for additional nomenclature and terminology editing guidance.

1. City of New York

References to "Owner" (or other agency or authority) as an entity should read "City of New York" for all matters related to property and payments.

2. Commissioner

References to "Architect," or "Engineer" should read "Commissioner." References to "Owner" for verification, certification, selection, approval, etc. should read "Commissioner."

3. Engineering Services

References to "Delegated Design" should read "Engineering Services." Note that all shop drawings and other submittals must be reviewed and approved "by the Commissioner". The Consultant must remain the Designer of Record (Architect of Record and/or Engineer of Record) and the Contractor's engineer may not assume that responsibility. Specifications where Engineering Services are specified must provide all required performance and design criteria such that the Contractor's Engineer is not required to make any design assumptions. Engineering Services provided must meet all the requirements of the NYC Codes, rules, procurement requirements, and regulations.

4. Authorities Having Jurisdiction (AHJ)

References to "Authority" or "Authorities Having Jurisdiction" must be revised to the applicable Code, Standard, Entity, Department, or Agency.

vii. Moreover, the Consultant must ensure that all specification sections are fully edited and relevant to their specific project. The Consultant is responsible for all specification information submitted including those produced by its sub-consultants. Do not include references to sponsors, clients, items or sections that are not applicable to the scope of the project at hand. It is imperative that, prior to submitting the specifications, the Consultant inspect all documents for adherence to all DDC requirements, completeness, and accuracy.

F. CONSULTANT WORK SESSIONS

The Consultant and sub-consultants responsible for writing technical specifications shall attend regular sessions with the Bid Packaging team starting at the CD Kickoff; however, training sessions on utilizing the OMS and the e-SPECS software will be scheduled with Consultants and sub-consultants for all new projects prior to start of CD Phase. Sessions shall occur bi-weekly or as mandated by the DDC Bid Packaging team. During these work sessions, drafts of all technical specifications shall be submitted for review as directed by the DDC Bid Packaging team. For more on Design Review, Sign-Off, and Final Acceptance of Construction Documents and the Bid Package, see Chapter 02: Overview of the Design Process.

CHAPTER 06: DESIGN CRITERIA

- A. GENERAL DESIGN APPROACH
- B. ACCESSIBILITY
- C. HISTORIC PRESERVATION
- D. BUILDING ELEMENTS AND SYSTEMS

A. GENERAL DESIGN APPROACH

All systems and components for the urban planning, architectural design, landscape design, and engineering of public projects must be designed to meet and in some cases exceed code requirements, while adhering to commonly established industry standards for quality, performance, materiality, fabrication, and installation.

Individual disciplines and systems must not be considered separately during design or documentation, but in an integrated and therefore comprehensive way. Project design should always strive to be holistic in order to creatively balance cost, schedule, and program requirements, operations and maintenance practices, sustainability and resilience, and performance and innovation. To respect public investment, the project must achieve a good fit through a design that is well-suited to its intended use and reflects the present and future needs of agency sponsors, end users, and communities.

In addition to any project-specific criteria, the following priorities must be applied across all disciplines by during the development of the project:

1) COLLABORATIVE AND TRANSPARENT

The design of public buildings and spaces requires a transparent, collaborative, and inclusive process that values all voices. All stakeholders, including the project's end users, the greater community, and all participating city agencies, must be offered an opportunity to meaningfully contribute to a common vision for the project. Through public outreach and interagency coordination, the process must promote discourse, exemplify accessible government, and inspire pride and a sense of ownership in the community.

2) CIVIC AND COMMUNITY ORIENTED

- a. Every neighborhood in New York City possesses a unique history and character that contribute to its sense of place. The design of public projects must actively engage the neighborhoods and communities in which they are built by respecting and responding to their existing context.
- b. Site design should reinforce community connectivity by responding to existing pedestrian routes and nearby amenities, mass transit, parks, and other local destinations. The overall project design should enliven the pedestrian experience with creative massing and façade articulation, an engaging ground floor, and visible and prominent entrances and open spaces.
- c. Project design must be guided by Sponsor Agency and municipal planning strategies such as previously approved master plans, Zoning Resolution Determinations, and ULURP agreements where applicable. Special consideration must be given to both officially designated landmarks as well as landmark quality structures.
- d. Project design should honor history and culture and convey community identity through a design that contributes to the character of the neighborhood with its form, materials, details, lighting, and landscape. It should incorporate art that reflects and enriches local culture and identity.
- e. Related Sections and Resources:
 - i. Chapter 06: Historic Preservation
 - ii. Chapter 09: Percent for Art
 - iii. Chapter 10: Regulatory Approvals (See information on NYC Community Boards, Public Design Commission, Landmarks Preservation Commission)
 - iv. CEQR Technical Manual (The Mayor's Office of Environmental Coordination)https://www1.nyc.gov/assets/oec/technical-manual/2020_ceqr_technical_manual.pdf

3) INCLUSIVE, HEALTHY, AND SAFE

- a.** Public buildings and spaces must support the health, dignity, and well-being of all New Yorkers, inclusive of all racial, ethnic, gender, sexual, religious, and cultural identities, and physical, social, cognitive, and mental abilities. All spaces must be equitable and accessible and should be designed to exceed minimum code requirements whenever feasible. Inaccessible public design elements of any kind will not be permitted.
- b.** Whether a facility is intended for public use or agency operations, it must enable every individual to feel welcome and valued, comfortable, and secure. Public spaces, entrances, and lobbies should be readily perceptible from the street with a clear sense of orientation. They should be well-lit, easy and intuitive to navigate, and supported by clear and consistent signage that is accessible to people of different ages and cultures. They must create a welcoming atmosphere with an appropriate level of security that has been thoughtfully integrated with the project design.
- c.** The project design should create indoor environments with healthy air quality, comfortable temperatures, noise- mitigating acoustics, suitable and variable natural and artificial lighting, and high-quality, sustainable materials.
- d.** Both indoor and outdoor spaces should be designed to promote physical activity and inspire movement, provide access to daylight, fresh air, and drinking water, and provide visual connections to nature.
- e.** Related Sections and Resources:
 - i.** Chapter 06: Accessibility
 - ii.** Inclusive Design Guidelines (Mayor's Office for People with Disabilities)
 - iii.** Inclusive Design Guidelines: Sports & Recreation (Mayor's Office for People with Disabilities) <https://www1.nyc.gov/site/mopd/initiatives/inclusive-design-guidelines.page>
 - iv.** Aging in Place Guide for Building Owners (NYC Department for the Aging) <https://ihcdhome.humancenterreddesign.org/pdf/Aging%20in%20Place%20guide%20for%20Building%20Owners.pdf>
 - v.** Universal Design New York (DDC) <https://www1.nyc.gov/assets/ddc/downloads/publications/guides-manuals/universal-design-ny.pdf>
 - vi.** Active Design Guidelines (DDC) <https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/active-design-guidelines/adguidelines.pdf>

4) SUSTAINABLE AND RESILIENT

- a.** Systems performance should make efficient use of resources for operation and, through benchmarking and commissioning, be capable of demonstrating that they operate as designed. Maintenance plans must be achievable and ensure continued performance throughout each system's useful life.
- b.** The project design must consider emergent and long-term risks by planning to mitigate and withstand the impacts of climate change and changing public health and safety conditions including sea-level rise, intensifying storms, and extreme heat. This will include managing storm water, offsetting the heat island effect, utilizing native vegetation, and considering short- and long-term impacts on local and regional ecosystems, including fauna such as migratory birds.

- c. In addition to local and federal codes pertaining to flood mitigation and flood proofing, the project design must support community resilience by designing public facilities that perform effectively during extreme events, provide essential services to vulnerable community members, and return easily to normal operations
- d. Related Sections and Resources:
 - i. Chapter 07: Commissioning
 - ii. Chapter 08: Sustainability and Resiliency
 - iii. Climate Resiliency Design Guidelines (Mayor's Office of Resiliency) https://www1.nyc.gov/assets/orr/pdf/NYC_Climate_Resiliency_Design_Guidelines_v4-0.pdf
 - iv. Sustainable New York (DDC) <https://www1.nyc.gov/assets/ddc/downloads/publications/about-ddc/sustainable-new-york.pdf>
 - v. Geothermal Heat Pump Manual (DDC) <https://www1.nyc.gov/assets/ddc/downloads/Sustainable/GeothermalHeatPumpManual.pdf>
 - vi. Water Matters (DDC) <https://www1.nyc.gov/assets/ddc/downloads/publications/guides-manuals/ddc-water-matters.pdf>

5) FUNCTIONAL, DURABLE, AND COST-SENSITIVE

- a. The project team should select high-quality, durable materials, equipment and building systems that are simple to operate, maintain, update, and replace when needed. These materials and systems should be readily available and easily buildable with local construction practices to minimize lead times, eliminate cost overruns, and prevent delays.
- b. The project team should integrate functionality by thoughtfully incorporating building systems and services into the overall design, including security, lighting, mechanical equipment, utilities, and waste disposal, and by screening equipment from public view.
- c. The project's space planning must provide unimpeded access and required minimum clearances per manufacturer recommendations and OSHA for the service, repair, and eventual removal and replacement of equipment without removal of exterior walls or significant impact on adjacent equipment and building occupants. This includes major components such as switchboards, motor control centers, boilers, chillers, cooling towers, pumps and air-handling units as well as ancillary components such as valves, cleanouts and individual equipment controls. All spaces must be designed with reasonable construction tolerances to ensure compliance with all legal and programmatic spatial requirements.
- d. When proposing novel or innovative building systems, design features, or products, the project team must analyze and compare initial cost, long-term operating costs, and maintenance requirements in comparison to industry standard products and practices. These recommendations must be reviewed with both the Sponsor Agency and their facilities engineers to solicit input and manage operational expectations. The project team may be required to prepare supplemental manuals to facilitate the operation and maintenance of the proposed element.
- e. Related Sections and Resources:
 - i. Chapter 06: Accessibility (Sections A-G: Elements)

B. ACCESSIBILITY

The Consultant is responsible for the design and construction of projects so that the building and/or site is readily accessible to and usable by individuals with disabilities. The Consultant is responsible for complying with all applicable local, state and federal requirements, including but not limited to, the accessibility requirements set forth in Chapter 11 of the NYC Building Code and its associated Technical Reference Standard ICC A117.1-2009, and the 2010 ADA Standards for Accessible Design (the "2010 ADA Standards") as well as all other requirements included in the Accessibility Standards, as defined in section c. below. The Consultant is encouraged to utilize United States Access Board Guidelines, whenever possible, as an additional design resource. Conformance with only one code or standard does not fulfill the obligation of the Consultant. Where there is a conflict or inconsistency between the requirements, the Consultant will ensure compliance with the more restrictive requirement. Obtaining approvals and permits from the Department of Buildings or any other City agency does not waive the Consultant's obligation to ensure the project's design and construction is compliant with all applicable local, state and federal accessibility requirements.

1) SCOPING

The Consultant shall review the scope of work provided in the FEP Report/Project Objectives and analyze the scoping provisions and triggers within the NYC Building Code and 2010 ADA Standards to ensure the design fully meets these accessibility requirements accordingly. The Consultant must monitor compliance of the design and its documentation during all design and construction phases. All new buildings must be fully accessible, to the extent established by such codes and standards. When altering existing buildings, the Consultant is responsible for verifying that the scope of work in the FEP Report/PO fully addresses the requirements of the NYC Building Code or 2010 ADA Standards, and must notify DDC in writing of any potential omissions or conflicts. The Consultant shall evaluate whether ADA Path of Travel (28 CFR 35.151(b)) is triggered by any alteration to a primary function area. If an area containing a primary function has been altered without providing an accessible path to that area, and subsequent alterations of that area, or a different area on the same path, are undertaken within three years of the original alteration, the total cost of alterations to the primary function areas on that path of travel during the preceding three-year period shall be considered in determining whether the cost of making that path accessible is disproportionate. The Consultant shall also evaluate whether the building must be fully accessible due to a change in the dominant occupancy/use, or based on the value of the alteration, as outlined in NYC Building Code Sections 1101.3.1 and 1101.3.2. Once the required level of accessibility has been evaluated, the Consultant is responsible for proper execution of the technical requirements.

2) TECHNICAL REQUIREMENTS

The Consultant is responsible for ensuring all building components are designed and constructed in compliance with Accessibility Standards, as required by the project scope. The Consultant is advised to provide adequate construction tolerances to ensure ordinary construction inaccuracies do not result in a non-compliant built condition.

3) ACCESSIBILITY STANDARDS

To ensure capital construction projects are readily accessible to and usable by individuals with disabilities, and to prevent the unlawful discrimination based on disability, the term 'Accessibility Standards' used throughout this document shall mean the following, and are inclusive of current versions of all the following:

- a. The New York City Construction Codes, including Chapter 11 of the NYC Building Code;

- b. Accessible and Usable Buildings and Facilities, ICC A117.1 2009 Edition;
- c. NYC Charter §224.3, regarding induction loop systems;
- d. The Americans with Disabilities Act, 42 U.S. Code §12101 et seq. and regulations implementing Title II of the Americans with Disabilities Act, 28 CFR §35.101 et seq., with particular regard to §35.151 "New construction and alterations," and including, but not limited to, path of travel requirements associated with alteration work;
- e. The 2010 ADA Standards for Accessible Design for State and Local Government Facilities Title II, with particular regard to §104.1, concerning construction and manufacturing tolerances;
- f. Section 504 of the Rehabilitation Act, 29 U.S. Code §794, and implementing regulations;
- g. United States Access Board issued accessibility guidelines;
- h. The New York State Human Rights Law, Executive Law §291 et seq., with particular regard to §296(2)(c);
- i. The New York City Human Rights Law, Administrative Code §8-101 et seq., with particular regard to §8-107(15); and
- j. The Fair Housing Act, 42 U.S. Code §3601 et seq., as amended by the Fair Housing Amendments of 1988, and implementing regulations at 24 CFR Part 100.

C. HISTORIC PRESERVATION

1) INTRODUCTION TO HISTORIC PRESERVATION

It is critical for preservation expertise to be brought to bear at an early planning stage. Early decisions that define a project's direction can have serious implications for the historic and architectural integrity of a building or site beyond technical preservation and materials conservation. Historic preservation design criteria apply to work on structures, interiors, sites, streetscapes and works of art that fall into three categories based on the regulatory framework:

- a. Designated New York City landmarks, interiors, scenic landmarks, and properties in designated historic districts -- including all features within the boundaries of scenic landmarks and historic districts -- are subject to regulatory oversight by the NYC Landmarks Preservation Commission (LPC). The Commission makes little distinction in regulatory procedure or standards between individual landmarks and properties within historic districts.
- b. Properties that are not designated by the LPC but are of landmark quality, including those listed on or eligible for the New York State or National Registers of Historic Places, or eligible for local designation by virtue of their significant historic, cultural, architectural or landscape features, are not subject to regulatory oversight by the LPC. The determination of whether properties affected by a project are landmark quality is made by DDC's Historic Preservation Office (HPO) in consultation with the New York State Historic Preservation Office and the Landmarks Preservation Commission.
- c. Projects affecting properties in both above categories may require review by the NY State Historic Preservation Office (SHPO) and under the City Environmental Quality Review Act (CEQR) or other environmental review laws, depending on funding sources and potential for adverse impacts on historic resources. Projects affecting works of art will also require review by the Public Design Commission.

2) STANDARDS AND GUIDELINES

Regardless of the outside regulatory framework, all projects affecting historic properties are reviewed by the DDC Historic Preservation Office for conformance with historic preservation standards, generally defined by LPC rules and guidelines and/or the Secretary of the Interior's Standards for treatment of historic properties. The Consultant must obtain from the HPO the latest published guidelines, standards, rules, application forms and instructions pertaining to historic preservation from any agency having jurisdiction over a designated property. The scope of the project will determine the most appropriate way to apply preservation standards. Every effort shall be made to achieve full compliance with the standards and to protect the historic and architectural features which support the designation, listing, or eligibility of the property.

3) CONSULTANT SERVICES

The extent of services described below may vary according to the overall scope of work and regulatory framework. Other services may be required and may be more fully described in the Project Objectives-Scope of Work or Task Order. Typically, required services include:

a. Research

Documentary, historical, and field research sufficient to inform the project scope and intent will provide a sound basis for design decisions and help in evaluating conditions exposed during probes and/or construction.

b. Evaluation of Significance

The Consultant is expected to prepare an evaluation of the relative importance of features relevant to preservation. The evaluation shall be based on research, and on an inventory of features such as spaces, materials, structural and other building systems, equipment, furnishings, stylistic details, craftsmanship, works of art, as well as historic or cultural significance.

c. Existing Conditions

The Consultant shall provide a conditions report based on observation, interviews, probes and tests. The Consultant is expected to identify, plan and oversee probes and tests, to provide detailed reports, and to incorporate results into the design strategy.

d. Documentation

In the absence of existing measured drawings, the Consultant shall produce a set of base measured drawings of historical features in the areas of work included in the scope. Throughout the project, the Consultant shall keep a Record of all changes to existing and original features including materials, methods, design intent, and detailing. The Consultant shall provide photographic documentation of conditions and activities throughout the project.

e. Design Options

All design options shall respect the historic and architectural integrity of the structure or site. At least one option must fully conform to applicable LPC guidelines and rules and the Secretary of the Interior's Standards. Any project affecting a historic resource, even if it primarily involves non-architectural trades or is not specifically for historic preservation, can have preservation implications, which must be considered in the design. Each scheme must fully explain the approach and the consequences as they relate to preservation issues. Each scheme must also be accompanied by a cost estimate and must include a life-cycle analysis with long-term cost/benefit scenarios.

f. Salvage of Historic Artifacts

Architecturally and historically significant features and fixtures such as sculpture, doors, woodwork, light fixtures, and furnishings should be incorporated into the project, preferably in their original locations or elsewhere on the project site. If a reuse on site cannot be found, the Consultant is to arrange for their relocation or reuse by the sponsor agency. The contract documents shall reflect these determinations.

g. Application for Eligibility

The Consultant may be required to prepare an application for the determination of eligibility for the National or State Historic Register as an additional service.

h. Special Experience Requirements

When the construction contract calls for special experience requirements, the Consultant shall assist in the review and verification of the special experience qualifications submitted by the Contractor and/or proposed sub- contractors. The Consultant may be required to participate in site visits to view qualifying work.

i. Historic Preservation Specialists

The Consultant shall provide a full range of preservation and conservation services by qualified experts. These experts shall be used wherever appropriate, in all phases of the project, including construction. The level of their participation and the extent of their responsibility shall be clearly defined at the beginning of the project. Specialists who may be required include, but are not limited to: historians, archaeologists, architectural and art conservators, materials specialists, historic structural and systems engineers, historic landscape architects, and advisors on special crafts associated with historic properties.

j. Maintenance Handbook

The Consultant shall provide a maintenance handbook addressing all features and finishes related to the historic preservation work. These may be conserved and restored features, new features that replicate historic features, or other features and finishes that are complementary to the work and contribute to the historic and architectural character of the building or site. The handbook should include requirements and recommendations from manufacturers and suppliers of any materials or fixtures.

D. BUILDING ELEMENTS AND SYSTEMS

The following technical criteria must be applied to the design of building elements and systems in the project. This criteria is presented in CSI's Unifomat classification system, and is characterized by a description of performative and functional requirements without regard to the materials and methods used to accomplish them.

A SUBSTRUCTURE

A10 FOUNDATIONS

A1000 Foundations General

1. Foundation Type

The Consultant must perform investigative work on the site including but not limited to borings and evaluate this data to determine the most suitable and economical type of foundation. The foundation must be properly designed, detailed, and specified on the structural drawings and specifications.

2. Ground Water

The Consultant must evaluate the ground/flood water conditions indicated in the Geotechnical report. If subsurface waterproofing is required, these details must be shown on the architectural drawings, coordinated, and schematically shown on the structural drawings

3. Settlement

The foundations must be designed to minimize overall as well as differential settlements. For utility lines where such settlement could have detrimental effects on facility operations, health, and safety, the settlement criteria must be more stringent. This is to be coordinated by the Design-Builder with other trades, as applicable.

4. Unsuitable Soils

Where the existing soils are not suitable for supporting a slab on grade, such floor systems.

5. Vibrations and Monitoring

The Consultant must advise on the requirements for monitoring the structure and any affected structures in the vicinity and provide relevant guidance in the notes or on the drawings.

A1020 Special Foundations

A1020.10 Driven Piles

1. The effect of pile driving operations on adjacent properties must be taken into consideration during design and should be reviewed with DDC. Pile types not mentioned in the NYC Building Code must be specified only after appropriate design analysis is performed and approval from the DOB is obtained. DOB determination is required prior to Design Development Phase kick-off.

A1020.50 Underpinning

1. Where the project is located adjacent to existing structures, the Consultant must make every effort to avoid or minimize the need for underpinning. If underpinning is found necessary, the following recommendations must be adhered to:
 - a. Where underpinning may be required, the Consultant must notify the Project Manager at the Schematic Design phase to contact the adjacent property Owner and coordinate all issues associated with underpinning.
 - b. The design of the underpinning is the responsibility of the Consultant and must be designed by a Professional Engineer, licensed in the State of New York, and retained by the Consultant. The drawings must be signed and sealed by the Structural Engineer.
 - c. The Consultant must review the underpinning for its impact on the new and existing construction and for conformance to their recommendations.
 - d. The Consultant is solely responsible for monitoring the conditions of the adjacent buildings and other structures affected by the underpinning during construction.
 - e. Underpinning must be identified and listed as a special inspection.
 - f. The Consultant must evaluate and monitor adjacent or affected historic properties.

A40 SLABS ON GRADE

A4000 Slabs On Grade – General

1. The Consultant must design, detail, and adequately specify all new slabs on grade to minimize or eliminate cracking and curling. Structural Synthetic Macro-Fibers should be used as a substitute for welded wire fabric reinforcement to minimize cracking in concrete from both plastic shrinkage and temperature shrinkage. The design must meet the requirements of ACI 360 R, Design of Slabs on Grade, and other applicable guidelines.

A90 SUBSTRUCTURE RELATED ACTIVITIES

1. Subsurface Investigation

In addition to providing for a suitable foundation solution, the Consultant is expected to use best professional judgment and experience to determine a soil exploration program that will reasonably clarify soil related work. The Consultant is responsible for the geotechnical analysis and engineering of the project.

- a. Office of Geotechnical Investigations (OGI)

At the earliest project stage, the Consultant shall consult through the DDC Project Manager with the DDC OGI to determine a preliminary number of borings, their location, and other required investigations. Contact with the OGI shall be maintained throughout site exploration. The Geotechnical Section shall be represented at the Design Kick-off Meeting.

b. Site Visits

All projects that require excavation and foundation work will be visited at the start of Pre-Schematic or Schematic Design by the Consultant's Structural Engineer or Geotechnical Engineer. This site visit is a contractual obligation. Based on the project requirements and as result of this field visit the program of soil exploration shall be initiated.

c. Soil Exploration Program

The soil exploration program should enable the determination of the optimal foundation solution as well as the reduction of uncertainty during construction. DDC does not place a maximum limit on the number of borings to be taken. The number and type of investigations should be based on reasonable economic and engineering decisions and in accordance with the NYC Building Code.

d. Additional Borings

When the Consultant finds that the preliminary borings are not sufficient to provide information for design and construction, additional borings shall be ordered as soon as possible to prevent any potential delay to the project schedule.

B SHELL

B10 SUPERSTRUCTURE

1. **Superstructure Types**

The Consultant must evaluate and design structural systems that are economical, efficient, durable, sustainable and flexible for future modifications and reconfigurations of spaces meeting the loading, serviceability, durability and vibration requirements of the Building Code, ASCE 7 and other applicable guidelines. The Consultant must evaluate and design lateral force resisting systems (LFRS) that are efficient and economical and appropriate for a gravity structural framing system.

B20 EXTERIOR VERTICAL ENCLOSURES

B2010 Exterior Wall

B2010.00 Exterior Wall – General

1. **Cavity Wall Air Space and Insulation**

- a. Cavities exceeding the code maximum will require analysis / calculations to be performed for the tie anchors.
- b. Cavity walls are designed not only to guide any moisture occurring in the cavity to move downward to the flashing and weep vents, but also to allow a certain flow of air throughout the cavity. Recommend providing a 2- inch minimum clear drainage cavity (not including the insulation) to be effective, to allow for proper construction of the wall, and to minimize mortar fins, droppings and bridging.

- c. Clearly indicate insulation attachment method either mechanically or adhered to masonry backup. Friction fitting rigid insulation between horizontal reinforcement is not an acceptable solution.
- d. If constructing cavity walls, provide continuous flashing at the bottom of the cavity and wherever the cavity is interrupted by elements such as shelf angles, lintels and penetrations.

B2010.10 Exterior Cladding

1. General

- a. Provide for continuity of the thermal and moisture protection layers of the exterior vertical enclosure and its connection to the horizontal enclosure.
- b. Design envelope sections to prevent condensation on interior surfaces of or within wall/roof sections that would support mold growth.

2. Materials

The Consultant must use materials that are cost effective, durable, easily maintained, and appropriate to the context of the project site. For renovations and additions, the qualities of the new exterior materials must compliment or match the existing materials when appropriate.

3. Loads

The Structural engineer must provide cladding design loads necessary for the design of the exterior building envelope to the architect. The structural engineer must also provide the architect with relevant building deflections necessary for the design of cladding details and must recommend location of the expansion and construction joints.

The Consultant is responsible for the strength and code compliance of all masonry elements, including brick, block, stone, and mortar. Attachment and reinforcement of masonry components, especially parapets, must be clearly detailed on the drawings. Special structural investigations must be conducted on landmarks and landmark quality structures.

4. Anti-Graffiti Coatings

Sponsor Agencies may require sealants to protect against graffiti. When specifying sealants, the Consultant must evaluate the risks of long-term damage to materials, particularly masonry historic structures and landmarks. Knowledge of prior coatings on the building is required, as are material samples with and without proposed sealants. Only non-toxic sealants must be specified. Detailed programmatic requirements will be addressed for such projects in the specific project requirements.

B2010.30 Exterior Wall Interior Skin

- 1. Where used, build with glass mat or moisture/mold resistant, Type X gypsum wall board for the interior face of exterior walls. On exterior walls, use only interior wall finishes that allow water vapor within the wall to escape into the conditioned space. Do not use vinyl wall coverings, oil-based paint, and other vapor-resistant materials as interior finishes for exterior walls.

B2010.90 Exterior Wall Openings Supplementary Components

1. Flashing (076000)

- a. The Consultant must show flashing details for installation for lapping / sealing, terminations and end dams, inside corners and outside corners (either field formed or prefabricated), wall to roof line, base flashing and copings. Isometric or 3D drawings must be used to convey proper detailing.
- b. Where the flashing is not continuous, such as over and under openings in the wall and on each side of vertical expansion joints, the ends of the flashing should be extended beyond the jamb lines on both sides and turned up into the head joint at least 1 in. at each end to form a dam. It is recommended to turn up flashing into the sill joints 4".
- c. Provide weep vents and mortar net at all wall flashings.
- d. Flashing materials to be chosen based on durability and compatibility with adjacent materials. Service life of flashing should meet or exceed that of the wall or roof assembly it is part of. Factors such as durability during construction, corrosion, deterioration due to UV exposure, and movement must also be part of the selection criteria. Dissimilar metals should be avoided.

B2020 Exterior Windows

B2020.00 Exterior Windows General

1. Sponsor Agencies may require the use of security measures on windows to guard against window vandalism and break-ins. The Consultant is encouraged to explore an improved aesthetic for these applications using new materials, technologies, and strategies to meet the Sponsor Agency's need for security.
2. Select framing that includes advanced thermal breaks of polyester-reinforced nylon.
3. Wherever possible, select systems that incorporate pressure-equalized technology.
4. Consider building energy efficiency, occupant comfort, daylighting, acoustic performance, and security when selecting exterior window and glazing systems.

B2080 Exterior Wall Appurtenances

1. Provide bird control devices per the Bird-Safe Building Guidelines, NYC Audubon, or as required by code.

B30 EXTERIOR HORIZONTAL ENCLOSURES

B3010 Roofing

B3010.00 Roofing General

1. Construct in accordance with the recommendations of the National Roofing Contractor Association (NRCA) Manual – Current Edition.
2. Roof-mounted equipment should be elevated as recommended in the NRCA Roofing and Waterproofing Manual and set back from the roof edge to minimize visibility.

3. Do not use pitch pockets as part of the roof design.
4. No building element may be supported by the roofing system except protective walkways manufactured specifically for use with that roofing system.
5. Provide protective walkways on the roof along routes to and around equipment for maintenance.

B3010.50 Low Slope Roofing

1. For edge flashings and copings on low-slope roofing, follow ANSI/SPRI ES-1.

B3010.90 Roofing Supplementary Components

1. Install vapor retarder in accordance with guidance in the NRCA Roofing and Waterproofing Manual.
2. For Roof System Related Sheet Metal Flashing use The NRCA Manual: Architectural Metal Flashing, Condensation Control & Reroofing – 2010 and SMACNA Architectural Sheet Metal Manual.

B3050 Horizontal Openings

B3050.10 Roof Windows and Skylights

1. Assemblies must comply with wind load testing in accordance with ASTM E 1233.
2. Skylight design must follow the guidelines of AAMA Standard 1600.
3. For the design of sloped glazing, reference the following two AAMA publications as resources: Glass Design for Sloped Glazing and Structural Design Guidelines for Aluminum Framed Skylights.
4. When designing for essential facilities as identified in the Specific Project Requirements, roof window and skylight assemblies to pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for project's Wind Zone for enhanced protection.

06

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 Interior Partitions

1. Use cementitious wall board as a tile base.
2. Use types IR and MR and type X gypsum wallboard where applicable for high-impact and moisture resistance per ASTM C645 and C1396.
3. Masonry partitions to be per ASTM C129, C645, C1596.

C1020 Interior Windows

1. Use insulated glazing where separating conditioned spaces.

C1030 Interior Doors

1. Per ANSI/SDI A250.8 (2017) for hollow-metal doors and frames, provide at a minimum Heavy-Duty Doors and Frames, Level 2 or Extra-Heavy-Duty Doors and Frames, Level 3 and Physical Performance Level A, Model 1 (full flush),

with full profile welded frame construction, or as required in the Specific Project Requirements.

C20 INTERIOR FINISHES

1. Finish materials must not adversely affect the health of workers or occupants. Health considerations must extend to the material's production, off-gassing during installation, and environmental pollution engendered by the disposal process.

C2010.00 Wall Finishes

1. Provide moisture and mildew resistant interior wall finishes which are easily maintained, and suitable in accordance with industry standards for the architectural surface being finished.

C2030.00 Floor Finishes

1. When budget and maintenance conditions allow, flooring from renewable resources such as linoleum, rubber, clay, or cork, and materials with high recycled content are encouraged. Vinyl composition tile (VCT) is discouraged. For health and maintenance reasons carpeting is discouraged. Alternative flooring should be considered wherever suitable, and in those situations where carpet must be used, carpet tile is preferred.

D SERVICES

D20 PLUMBING

D2000 Plumbing Performance Requirements

1. Plumbing Seismic Design

Plumbing Systems and Equipment Requiring Restraint- Plumbing natural gas piping, motor vehicle fuel storage tankage, piping and dispensing equipment, domestic water storage tankage, supply/return piping and heating equipment, sanitary drainage piping and pumping equipment, vent piping, stormwater drainage piping and pumping equipment associated with building life safety systems or other critical plumbed equipment that must be maintained functional and operational in the aftermath of a seismic event, must be designed for seismic forces and adequately restrained.

2. Special Purpose Equipment Areas Served By Plumbing Systems

- a. In Mechanical Equipment Rooms, potable water piping and sanitary/storm drain piping must not be located above motor control centers, variable frequency drives (VFD), motor disconnect switches and other mechanical equipment controls. Where required, suitable means of protection (guards, drain pans, pipe leak containment jacketing and leak detection) will be provided to shield mechanical equipment from exposure to leaking and spraying water.
- b. Mechanical Equipment Rooms must be provided with floor drains and/or other suitable means of collecting, containing, and disposing of water. Overhead and floor mounted drain piping will be located and arranged to maintain safe headroom and adequate walkway clearance for normal maintenance access and service clearance.

- c. In Electrical Equipment Rooms – no potable water piping and sanitary/storm drain piping are permitted. Where required, suitable means of protection (guards, drain pans, pipe leak containment jacketing and leak detection) will be provided to shield electrical equipment from exposure to leaking and spraying water.
- d. In Information Technology Equipment Rooms - no potable water piping and sanitary/storm drain piping are permitted. Where required, suitable means of protection (guards, drain pans, pipe leak containment jacketing and leak detection) will be provided to shield information technology equipment from exposure to leaking and spraying water
- e. In Chemical Storage Rooms, UPS Battery Rooms and other areas with hazardous chemical exposure environments, – an OSHA compliant emergency eyewash station and shower will be provided. Floor drains provided for emergency eyewash stations and shower locations will incorporate suitable means of collecting, containing, treating, and safely disposing of chemically contaminated water before discharge to building drainage system and the City sanitary sewer.
- f. Vertical Chases and Shafts- all potable water piping and sanitary/storm drain piping pipes located within building vertical chases and shafts will have accessible service drain valves with hose bibs located at intermediate floors and the bottom of pipe risers for ease of maintenance. Where required, provide a means of air venting and vacuum relief to allow water to drain freely from riser piping. A floor drain will be provided at the lowest level in each chase or shaft. Adequate access to the service drain valves and floor drains will be provided.

D2010 Domestic Water Distribution

D2010.00 Domestic Water Distribution General

1. Domestic Cold Water Service

- a. Domestic cold water service will consist of a complete piping distribution system originating from a potable water source including the provision for utility service water meter and backflow preventer equipment approved for protecting the City water supply.
- b. In the design and arrangement of cold water service piping distribution systems, there must be no pipe dead legs or capped spurs.
- c. The Domestic cold water service will supply potable cold water to all plumbing fixtures, hose bibs, plumbed equipment, domestic hot water heaters and make up water provided for mechanical equipment equipped with an approved air-gap fitting or backflow protector device.

2. Domestic Hot Water Supply

- a. Domestic hot water service will consist of a complete piping distribution system originating from a potable water source and if separately derived, include the provision for utility service water meter and backflow preventer approved for protecting the City water supply.
- b. In the design and arrangement of hot water service piping distribution systems, there must be no pipe dead legs or capped spurs.

- c. Domestic potable hot water should be generated utilizing a reliable, efficient and sustainable source of energy. Energy recovery can be used to reduce the reliance on electricity and fossil fuels for water Heating. For specific requirements, refer to the Owner's Project Requirements (OPR) and the specific project requirements.
- d. For emergency disinfection, domestic water heating equipment will have the capability of heating the entire distribution system to a temperature of 160°F (minimum).
- e. Storage of heated potable water must minimize stagnation, facilitate re-circulation and point of use consumption. A heated potable water storage and delivery temperature of 140°F (minimum) is acceptable providing that the point of use water temperature is regulated to prevent scalding.
- f. Where provided, potable hot water return systems will be designed with balancing valves and test plugs at each return circuit.
- g. Point-of-use instantaneous hot water heaters are acceptable for use at emergency eyewash, shower and other plumbing fixtures to ensure the reliable supply of tepid water.

3. Domestic Water Service Pressure

The Domestic water service supply pressure must be sufficient to provide the design water demand volume and pressures required by plumbing fixtures and plumbed equipment.

4. Domestic Water Booster Pumping System

Where City water supply pressure is inadequate to provide the design water demand volume and pressures required by plumbing fixtures or and plumbed equipment, provide a factory assembled and tested pressure booster pumping system including equipment base, booster water pumps sized for design volume demand, maximum delivery pressure requirement and full operating redundancy, variable speed pump control, ASME hydro-pneumatic tank, pressure operating control, pump inlet/outlet manifold piping, fittings, valves, air venting devices, pressure relief devices and other appurtenances.

5. Domestic Water Equipment Pressure Control

At all quick-closing automatic valves (mechanical makeup, drinking fountains, flush valves, single lever control faucets, temperature regulating valves, dishwashers, return pumps, and similar equipment) water hammer arrestors will be provided. Water hammer arrestors should be selected and applied in accordance with NYC Code, Plumbing Drainage Institute (PDI) Standards and as recommended/required by the plumbed fixture and equipment manufacturer.

D2010.60 Plumbing Fixtures

Plumbing fixture type, use, and materials of construction will be selected based on the OPR and the specific project requirements. Coordinate fixture selection and design application with NYC Code, ADA requirements, City water supply pressure level, method of potable cold/hot water distribution system pressure/volume regulation and fixture manufacturer's performance requirements/recommendations.

D2010.90 Water Metering

1. The installation of water meters must comply with RCNY Title 15, Chapter 20, "Rules and Regulations Governing and Restricting the Use and Supply of Water" available from the New York City Department of Environmental Protection (DEP). A list of "Approved Water Meters and Related Equipment" is available from NYC DEP.
2. All water meter bodies, service valves and piping will be composed of non-lead metal alloys that comply with NSF 61G/372 Standards and NYC DEP Rules.
3. NYC DEP uses a Radio Frequency (RF) fixed network Automatic Meter Reading (AMR) System for meter reading. To register the meter head installed under permit, the installation of power receptacle is required. The Licensed Plumber must connect all three wires from the meter register head to the receptacle. The wire from the meter register must be 22-gauge, three conductor wire, red-black-green. DEP will modify the power receptacle with a Meter Transmitter Unit (MTU) during inspection of the installation.
4. Sub-metering equipment with remote monitoring capability will be used to collect water use data for building equipment such as: cooling tower/evaporative cooler makeup water, steam and hot-water boilers, controlled irrigated landscape areas and other high demand water use equipment, system or process.
5. All sub-metering equipment must be configured to communicate water consumption data to a meter data management system which is capable of electronically storing data and creating user reports showing calculated hourly, daily, monthly and annual water consumption.
6. NYC DEP has approved for use several devices that transmit meter information to a point other than, and in addition to the AMR System. NYC DEP does not provide maintenance support for these devices. The output of meter attachments is not recognized for billing purposes. Meter attachments must not be configured to interrogate the meter more than once every 60 minutes. Refer to the "Water Meter Data Output to Building Management Systems Guide" available in the "Property Managers and Trade Professionals" publication available from NYC DEP.

D2020 Sanitary Drainage Systems

D2020.00 Sanitary Drainage Systems General

1. The sanitary drainage system will consist of a complete piping and collection/ volume detention network serving all required plumbing fixtures, floor drains and other equipment connecting to the City sewer system.
2. The sanitary flow will be by gravity. Where required, provide suitable means of sanitary collection/detention (tank, pit, manhole, catch basin) and transfer pumping capability to allow gravity flow to the City sewer system.
3. Any time a project requires connecting to a City sewer, NYC DEP must approve that the sewer can accept the sanitary and/or storm discharge. A sewer certification is required for any new connection to a City sewer.
4. Where a City combined sanitary and stormwater sewer presents a risk of surging backflow into the building, evaluate the application of a sewer back water valve with manual gate to prevent sustained damage and contamination of property and building interior.

D2020.30 Sanitary (Soil and Waste) and Vent System

1. Sanitary Drainage System

Steam condensate as well as chemically treated mechanical discharge from cooling towers, boilers, chillers, and other mechanical equipment must not discharge to the sanitary drainage system without proper treatment for protection of the environment and waterways.

2. Sanitary Floor Drains

Trap primers must be provided for all sanitary drains (floor drains, receptors, open site drains, hub drains, and similar) where drainage is not routinely expected or is seasonal.

3. Grease Interceptors

- a. Drains, fixtures, and equipment discharging fat, oil, or grease-laden waste; within 10 feet of the cooking battery; and as required by the Department of Health, must discharge to a grease interceptor before connecting to the sanitary sewer.
- b. Grease interceptor(s) must meet criteria mandated by the Industrial & Acid Waste Unit at DEP. Sizing of grease interceptors must be based on the so-called volume sizing guideline, not the drainage fixture-unit technique.

4. Sand/Oil Separator

Floor drains and/or trench drains in vehicle repair garages must discharge to a sand/ oil separator before discharging to the sanitary sewer.

5. Piping

- a. Hub-Less (no hub) Cast Iron piping is permitted for the sanitary system inside the building except for underground applications. Service weight Cast Iron is allowed in either above or underground applications, but underground connections must be Cast Iron bell and spigot pipe with a lead and oakum joint.
- b. Hub-less (no hub) pipe and fittings must not be used for the storm piping inside or outside the building. Only Service Weight with caulked joint (bell and spigot, lead and oakum) for underground application must be used for storm drainage piping. The use of the so-called "push-on-joint" or a hub pipe with neoprene gasket is allowed for interior and above the ground storm piping.

D2020.90 Thermal Pipe Insulation (Sanitary)

1. All sanitary sewer vents terminating through the roof must be insulated for a minimum of 6 ft. below the roof line to prevent condensation from forming and must include vapor barrier jacket on this insulation.
2. All piping exposed in plenums, or above the ceiling, must be insulated to prevent condensation. The thermal pipe insulation for plumbing systems must comply with fire and smoke-developed index in accordance with the Code requirements.

D2030 Storm Drainage Systems

D2030.00 Storm Drainage Systems General

1. The stormwater drainage system will consist of a complete piping and collection/ volume detention network serving all required building stormwater scuppers, gutters, leaders and storm drains connecting directly and indirectly to the City sewer system.
2. Stormwater flow will be by gravity. Where required, provide suitable means of stormwater collection/detention (tank, pit, manhole, catch basin) and transfer pumping capability to allow gravity flow into the City sewer system.
3. NYC DEP allows for different types of stormwater management systems to comply with the stormwater performance standard, including subsurface, rooftop and stormwater recycling systems. These systems store and slowly release stormwater to the sewer system (detention) or dispose of stormwater onsite (retention) through infiltration to soils, evapotranspiration, and recycling onsite.
4. Potable water can be conserved where stormwater is collected, stored and treated for use in building water closets, urinals, cooling tower makeup supply and "grey water" systems for vehicle and other non-potable washing functions. Untreated water can be used for site irrigation of landscape features.
5. Maximum stormwater collection/detention volume will be designed in accordance with NYC DEP "Guidelines for the Design and Construction of Stormwater Management Systems" and "Criteria for Detention Facility Design" available from NYC DEP.
6. Any time a project requires connecting to a City sewer, NYC DEP must approve that the sewer can accept the sanitary and/or storm discharge. A sewer certification is required for any new connection to a City sewer.
7. Where a City combined sanitary and stormwater sewer presents a risk of surging backflow into the building, evaluate the application of a sewer back water valve with manual gate to prevent sustained damage and contamination of property and building interior.
8. Clearwater drainage including cooling coil condensate drainage, evaporation pan drainage, ice makers and similar clear, non-chemically treated drainage will be recovered and reused for cooling tower make-up, landscape feature irrigation, greywater use or similar purposes. Clearwater drainage without chemical, vegetable, human, animal, protein, fecal, oil, grease, or similar pollutants may be discharged to the stormwater drainage system where permitted by NYC DEP, NYS DEC and the U.S. Environmental Protection Agency.
9. Foundation and Subsoil Drainage
 - a. The requirements of the foundation and subsoil drainage system must be identified, capacity calculated, and materials identified by the geotechnical soils engineer and identified in the geotechnical report. The layout and installation details and materials (identified by the geotechnical report) must be specified and identified in the structural foundation drawings and indicated on the architectural drawing sections and details. See Structures and Soils section in this Chapter.

- b. The foundation and subsoil drainage system must be provided with an emergency power source, backwater prevention, and perforated drain tile piping in washed gravel bed with filter fabric, which must extend to the duplex sump pumping system as required.

D30 HVAC

D3000 HVAC Performance Requirements

1. All Owner's Project Requirements (OPR) and specific project requirements must be met.
2. **Thermal Comfort and Humidity Requirements**
The thermal comfort and humidity performance requirements of HVAC Mechanical Systems must be designed in accordance with the NYC Building Code, NYC Energy Conservation Construction (ECC) Code and Ref. Std. ASHRAE 55. Indoor habitable and occupied spaces must be designed to provide a healthy and comfortable environment year- round.
3. **Ventilation**
Provide for and maximize the benefit of natural and or mechanical ventilation for occupied and habitable spaces. Make reasonable provisions in equipment selection and system design to permit the increase of outdoor air ventilation supply rate and exhaust air rate to allow for the dilution and purge of indoor air contaminants that may be determined to contribute to unhealthy environmental conditions.
4. **Indoor Air Quality**
To provide health and comfort of the building occupants, design and install the mechanical systems to meet the requirements of the Code. Exposure limits to contaminants (particulate, gaseous, bacterial, viral) to be established by governing City, State and Federal Public Health Authorities.
5. **Interior Noise Control**
Limit occupant exposure to excessive mechanical noise and vibration. Any equipment generating indoor noise must meet the STC, OITC, NC, RC, sound power level, vibration displacement, velocity and acceleration limitation requirements of the NYC Codes, latest edition of the ASHRAE Applications Handbook and other applicable Reference Standards. Where required, perform, an in depth acoustical and vibration analysis to identify potential noise and vibration source transmission pathways and to develop effective isolation and control strategies for minimizing excessive noise and vibration propagation indoors.
6. **Exterior Noise Control**
When outdoor noise generation is a controlling design consideration, select outdoor mechanical equipment to reduce assembly and/or component vibration and aerodynamically generated noise in accordance with the project acoustician's recommendations.

Limit the propagation of excessive outdoor mechanical noise. Any equipment generating noise must meet the sound power level, vibration displacement, velocity and acceleration limitation requirements of the NYC Codes, latest edition of the ASHRAE Applications Handbook and other applicable Reference Standards. Where required, perform, an in depth acoustical and vibration analysis to identify potential noise and vibration source transmission pathways and to develop effective isolation and control strategies for minimizing excessive noise and vibration propagation outdoors.

7. Energy Efficiency

The HVAC system design must meet or exceed the requirements of the NYC ECC and Local Laws. An integrated design approach must be implemented to incorporate all elements that will affect the performance of the HVAC System.

8. Operation and Maintenance

a. Accessibility

Design the location and installation of all HVAC System equipment, control devices, balancing devices, means of isolation and means of access so that it all can be safely and easily inspected and maintained. Comply with the manufacturer's recommended clearances around installed equipment.

b. Operability

The sequence of operation for the control systems must be clearly described and properly documented. The HVAC system design should simplify control and minimize the need for overly complex control systems.

c. Reliability

Design the HVAC system so that equipment failures and normal maintenance have minimal impact on the users. Failure of one piece of equipment should not negatively impact large portions of the building. Install piping and valves so that different combinations of equipment can be used during replacement and overhaul. Equipment components, spare parts, and materials should be readily available, and the equipment should be serviceable, repairable by service providers and resources available locally.

d. Recapitalization

The City of New York upgrades building Mechanical systems in phases over many years while parts of the building are occupied. The system's design should consider how equipment elements will be replaced in the future. Vertical and horizontal distribution should allow parts of the system to remain in operation and zones of the building to be occupied during equipment replacement.

9. Longevity

Public buildings have a longer life expectancy than most commercial office buildings; many buildings are over 50 years old and are expected to continue in service for decades to come. HVAC systems are expected to have extended service lives. They will be used by many different tenants, operated by many different maintenance providers, and modified many times over the life of the building. Selection of robust, reliable, energy efficient equipment that can be reliably operated over the long term is required.

10. Visibility

Exterior mechanical equipment should be located where it is not visible to the public or, when this is not feasible, should be provided with visual screening.

D3050 Facility HVAC Distribution Systems

D3050.10 Facility Hydronic Distribution

1. Steam, Hot, Chilled, & Condenser Water Systems and Selected Equipment

- a. Piping System:
 - i. Steam, Steam Condensate, Hot, Chilled & Condenser water piping must be designed in accordance with the latest edition of the ASHRAE Fundamentals Handbook and ASHRAE HVAC Systems & Equipment Handbook.
 - ii. Evaluate the piping system's potential for expansion and contraction and show all provisions for anchoring, guiding, and compensation on the drawings. As required, coordinate with Structural work for the design of all attachments of pipe supports, guides and fixed anchoring locations to the building structural systems.
- b. Pumps:
 - i. Determine the type of pump (centrifugal, positive displacement, base mounted, in-line, etc.) that best fits the application.
 - ii. Select pump materials of construction to resist wear, fatigue, and corrosion and to operate reliably, safely and efficiently for the design pressure and temperature requirements.
 - iii. Select the pump size and operating point of rating to maximize hydrodynamic efficiency and to reduce energy consumption.
 - iv. Select pump operating speed to minimize operating noise and vibration levels. Pumps that are designed for variable speed operation must be selected to operate safely without excessive vibration levels, excessive deflection of rotating assembly elements and damage to pump casing seals and drive bearings throughout their range of operating speed adjustment.
 - v. Pump equipment must have remote control and supervisory capability for integration with BAS or other supervisory control and monitoring systems as identified in the Owner's Project Requirements.
- c. Boilers:
 - i. Choose the type of boiler (cast iron, dry-base, scotch marine, water tube, etc.) based on the application (working pressure and temperature, fuel used, construction material, draft type, low emissions, condensing or not, etc.), efficiency requirements, and the dimensional constraints of the boiler room.
 - ii. Boiler heat exchangers and auxiliary equipment must be constructed of materials of construction to resist wear, fatigue and corrosion and to operate reliably, safely and efficiently for the design pressure and temperature requirements.
 - iii. Boiler and auxiliary equipment must have remote control and supervisory capability for integration with BAS or other

supervisory control and monitoring systems as identified in the Owner's Project Requirements.

d. Chillers:

- i. For chilled water systems of 500 tons and larger, centrifugal chillers should be used. Below 500 tons, reciprocating compressor, scroll, and rotary screw chillers are permitted.
- ii. Select chiller and auxiliary equipment to minimize operating noise and vibration levels.
- iii. Chiller heat exchangers, refrigerant compressor and auxiliary equipment must be constructed of materials of construction to resist wear, fatigue and corrosion and to operate reliably, safely and efficiently for the design pressure and temperature requirements.
- iv. Chiller and auxiliary equipment must have remote control and supervisory capability for integration with BAS or other supervisory control and monitoring systems as identified in the Owner's Project Requirements.

e. Cooling Towers:

- i. Design for either Induced or Forced Draft cooling towers, whichever best fits the application.
- ii. Select cooling tower fan operating speed to minimize operating noise and vibration levels. Fans that are designed for variable speed operation must be selected to operate safely without excessive vibration levels, excessive deflection of rotating assembly elements and damage to drive bearings throughout their range of operating speed adjustment. A fan vibration switch with a manual reset must protect tower fan assemblies.
- iii. Multiple cell towers must have equalization piping between cell basins. Equalization piping must include automatic isolation and shutoff valves between each cell to control water flow only over those towers that are in use.
- iv. Cooling tower basins, housing, splash fill and mist eliminator elements must be constructed of materials of construction to resist wear, fatigue and corrosion and to operate reliably, safely and efficiently for the design pressure and temperature requirements. Special consideration must be given to de-icing cooling tower basins and splash fills if they are to operate in subfreezing weather.
- v. Wind and seismic design must be incorporated. If the cooling tower is located on the building structure, vibration and sound isolation must be provided.
- vi. Cooling tower and auxiliary equipment must have remote control and supervisory capability for integration with BAS or other supervisory control and monitoring systems as identified in the Owner's Project Requirements.

f. Cathodic Protection

The requirement for providing cathodic corrosion protection for underground metallic piping must be evaluated by means of a geotechnical report including soils analysis and electric resistivity test. Where required, cathodic protection or other accepted means of preventing pipe corrosion must be provided.

g. Water Treatment

Provide complete systems for water treatment. The methods used to treat makeup water must have demonstrated prior success in existing facilities using the same municipal water supply and must follow the guidelines outlined in the ASHRAE Applications Handbook. The design of the water treatment for closed and open hydronic systems must take into consideration the operational and maintenance needs of all system equipment including such components as boilers, chillers, cooling towers, other heat exchangers, pumps, and piping. The design must address all aspects of water treatment: biological growth, dissolved solids and scaling, corrosion protection, and environmental discharge regulations. The chemical feed system equipment must have remote control and supervisory capability for integration with BAS or other supervisory control and monitoring systems as identified in the Owner's Project Requirements.

h. Air Control

Pressurized diaphragm expansion tanks must be appropriately sized for closed piping systems. Air separators and vents must be provided on closed hydronic systems to remove accumulated air within the system. Automatic bleed valves must only be used in accessible spaces in mechanical rooms, where maintenance personnel can observe them, and they must be piped directly to open drains. Manual bleed valves must be used for terminal units and other less accessible high points in the system. Air vents must be provided at all localized high points of the piping systems and at each heating coil, and system drains must be provided at all localized low points of the piping systems and at each heating coil.

i. Piping System and Equipment Identification

All pipes, valves, and equipment in mechanical rooms, shafts, ceilings, and other spaces accessible to maintenance personnel must be identified with color-coated piping or color-coded bands, and permanent tags indicating the piping system type and direction of flow, or the equipment type and number, in accordance with ASHRAE handbooks. The identification system must also tag all valves and other operable fittings in accordance with ASTM Standard A13.1.

D3050.50 HVAC Air Distribution

1. General Design Requirements

For dedicated zones of control, Constant Volume (CV) systems are acceptable. For multiple zones of control, separate Variable Volume (VV) systems are required.

- a. Use diffusers and registers in lieu of grilles for supply air.
- b. Use sheet metal ductwork only; do not use fiberglass ductwork.

- c. Use external thermal duct insulation in lieu of internal insulation.
- d. Turning vanes must comply with SMACNA's HVAC Systems duct design standard.
- e. Use quadrant opposed blade dampers for balancing in lieu of splitter dampers. All supply and return branch ductwork must be provided with opposed blade dampers.
- f. Review security requirements with Sponsor Agency. For security applications, use framed security bars for HVAC openings or ducts 6" or larger in any dimension.

2. System Layout

Unless limited by the Owners Project Requirements and the specific project requirements, both overhead and underfloor air distribution systems can be considered for the design of HVAC Systems. Additional consideration for housekeeping and maintenance may be required for the application of underfloor air distribution systems. See Section D 3000, Part 8. Maintenance & Operations for additional guidance.

- a. The use of Mechanical Equipment Rooms (MER) as HVC System return air or relief air plenums is not permitted.

3. Air Delivery Devices

Air is to be supplied through diffusers or registers mounted in ceilings, sidewalls, sills, or floors. Air is to be returned or exhausted through grilles, slots, and other openings located in sidewalls and ceilings.

- a. Adequate space ventilation requires that the selected diffusers effectively mix the total air in the room with the supplied conditioned air.
- b. The locations of the air delivery devices and the ranges of their outlet airflow rates must be selected to ensure that the Air Diffusion Performance Index (ADPI) values remain above 80% during all full-load and part-load conditions, and below the specified noise level to achieve the background noise criteria, in accordance with the test procedures specified in Appendix A of ASHRAE Standard 113
- c. Variable air volume (VAV) terminal units or constant air volume (CAV) terminal units, including series-type-fan- powered VAV terminal units, may be used. Ceiling diffusers or booted-plenum slots must be specifically designed for VAV air distribution if used.
- d. Booted plenum slots must not exceed 4 ft. in length unless more than one source of supply air is provided.

4. Sizing of Ductwork

Energy consumption, security, and sound attenuation must be major considerations in the routing, sizing, and material selection for air distribution ductwork. All supply, return and exhaust ductwork must be sized in accordance with the latest editions of the ASHRAE Fundamentals Handbook and ASHRAE HVAC Systems & Equipment Handbook.

- a. When indoor noise generation is a controlling design consideration, select duct, plenum and air terminal device velocities to reduce air turbulence

and aerodynamically generated noise in accordance with project acoustician's recommendations. The use of plenum and duct sound lining materials must be limited and evaluated for the potential risk of occupant health and safety exposure to airborne particulate, filament fiber and VOC contaminants.

5. Testing of Air Distribution Systems

Air distribution systems must be tested twice for leakage; during the construction process, before the installation of insulation and after all connections to terminal units, air delivery and return devices, and return air and exhaust air fans have been made.

6. Louvers

All exterior louver designations must clearly indicate size, gross and net free area. Exterior louvers, including outdoor air intake louvers and fan discharge louvers, should be located and positioned to deter potential vandalism.

7. Humidification

Where humidification is necessary, electronic or steam-to-steam generators must be used to produce atomized hot water, clean steam, or ultrasound vapor.

- a. All equipment and steam dispersion piping associated with humidification equipment must be stainless steel.
- b. Humidifiers must be centered on the air stream to prevent stratification of the moist air.
- c. When steam is required during summer seasons for humidification or sterilization, a separate clean steam generator must be provided and sized for the seasonal load.
- d. Makeup water for direct evaporation humidifiers must originate directly from a potable source. Chemically treated water must not be used for humidification. Humidifiers must be designed so that microbiocidal chemicals and water treatment additives are not emitted in ventilation air.
- e. Each humidifier must have remote control and supervisory capability for integration with BMS or other supervisory control and monitoring systems as identified in the Owner's Project Requirements.

8. Air Handling Units

- a. Select packaged equipment construction (single or double wall, insulation) and fan type (FC, BI, Airfoil, etc.) that results in acceptable performance and noise levels. Units must be ARI certified and UL listed.
- b. Select design air velocities through air handling component sections and heating and cooling coils to limit air pressure drop, aerodynamic noise and potential cooling condensate transfer as recommended by the equipment manufacturer.
- c. Make sure there is available space and service clearance for piping coils, drains, and traps.
- d. AHU Capacities

Where possible, air handling units must be sized such that a Refrigeration System Operating Engineer is not required to be on site to facilitate

flexible zone control, particularly for spaces that involve off-hour or high-load operating conditions.

e. Temperature and Airflow Control

Psychometric process charts must be prepared for each AHU application, characterizing full-load and part-load operating conditions for all processes in the system, in accordance with this Guide. AHU/coil designs must ensure that conditioned space temperatures and humidity levels are within acceptable range, per program requirements and the indoor design conditions noted above.

f. Limitation of Supply Air Temperature

Comfort HVAC systems with supply air dry bulb temperatures below 50F are not permitted. Supply air must be no lower than 50F dew point temperature to prevent condensation on the duct surfaces.

g. Cooling and Heating Coils

Select finned-tube cooling coils to ensure that the coils can be cleaned. Dehumidifying coils must be selected to prevent water droplet carryover beyond the drain pan at design conditions. All hot water heating and chilled water-cooling coils must be copper tube and copper finned materials. Equipment and other obstructions in the air stream must be located sufficiently downstream of the coil so that it will not come in contact with the water droplet carryover. Cooling coils must be selected at or below 500 fpm face velocity to minimize moisture carryover. Heating coils must be selected at or below 750 fpm face velocity.

h. Drains and Drain Pans

Drain pans must be made of stainless steel, adequately sloped and trapped to ensure drainage. Overflow connections must be provided and connected to the sanitary or storm line in accordance with Code.

i. Filter Sections

Incorporate the proper air filtration and monitoring system for the application. Air filtration must be provided in every air handling system. AHUs must have pre-filter and final filter sections, each located to protect cooling, heating and energy recovery equipment.

- i. Install filter rack assemblies with pre-filter / final filter rating of MERV (Minimum Efficiency Reporting Value) of: 8 / 14.
- ii. Differential pressure gauges and sensors must be placed across each filter bank to allow quick and accurate assessment of filter loading as reflected by air-pressure loss through the filter, and the sensors must be connected to the BAS (where applicable).
- iii. Where occupancy requirements or building functions are likely to generate airborne particles, vapors, gases and other contaminants that result in concentrations exceeding safe and healthy levels special air filters or air cleaning components must be provided for the supply and return air or dedicated and localized exhaust systems must be used to contain these contaminants.

9. Air Systems and Equipment

- a. Unless identified otherwise in the Owner's Project Requirements, use ductwork, instead of plenum, for air distribution (supply and return) in a space/facility.
- b. The fresh air intakes and exhaust must be located so as not to introduce pollutants to the inhabited space. Furthermore, size the louver/grille for reduced air velocity to minimize noise, pressure loss, and rain/snow carryover through the intake. Incorporated drains at the building and AHU intakes.
- c. Choose the size, shape, fitting/accessories, material composition, and layout of the ductwork that best fits the application and minimizes the friction loss, as well as the overall system noise level. Generally, design the ductwork per the latest SMACNA standards. Select ducts with aspect ratios 4:1 or less. Incorporate volume dampers in duct branches for system balancing.
- d. Roof mounted air intakes, air exhausts, fans, AHU's and other types of HVAC System equipment must maintain a minimum clear unobstructed height of 12 "above the surrounding finished roof surface and when required, be set higher to allow maintenance access to roof system. Install HVAC equipment on roof curbs, support rails and other means of equipment support in accordance with equipment manufacturer's installation requirements.
- e. Unless otherwise identified in the Owner's Project Requirements, space humidification systems are not necessarily required for normal comfort HVAC design applications. For the purpose of controlling indoor air contaminants that may be determined as contributing to unhealthy environmental conditions or for the control of special use spaces like asset storage or computer room spaces, make reasonable provisions in HVAC System equipment selection and system design to permit the increase or decrease of indoor humidity levels.
- f. The air filtration system may be integral with the equipment. The level of filtration must satisfy the requirements of the application including the enhanced control of indoor air contaminants that may be determined as contributing to unhealthy environmental conditions.
- g. Air Distribution Accessories:
 - i. Design and install the supply grilles, registers, or diffusers in each space to result in acceptable draft conditions, noise level, and system air pressure drop.
 - ii. For the return or exhaust application, design and install the grille, register, or diffuser to minimize noise and air pressure drop.
- h. Fans
 - i. Determine the type of fan (power roof ventilator utility fan, centrifugal in-line, propeller fan, etc.) that best fits the application.
 - ii. Select fan materials of construction to resist wear, fatigue and corrosion and to operate reliably, safely and efficiently for the design pressure and temperature requirements.

- iii. Select fan operating speed to minimize operating noise and vibration levels. Fans that are designed for variable speed operation must be selected to operate safely without excessive vibration levels, excessive deflection of rotating assembly elements and damage to drive bearings throughout their range of operating speed adjustment. Choose the fan to operate in its safe region and safety below its maximum speed and static pressure point.

Fan equipment must have remote control and supervisory capability for integration with BAS or other supervisory control and monitoring systems as identified in the Owner's Project Requirements.

D3050.90 Facility Distribution Systems Supplementary Components

1. Controls for HVAC Components

- a. Each piece of mechanical equipment must have remote control and supervisory capability for integration with BAS or other supervisory control and monitoring systems as identified in the Owner's Project Requirements. Each piece of equipment must have a metering device for transmitting energy and water consumption data and, if applicable, a current-sensing device for transmitting fan and/or pump motor energy consumption data
- b. Integrate the control hardware and software to protect against component freeze-up and allow for optimum operating cycles, including "free cooling" (whenever justifiable) and fire/smoke control.

2. Meters, Gauges, and Flow Measuring Devices

Each piece of mechanical equipment must be provided with instrumentation or test ports to verify operating performance parameters such as delivered capacity, pressure, temperatures, flow rates, water, gas, electric and energy consumption.

Each meter, gauge, and flow measuring device must be calibrated before start-up and must have provisions for periodic calibration at its location. Permanent or temporary testing stations must be provided for startup and testing of building systems. Connections must be designed so that temporary testing equipment can be installed and removed without shutting down the system.

System test and monitoring equipment must have remote control and supervisory capability for integration with BAS or other supervisory control and monitoring systems as identified in the Owner's Project Requirements. For further information on advanced metering see Electrical Engineering section in this Chapter.

D3060 Exhaust Venting

1. Emergency Generator Venting

- a. A positive pressure rated, U.L. listed double wall insulated metal breeching and chimney system may be used downstream of an emergency generator engine exhaust silencer. All engine exhaust venting upstream of emergency generator silencer must be insulated schedule 40 black steel pipe with welded joints. Piping system to be sized, designed and installed for generator back pressure. Provide a controlled means of engine deflagration (overpressure) relief in accordance with engine manufacturer's recommendations and safety requirements.
- b. Evaluate engine exhaust pipe and vent system's potential for expansion and contraction and show all provisions for anchoring, guiding, and

compensation on the drawings. As required, coordinate with Structural work for the design of all attachments of pipe and vent supports, guides and fixed anchoring locations to the building structural systems.

2. Post Fire Smoke Purge Venting

A means of providing post fire smoke purge must be provided where required by NYC Code. The means of smoke purge should be by dedicated exhaust equipment whenever possible to avoid potential smoke contamination of HVAC System supply, return and outdoor air ventilation ducts, fans, filtration and heating cooling equipment. Design and plan suitable means of access to smoke contaminated duct interior surfaces and equipment components for the purpose of cleaning and restoration after a smoke purge event.

Performance:

- a. Smoke purge control isolation dampers.

Select the appropriate temperature rating and leakage class for combination fire-smoke dampers utilized for the control of the post fire smoke purge system. Isolation dampers must be provided with an override feature, which must be activated by the NYC Fire Department at the smoke purge control panel.

- b. HVAC System design temperature rating. HVAC System ducts, fans and accessory equipment utilized for the purpose of providing post fire smoke purge should be designed for a "cold smoke condition" that could produce temperatures above the standard HVAC equipment design upper operating temperature limit of 140 F.

D40 Fire Suppression

D4010 Fire Suppression

1. Fire Suppression Seismic Design

- a. Fire Suppression Systems and Equipment Items Requiring Restraint- Fire suppression sprinkler and standpipe piping, hose manifolds/racks, fire supply water storage tankage, fire department apparatus water supply connections (siamese), and water pumping equipment associated with building life safety systems or other critical fire extinguishing equipment that must be maintained functional and operational during and in the aftermath of a seismic event, will be designed for seismic forces and adequately restrained.

D4010.10 Water Based Fire Suppression

1. All fire suppression and extinguishment systems and equipment will be designed and engineered.
2. A sprinkler system is a fire suppression system, other than a water mist fire extinguishing system, that utilizes water as the fire extinguishing agent.
3. A water-mist fire extinguishing system will be installed in accordance with the NYC Codes and NFPA 750 Standard on Water Mist Fire Protection Systems in accordance with their listing and as amended by the Codes.
4. An automatic sprinkler system will be installed in accordance with the NYC Codes and NFPA 13 Standard for the Installation of Sprinkler Systems and as amended by the Codes.

5. Standpipe systems will be installed in accordance with the NYC Codes and NFPA 14 Standard for the Installation of Standpipes and Hose Systems and as amended by the Codes.
6. For buildings one hundred fifty feet or less in height, the minimum standpipe riser pipe size will be 4 inch. For buildings greater than one hundred fifty feet in height, the minimum standpipe riser size will be 6 inch. The height of a building determined for the purpose of standpipe riser design, will be that of the individual riser to the highest hose outlet (not including manifold outlets) from the level of the entrance floor at street level at which the riser begins.
7. Unless otherwise permitted by the NYC Codes, Class III standpipe hose connections will be provided in every required egress stairway, and a hose connection will be provided for each floor level above or below grade. Hose connections will be readily accessible and located at the riser on each floor-level landing and on the entrance floor above the standpipe riser control valve.
8. Unless otherwise permitted by the NYC Codes, a Class III Standpipe System will provide a 1-1/2 inch hose station to supply water for use by building occupants and a 2-1/2 inch hose connection to supply a larger volume of water for use by the NYC Fire Department (FDNY) and those trained in handling heavy fire hose streams.
9. The number of standpipe risers provided will be designed and arranged so that all locations of every floor can be reached by the flow of a single twenty foot hose stream supplied from a hose nozzle attached to not more than one hundred twenty-five feet of hose connected to a standpipe riser outlet valve.
10. Standpipe systems that include more than one (1) pipe riser will have all risers horizontally cross-connected at, or below, the street entrance floor level. Where there is no cellar, standpipe riser cross-connection may be located at the ceiling of the lowest story
11. Cross-connections will be sized at least as large as the largest standpipe riser cross connected. When supplying only two (2) 4 inch standpipe risers, the cross connection will not be sized less than 5 in. For all other standpipe riser cross-connection configurations, the cross-connecting pipe will not be sized less than 6 in.
12. Each Fire Department apparatus water supply (siamese) provided to the building must be connected to the standpipe system. The water supply pipe from the apparatus water supply connection to the individual riser pipe or cross connecting pipe will be 5 in., except that a 4 inch water supply pipe is permitted when supplying a single 4 inch standpipe riser. The pipe from the apparatus water supply connection must be run as directly as practicable to the individual riser pipe or cross connecting pipe.
13. The fire suppression system will be an integrated system of underground and overhead piping, fittings, valves, auxiliary equipment and appurtenances designed in accordance with accepted fire protection engineering standards. The system will include a suitable and approved water supply. The portion of the system above the ground will be a network of hydraulically.
14. **Fire Pumps (21 30 00)**
 - a. A sprinkler booster pump or fire pump system will be provided if the fire suppression system hydraulic calculations indicate that City water pressure is inadequate to properly pressurize the highest floor sprinkler heads or supply the required standpipe hose stream demand. A five (5) psi safety factor must be used in the system hydraulic calculations prepared.

- b. Every automatic fire pump will be designed to draw from two (2) independent street water mains in different streets.
- c. Where two City water services are supplied to the building, one service from the street water main must be run directly to the fire pump, and the other service may be used for domestic water supply. The connection from water main to fire pumps must be at least 6" pipe size.
- d. In the event that two separate and distinct water mains are not available as a supply or the City water mains cannot produce the required supply flow and pressure, a suction tank, or tanks, suitably located and of sufficient capacity to furnish the fire pump with at least a one-half hour supply at the rated capacity of such pump. Suction tanks must be filled by a 6" connection to the water main, controlled by an automatic ball float valve in the suction tank. A 6" bypass line must be provided so that fire pumps may be fed directly from the street water main.

15. Wall Hydrant Requirements

- a. A freeze proof wall hydrant must be provided every 150 feet length of the building façade so that hoses, with maximum length of 75 feet, can service the entire facility. Provide a minimum of one freeze-proof wall hydrant on each wall façade.

D4010.50 Fire Extinguishing

Where the discharge of water would be deleterious or hazardous, the installation of alternative automatic fire-extinguishing systems complying with the NYC Codes can be permitted in place of automatic sprinkler protection where recognized by the applicable NFPA Standard and approved. Such a system can be accepted where the nature of the fire hazard is such that water would be ineffective or hazardous as an extinguishing agent, or the need to preserve the historic, irreplaceable or special nature of the contents of the occupancy prevents against the installation of a sprinkler system.

Where approved, automatic sprinklers may not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with NYC Codes that will respond to visible or invisible particles of combustion, and where an approved automatic fire-extinguishing system is provided:

- 1. Any room or space where the application of water, or flame and water, constitutes a serious life or fire hazard.
- 2. Any room or space where sprinklers are considered undesirable because of the nature of the contents.
- 3. Generator or transformer rooms. This exemption must not apply to a generator or transformer rooms unless such room or space is separated from the remainder of the building by walls, floor, ceiling or roof assemblies having a fire-resistance rating of not less than 2 hours where the generator in such room is not using high pressure flammable gas in excess of 15 psi. As its fuel source.

Clean agent fire extinguishing systems will be installed in accordance with the NYC Codes and NFPA 2001 Standard on Clean Agent Fire Suppression Systems in accordance with their listing and as amended by the Codes. If a clean agent fire extinguishment system using a fixed amount of extinguishing agent is approved to be installed in place of a required sprinkler system, a connected reserve of charged agent cylinders equal to the primary supply must be provided.

Where a room or space protected by an approved clean agent fire extinguishing system, a fixed emergency forced ventilation is required. When the protected area is normally occupied, a fixed emergency forced ventilation system enough to accomplish at least six (6) air changes per hour of the flooded protected area must be provided unless all of the following apply:

1. The clean agent fire extinguishing system is used to extinguish a Class A Fire for ordinary solid combustibles such as paper, wood, cloth and some plastics.
2. The design concentration does not exceed the "no observable adverse effect level" for halocarbon agents, or "no effect level" for inert gas agents as defined in NFPA 2001 and amended by the NYC Codes.
3. If other than inert gas agents are used, the quantity of the thermal decomposition products formed from such agents is below the dangerous toxic load (DTL) for humans as described in Meldrum's "Toxicology of Substances in Relation to Major Hazards: Hydrogen Fluoride" (HMSO, London, 1993). Upon request by the City, documentation of a hazard assessment of thermal decomposition products formed from such fire extinguishment agents must be filed with the City.

D50 Electrical

D5010 Facility Power Generation

D5010.10 Packaged Generator Assemblies

1. Emergency and Standby Power Systems

Emergency power systems legally required standby power systems and optional standby power systems will be designed to comply with the requirements of the NYC Building Codes, Electrical Code, Fire Code, NYC Zoning Resolutions, NFPA 110, and NFPA 111. Compliance with NYC Electrical Code, Article 700 for the electrical safety of the installation, operation, and maintenance of emergency and standby systems is required. The electrical engineer will coordinate with the mechanical engineer, structural engineer and architect on the design of the emergency / standby power generator system.

a. Applicability of Zoning:

- i. The location of emergency power system equipment and standby power system equipment on the building exterior and building Lot will comply with applicable zoning resolution restrictions including : obstructions in open space, public plaza; obstructions in required yards or rear yard equivalent; obstructions for height and setback; special purpose districts requirements; special flood hazard zone, tidal wetlands zone, fresh water wetlands, and coastal erosion hazard areas.
- ii. For Electric Plan Review, the following will be provided and shown:
 1. When an emergency or standby generator is part of a 1000 KVA or smaller system and the generator is rated below 1000 KVA, a one-line diagram showing how the generator is connected to the system can be submitted for the Electrical Plan Review. Include grounding of the generator frame and neutral bonding. If the generator is part

of a system larger than 1000 KVA and rated 1000 KVA or larger, a room layout will be submitted in addition to the one-line diagram. Grounding for the emergency generator will be provided. Determine if a separately derived grounding system will be used.

2. See Section D5020.00 Design Parameters for additional guidance on electric service design, arrangement and equipment protection requirements. Observe applicable requirements for emergency and standby power system distribution design arrangement and equipment protection.

b. Classification of Emergency Power Systems:

- i. The class and type of Emergency Power System) will be Class 72, providing a minimum of 72 hours of operating time at rated system load without being refueled and Type 10 limiting load transfer time to a maximum of 10 seconds with the load terminals of the automatic transfer switch set at 90 percent of both the rated voltage and frequency (Ref. NFPA 110). For modification of emergency power system equipment general performance requirements, refer to the Owner's Project Requirements (OPR) and the specific project requirements.

c. Emergency Power System

The emergency power system will supply power to designated electric loads through the operation of an automatic transfer switch upon failure of the normal supply. Automatic transfer switches will be provided with a maintenance bypass switch to allow the automatic transfer switch to be maintained while still providing power to the building.

Emergency power loads will include life safety and critical building equipment:

- i. Emergency lighting (must include all required egress lighting, illuminated exit signs).
- ii. Fire alarm system and Automatic fire detection systems.
- iii. Carbon Monoxide and natural gas leak detection and alarm system.
- iv. Emergency voice/alarm communication systems including FDNY auxiliary radio communication (ARC) systems.
- v. Smoke control and exit stairway pressurization systems.
- vi. Fire pump, Sprinkler Booster pump and Pressure maintenance (jockey) pump.
- vii. Sewage ejector and sump pumps.
- viii. Telephone System.
- ix. Security System.
- x. Select lighting for security office, electrical and mechanical rooms.

- xi. Air compressors serving dry-pipe or pre-action sprinkler systems.
- xii. Power and lighting for fire command center and security control center.
- xiii. Fire service access elevators and associated controllers and the cooling and ventilation equipment serving their machinery rooms and machinery spaces (simultaneously all designated elevators).
- xiv. Occupant evacuation elevators and associated controllers and the cooling and ventilation equipment serving their machinery rooms and machinery spaces (simultaneously all designated elevators).

d. Legally Required Standby System:

Classification of Legally Required Standby Power Systems:

The class and type of Legally Required Standby Power Systems will be Class 48, providing a minimum of 48 hours of operating time at rated system load without being refueled (see Ref. Chapter 4, NFPA 110) and Type 60 limiting load transfer time to a maximum of 60 seconds with the load terminals of the automatic transfer switch set at 90 percent of the both the rated voltage and frequency. For modification of required standby power system equipment general performance requirements, refer to the Owner's Project Requirements (OPR) and the specific project requirements.

This required standby power system will automatically supply power to selected electric loads (other than those classified as the emergency system loads) through the operation of an automatic transfer switch upon failure of the normal power source.

Required standby power loads will include:

- i. Smoke control and exit stairway pressurization systems.
- ii. Fire service access elevators and associated controllers and the cooling and ventilation equipment serving their machinery rooms and machinery spaces (simultaneously all designated elevators). Visitor screening equipment.
- iii. Power and lighting for fire command center and security control center.
- iv. Telephone switches and fiber cable battery systems.
- v. Mechanical control systems.
- vi. BASs.
- vii. Uninterruptible power systems serving technology/server rooms.
- viii. HVAC systems for technology/server rooms, UPS rooms, and communications rooms.
- ix. Exhaust fan in UPS battery rooms.
- x. FAA aircraft flight path obstruction warning lights.
- xi. Domestic water booster pumps (high rise buildings).

e. Optional Standby System

This system will supply power to the facilities or property where life safety does not depend on the performance of the system. The optional standby system will supply power to selected building loads, either automatically or by manual transfer switch. For modification of optional standby power system equipment general performance requirements, refer to the Owner's Project Requirements (OPR) and the specific project requirements.

Optional standby system loads may include:

- i. General equipment areas of the buildings.
- ii. HVAC and refrigeration system equipment.
- iii. Data processing and communications system equipment.
- iv. Receptacles and emergency lighting in large conference rooms to facilitate command and control operations during an emergency situation.
- v. Additional building loads as required.

f. Generator System

The emergency and standby generator system will consist of one or more central engine generators and a separate distribution system with automatic transfer switches, distribution panels, lighting panels, and, where required, dry-type transformers feeding 208Y/120V panels. The generators and the generator control panel will be located in separate rooms or enclosures.

g. Capacity

The engine generators will be sized to serve approximately 150 percent of the design load and to run at a maximum of 60 percent to 80 percent of their rated capacities after the effect of the inrush current declines. When sizing generators, the initial voltage drop on generator output due to starting currents of loads will not exceed 15 percent.

Emergency and legally required standby power systems must have adequate capacity to safely carry all loads expected to operate simultaneously. A temporary alternate source of power must be available whenever the emergency or standby generator is temporarily out of service. If the alternate power source lacks adequate capacity to temporarily carry the entire connected load, it must have automatic and selective load pickup and load shedding capability to ensure adequate power supply to loads in the following order of selected priority:

- i. Emergency circuits
- ii. Legally required standby circuits
- iii. Optional standby circuits.

h. Load Bank

- i. A permanently installed electric load bank, sized at a minimum of 50 percent of generator rating, will be provided. The load bank will be factory mounted to the engine radiator assembly. Select

materials of construction that will tolerate the high temperatures associated with radiator-mounted load banks.

- ii. For diesel generators, the load bank will provide a load add/shed feature that will maintain load levels at the generator manufacturer's recommended minimum load. The load bank will have a minimum of four automatic load taps controlled by a load add/shed relay incorporated into the run circuit on the generator.

- i. Remote Annunciators

Provide remote annunciators for the emergency generator; quantity and locations, as required.

- j. Exterior Noise Control

The design and installation of new or replacement emergency and standby generator equipment on City owned facilities or properties, and the modification of existing fixed equipment, when located outside of the building – in a yard, court, on a roof, or where the equipment opens to the exterior of the building – will be subject to the requirements of the New York City Noise Code and NYC DEP noise control regulations.

- i. Objectives

Provide a proactive design approach, to assure full compliance with the Code. Evaluate, specify and install manufactured equipment with the least available sound output and/or with sound mitigating accessories.

- ii. Outdoor Noise Propagation

In the development of emergency and standby generator equipment selection, take into consideration the effects of outdoor noise propagation from the site property to nearby "sensitive receiver" properties and make recommendations for the further evaluation of existing noise conditions at the site and/or the selection of Noise Control Measures (NCM) designed to adequately address Code requirements.

- iii. Exterior Acoustical Assessment

Acoustical design compliance strategies will include but not be limited to the following:

1. Retain (as required) the services of an acoustical sub-consultant with minimum qualifications and experience in accordance with the rules of the NYC Department of Environmental Protection (DEP).
2. Perform an initial inspection and evaluation to identify location and distance from the project site of any potential line of sight sound receptor locations that may be affected by the proposed work, particularly "sensitive receiver" properties.
3. Establish and document existing baseline ambient noise level conditions, identify any observed sound produced by existing exterior equipment that exceeds Code threshold, and request from NYC DEP a history of violations and/or complaints.

4. Prepare and submit an acoustical analysis of the maximum resultant sound pressure levels resulting from the proposed work, including noise level testing data and manufacturer's equipment operating performance documentation.
5. Confirm that the proposed emergency and standby generator system design and installation will comply with the New York City Noise Code, identify an alternative design approach, or recommend supplementary noise control measures (such as engine exhaust silencer(s), acoustical equipment enclosure, ultra-quiet cooling fans, unit lagging, external intake/exhaust silencers) that will limit acoustical energy propagation beyond the site property limits to Code compliant levels.
6. Specify the required Noise Controlled Inspections to be performed by the testing agency of the operating noise level (ambient, directional) after new or replacement of exterior mechanical equipment is installed.
7. Define the maximum permissible emergency and standby generator sound power levels for each unit and reflect these dB values in the performance specifications for the project. The maximum sound power levels will comply with NYC Noise Code limitations and be based on specific project conditions such as the nature of unit mounting (dunnage), roof deck construction, noise reduction coefficient of suspended ceiling, sound trap attenuation characteristics, etc.

D5020 Electrical Service and Distribution

D5020.00 Distribution General

Design a complete building electric power system, including system voltage regulation, power metering, system power distribution, means of disconnect, system equipment protection, and system equipment grounding.

1. Distribution

Electric power will be distributed to serve all interior and exterior lighting including parking lot lighting, all mechanical and plumbing equipment motor loads and controls, fire suppression system equipment motor loads and controls, specialty equipment and general receptacles, elevators, dumb waiters, fire alarm, mechanical alarms and security systems, communication equipment and other miscellaneous equipment.

2. Design Parameters

For Electric Plan Review, the following will be provided and shown:

- a. The arrangement of service equipment and its proximity to the point of service entrance including the manner in which service will be extended to the service equipment.
- b. The clearance around wall and free-standing switchboard will be shown.

- c. The location of the main switchboard and/or distribution panels in relation to the service equipment.
- d. Design of Transformer grounding will be shown.
- e. The available short circuit current protection at the point of service entrance and at the point of change in the interrupting rating of the overcurrent protection. Where used, series ratings will be indicated.
- f. A one line diagram indicating the service equipment and the distribution equipment up to the 2nd level overcurrent protection, showing all overcurrent devices with their ampere rating, make and type, interrupting current ratings and bus and wire sizes. Frame and trip sizes for circuit breakers will be indicated.
- g. A statement confirming that all fuses and/or circuit breakers have been coordinated for selective short circuit overcurrent protection.
- h. The location of the electric service room with respect to the surrounding areas will be shown and means of egress from the switchboard room and where it leads to will be shown. The legal exit(s) to which egress door(s) lead will also be shown.
- i. Means of adequate ventilation of the electric service room when the service equipment totals 2000 KVA or larger will be provided.
- j. For all panelboards provide complete panel schedules showing circuit number, circuit breaker trip rating, load in volt-amperes for each circuit, load description and location, summary of connected load and demand load.
- k. For all power panelboards, indicate conduit and cable size feeder for individual circuits. Provide twenty-five percent spare feeder capacity.
- l. For fused switch panels, show switch and fuse rating. Show service voltage, phase, bus rating, short circuit current ratings, main circuit breaker or switch and fuse if required. Indicate panel location and type of mounting.

3. Panelboards

Main power and distribution panel boards, and lighting and receptacle power panelboards, will be located in electrical rooms and closets. Secondary lighting and receptacle panelboards will be located adjacent to the loads they serve. Centrally located electrical closets, which should be stacked in multi-story buildings.

- a. Power and distribution panels will be of the circuit breaker type.
- b. Lighting and receptacle panels will be of the circuit breaker type with bolt on branch circuit breakers and must have door-in-door trim.
- c. In panelboard selection provide twenty-five percent spare circuit breakers.
- d. Panelboards serving non-linear loads will have a 200% rated neutral.
- e. All power distribution, lighting and receptacle panelboards will include a typewritten schedule directory describing each individual circuit breaker load.

4. Conduit and Wiring

All conduits will be 3/4" minimum size and run concealed where possible. Heavy wall, rigid, galvanized steel conduit will be installed where exposed or where required by Code. Electrical Metallic Tubing (EMT) will be installed concealed in hung ceilings or walls. Compression fittings will be used for EMT. Armored cable will not be used. Aluminum conduit and wire will not be used. Flexible conduit will only be used for short lengths.

- a. Provide a drag wire in all empty conduits.
- b. Cable connectors will be of the copper pressure plate type. Connections to bus bars for cable sizes number 1/0 and larger, will be made with two zinc-plated bolts.
- c. Power wiring will be sized to limit the voltage drop in branch circuits to 2% to the farthest outlet, and to 5% total for feeders and branch circuits.

5. Transformers

All transformers will, as a minimum, have K-13 rating and have 200% rated neutral.

- a. Transformers for lighting and receptacle service will be two-winding per phase, dry type of capacity to serve the lighting and receptacle loads specified.
- b. Transformers will have 2 1/2 % taps, two above and two below rated voltage.
- c. Transformer windings will be copper. Transformers will have primary and secondary winding protection.
- d. Dry type transformers up to 45 KVA will have dB ratings not to exceed 45 dB, and above 45 KVA will not exceed 55 dB.

6. Motors and Motor Control Centers

Design and specify power for motors and controls. Motor Control Centers (MCC) will have combination magnetic motor starter and fused disconnect. Each starter will have hand-off auto switch, control transformer, pilot light, two auxiliary contacts, and an external manual reset button.

D5020.10 Electrical Service

1. Electrical Service Metering

- a. Flexibility

Service equipment will be designed to have adequate capacity to serve the load of the facility plus 25% future expansion.

- b. Electric Service Request

Submit to the utility company a site plan showing the building property line, electric service entrance, equipment room, and a breakdown of the electric load (load letter).

The request will inquire about the available service voltage, utility short circuit current and impedance, metering requirements, charges and any other requirements.

The request will also indicate the desired voltage and Point of Entry (POE) into the building or to property line manhole or hand hole, to provide a reasonable route to the electrical room.

c. Metering

Provisions for utility company's metering will be made at the service entrance.

d. Monitoring

Provisions will be made to monitor voltage, amps, kilowatt hour, power demand, and power factor.

D5020.70 Facility Grounding

1. Grounding System

Grounding systems will be designed to be coordinated with the specific type and size of the electrical distribution system, including the following applicable generic types of grounding systems or grounding components:

a. Separate Equipment Ground Conductor

- i. The types, sizes, and quantities of equipment grounding conductors will comply with NYCEC, Article 250, unless specific types, larger sizes, or more conductors than required by code are indicated.
- ii. Insulated equipment grounding conductors will be installed with circuit conductors for the following items, in addition to those required by the code:
 1. Feeders and branch circuits.
 2. Lighting circuits.
 3. Receptacle circuits.
 4. Single-phase motor and appliance branch circuits.
 5. Three-phase motor and appliance branch circuits.
 6. Flexible raceway runs.
 7. Metal clad cable runs.
 8. Cable trays (bond each individual section).

b. Busway Supply Circuits

- c. Insulated equipment grounding conductors will be installed from the grounding bus in the switchgear, switchboard, or distribution panel to the equipment grounding bar terminal on the busway.

d. Separately Derived Grounds

To minimize extraneous "noise" on certain systems, particularly those in which harmonics are generated; the specific system grounds will be separated before grounding at the service grounding electrode or counterpoise.

e. Isolated Grounds

Isolated grounds will be applied where the equipment served may be particularly sensitive to external interference from sources generating third harmonics and higher. In these instances, the grounds beginning from the panelboard ground and the grounding conductor from the raceway to the grounding terminal at the receptacle or outlet box, will be electrically isolated from the main grounding system. The isolated grounds will terminate at a common ground or counterpoise.

f. Raised Floor

All access floors will be grounded. A grounding conductor will be bonded to every other floor pedestal and extended to the technology/server room common ground bus.

g. Counterpoise

Where feasible, a grounding conductor (counterpoise) will be provided in an isosceles triangle configuration with sides greater than or equal to 10 ft. The conductor will be tinned copper not less than No. 4/0 AWG and be electrically connected to the incoming domestic water services (provided the piping for the water service is a conducting material) on either side of the building as well as the various clusters of three ground rods spaced at intervals. Ground rods will be 5/8 in. diameter by 96 in. long and be zinc coated copper. The counterpoise loop will involve direct burial in earth 24 in. below grade. The following items will be connected to the counterpoise loop. All ground rod and grounding connections will be exothermically welded:

- i. Lightning protection system "down conductors".
- ii. Transformers in substations.
- iii. Emergency generator ground.
- iv. Telecom and data room grounds.
- v. Separately derived grounds.
- vi. Isolated ground panels.
- vii. Main switchgears.
- viii. Normal and emergency distribution systems.
- ix. Flagpoles.

h. Common Ground System

Provide a common ground bus throughout the building. A common ground bus will originate from the main service entrance and run up through stacked electrical rooms, where an insulated wall-mounted copper ground plate will be installed for connecting any equipment needing a common ground.

- i. All transformers, switchboards and panelboards will be designed with ground bus and be properly grounded.
- ii. The neutral of the emergency generator will be grounded to the ground electrode.

D5020.90 Electrical Service and Distribution Supplementary Components

1. Arc Flash

Perform an Arc Flash analysis for the entire building electrical distribution system. The data from the arc flash calculations for individual pieces of electrical equipment will be transposed to NFPA 70E-approved labels and all panelboards, motor control centers, switchgear, and major electrical equipment will be appropriately labeled and protection boundaries delineated per OSHA 1910 Subpart and NFPA 70E requirements.

2. Short Circuit and Coordination Study

Perform a preliminary short circuit analysis for building electrical power distribution systems. A final short circuit and coordination analysis will be completed by the electrical contractor's testing agency or by an independent testing agency, and a report will be submitted for Record.

D5030 General Purpose Electrical Power

D5030.50 Wiring Devices

1. Receptacle Outlets

- a. Provide conduit grounding for general convenience receptacles. Ground conductors will be provided for individual circuits to receptacles for computers and all other dedicated equipment.
- b. Provide Ground Fault Interrupter (GFI) type receptacles in mechanical equipment rooms, wet locations, and near sinks in labs and lavatories.
- c. Provide duplex receptacles for servicing HVAC equipment (125 volts, 20 amps, specification grade, GFCI protected) within 25 ft. of the equipment.
- d. Provide duplex receptacles for maintenance (125 volts, 20 amps, specification grade) so that all areas are accessible by a 50 ft. extension cord.
- e. In storage rooms, provide a minimum of one (1) duplex convenience receptacle.
- f. Provide duplex convenience electrical outlets in offices (125 volts, 20 amps) spaced approximately twelve (12) ft. maximum on center around the perimeter of the room.
- g. In offices a maximum of four (4) computer duplex receptacles will be connected to a 20 amp circuit, and a maximum of eight (8) general convenience duplex receptacles will be connected to a 20 amp circuit.
- h. Separate circuits must be designed for copiers, water coolers, fax machines, printers and other office equipment.
- i. Provide TVSS duplex receptacles with LED indicator, where required, for protection of plug-in microprocessor- based equipment.
- j. Refer to the Owner's Project Requirements (OPR) and the specific project requirements for additional guidance.

D5040 Lighting

D5040.00 Lighting General

1. Lighting Calculations

- a. Computer generated lighting calculations are required
- b. Calculations will show horizontal illuminance at ground level. Light loss factor of 0.7 must be used for calculations. In general, Illuminating Engineering Society (IESNA) standards will apply (up to 15% deviation is permitted).

2. Lighting Requirements (Indoor Lighting and Daylighting Criteria)

- a. Museum standards for lighting works of art will follow the IES Handbook; Installation Standards, in Fine Arts Collection Policies and Procedures.
- b. Exit enclosures where Photoluminescent materials are installed will comply with the requirements in NFPA 101.
- c. Emergency electric lighting systems will consist of separate luminaires and wiring with an independent power source, e.g., an emergency or standby power generator, or separate luminaires or unit devices supplied by the normal power supply and a secondary source that comes on automatically when the normal power supply fails.
- d. Emergency lighting for means of egress will be provided in accordance with the requirements in NFPA 101. Emergency lighting outside the building will also provide illumination to either a public way or a safe distance away from the building, whichever is closest to the building being evacuated.
- e. Refer to the Owner's Project Requirements (OPR) and the specific project requirements for additional guidance.

3. Lighting Requirements (Exterior/Site/Security Criteria) (Refer to G4050)

4. Design Criteria

- a. LED lamps will not be retrofitted into existing luminaires unless the retrofitted product meets all of the following requirements:
 - i. UL rating is maintained for ENTIRE fixture to include UL 1598C and UL 1993.
 - ii. If LED product category is certified by the Design Lighting Consortium (DLC), it is published on their Qualified Products website: <https://www.designlights.org/>
 - iii. Retrofitted lamps will be tested by a recognized Testing Laboratory in accordance with IES standards LM-79, LM-80, and TM-21.
 - iv. Minimum total fixture efficacy of 100 lumens per watt (total efficacy is a combination of lamp plus driver plus ballast).
 - v. Product will be dimmable and compatible with existing lighting control systems and future daylighting technologies.

- vi. LED products will have a "low risk" level of flicker (light modulation) of less than 5%, especially below 90Hz operation to prevent photosensitivity epileptic seizures as defined by IEEE standard 1789- 2015LED.
- vii. For common office areas, LED product will be dimmable and compatible with existing lighting control systems and provide a path to compatibility with future daylighting technologies, or reduced power consumption by at least 50% for non-controlled fixtures.
- viii. For back office areas, electrical, mechanical, and corridors, LED products do not have to be dimmable but compatible with existing lighting control systems and reduce power consumption by at least 50%.
- ix. Space photometrics and glare control will meet IES guidelines for tasks performed in the retrofitted spaces.
- x. A mock up retrofit of typical areas of the building is required to confirm the above performance requirements of lighting output suitability, controllability and flicker measurements.
- xi. Minimize lamps, light sources ballasts and driver types.

b. Lamps

- i. Effort will be made to minimize the number of lamp types within a facility to simplify lamp maintenance.
- ii. In retrofit scenarios, all fluorescent lamps will be recycled by firms that recover the mercury that is contained within the lamps. All PCB containing ballasts will be disposed of through specialized disposal firms that destroy the PCBs. All applicable lamps must be Energy Star certified as applicable.

c. Ballasts and Drivers

- i. Ballasts for fluorescent lamps will be "NEMA Premium" when applicable. Ballasts will be compatible with lighting control system.
- ii. Electronic ballasts and drivers will be used wherever possible and have a sound rating of "A."
- iii. When EM ballasts are be used in special applications, EM ballasts will have a sound rating of "A" for 430MA (Standard Output) lamps, or "B" for 800 MA lamps, and "C" for 1,500 MA lamps.
- iv. Special consideration will be given to the ballast types where an electronic clock system is also specified to confirm compatibility of application.
- v. Instant-start ballasts are preferred, except where lamp replacement is difficult.
- vi. Dimming ballasts are preferred, particularly in naturally lit spaces. Dimming ballasts with minimum settings less than 5% of full output should be limited to spaces with audio/visual equipment or similar program.

- vii. In spaces without full-time stationary occupants, utilize stepped ballasts, or multiple level switching, in lieu of continuous dimming ballasts.

d. Lighting Controls

All interior lighting will be automatically controlled by a programmable Lighting Control Panel (LCP) with integral clock except for the emergency lighting.

- i. Each area enclosed by walls or floor to ceiling partitions will have at least one switch to control the lighting within.
- ii. For spaces 2,000 sf. or less in area, lighting will be controlled by ceiling mounted occupancy sensors and override switch.
- iii. Enclosed office lighting will be controlled by ceiling mounted occupancy sensors with override switch.
- iv. Libraries and Places of Assembly will generally be provided with key operated switches.
- v. Corridor, Lobby and Toilet Lighting will be controlled automatically from the Lighting Control Panel.
- vi. Corridor and Stair Emergency Lighting will be unswitched.
- vii. Special light controls will be provided for certain applications, as required.
- viii. Control systems will be compatible with lamps, light sources, ballasts and lamps.
- ix. Lighting controls will use individual luminaire control,
- x. Ambient lighting will be adjusted per daylight availability, occupant/vacancy, and other BAS signals, such as demand response.
- xi. Task and personalized ambient lighting will be adjusted per occupancy/vacancy and personal dimming.
- xii. Lighting controls will be commissioned to operate as intended without false triggering.
- xiii. All lighting controls will be compatible with luminaires.
- xiv. Lighting control devices provided for illumination within exit enclosures will comply with the requirements in NFPA 101.
- xv. Occupancy sensors and Time Clocks - Use infrared, ultrasonic, and microphonic occupancy sensors. Dual technology infrared and ultrasonic combination-type sensors are recommended. Sensors should be manual- on, automatic-off, particularly when used in naturally lit spaces. Where occupancy sensors are not practical, time controls will be used.
- xvi. In new construction and substantial reconstruction, all exterior/ site/security lighting will be master controlled by the lighting management system.

5. Security Lighting, Exit Signs, and Emergency Lighting

a. Security Lighting

Security lighting in daylit spaces will be controlled by photosensors. When security lighting also functions as emergency lighting, separate circuits and emergency ballasts are required.

b. Exit Signs

- i. Exit signs will meet the requirements in NFPA 101 and be energy efficient and environmentally friendly products (e.g., light emitting diodes (LED type), Photoluminescent type).
- ii. Locations - Means of egress will be clearly marked by illuminated exit signs placed as required so that exits and path of egress are easily recognized from any point in a corridor or Place of Assembly.
- iii. Design Parameters - Exit signs will have 8" letters illuminated by light emitting diodes (LED) only. Wall mounted exit signs are preferred over pendant mounted exit signs. The use of pendant mounted exit signs is limited to meet visibility requirements, and only when wall mounted units may not suit the need.

c. Emergency Lighting

Emergency lighting for means of egress will illuminate designated stairs, aisles, corridors, ramps, escalators, walkways, and passageways leading to an exit. Emergency lighting will be provided at exit discharges extending to the public way and for safety and security Refer to the Owner's Project Requirements (OPR) and the specific project requirements for additional guidance.

- i. Emergency lighting will be provided in accordance with the requirements of NFPA 101. At a minimum, un-switched emergency lighting (to serve as night lights) will be provided in the following areas:
 1. Zones covered by closed-circuit TV cameras.
 2. Security zones.
 3. Fire command center.
 4. Security control center.
 5. Where required in NFPA 101.
 6. UPS and battery rooms.
- ii. Emergency lighting will be manually switched from within for the following areas:
 1. Communication equipment rooms.
 2. Electrical rooms.
 3. Technology/server rooms.
 4. Engineers' offices.

- iii. Supplemental battery-powered emergency lighting will be provided in the following spaces to bridge the generator startup time:
 - 1. Generator rooms.
 - 2. Main mechanical and electrical rooms.
 - 3. Any locations where lighting cannot be interrupted for any length of time.
- iv. Circuits for emergency lighting in an area required to be provided with emergency lighting will be arranged so that loss of normal or emergency power supply does not reduce the available lighting levels below the level required.
- v. Illumination levels required for emergency lighting will be at a minimum:
 - 1. Place of Assembly
 - a. General: 1 foot-candle measured 18" above floor
 - b. Aisle: 2 foot-candles measured 18" above floor
 - c. Exit Doors: 5 foot-candles measured at the floor level
 - 2. Corridors and Stairs:
 - a. 2 foot-candles measured 18" above floor.
- vi. Buildings with Generator - In new buildings, major modernizations, or major additions, where an emergency or required standby generator is provided provide power for emergency lighting through an Automatic Transfer Switch (ATS) and emergency lighting panel.
- vii. Buildings without an Emergency or Required Standby Generator- In buildings not provided with an emergency or required standby generator, emergency lighting fixtures will be connected to a power source recognized by the Code. The emergency lighting fixtures in a Place of Assembly and paths of egress to the outside will be controlled by a relay with sensing circuit off the local lighting panel.

6. Specific Lighting Requirements

a. Special Areas

Certain areas, where the lighting design is an integral part of the building architecture integrate the design with the interior finishes and furniture arrangement to enhance the functionality of the spaces.

Further consideration to adhere to the energy criteria and maintenance criteria, as well as minimizing the number of special lamp types and fixtures is required.

Areas generally requiring special lighting treatment are as follows:

- i. Main entrance lobbies.
- ii. Atriums.
- iii. Elevator lobbies.
- iv. Public corridors.
- v. Public areas.

- vi. Auditoriums.
- vii. Conference rooms.
- viii. Training rooms.
- ix. Dining areas and serveries.
- x. Libraries.

7. Lighting - Historic Buildings

Historic chandeliers, pendant lights, sconces, and other period lighting may be upgraded with energy efficient light sources and optical enhancements that preserve the historic appearance of the luminaire and space.

Replica lighting for restoration zones will be fabricated or modified to accept energy efficient lamps.

Supplemental lighting, when required, will be designed and located to minimize penetration of ornamental wall and ceiling surfaces and to avoid competing visually with historic lighting.

Recommended alternatives for increasing light levels in ceremonial spaces, when re-lamping is not sufficient, will include compatibly designed floor lamps, task lights, and discretely placed indirect lighting.

D5040.50 Lighting Fixtures

1. Energy Efficient Lighting Fixtures

- a. Lighting efficacy (lumens per watt) and lamp life will be primary considerations in interior lighting design.
- b. Utilize the latest technology LED lights for indoor and outdoor applications where brightness, tight focus, and long lamp life are priorities.
- c. Incandescent lamps will be specified only where necessary, in limited applications and areas, such as theatrical lighting, track lighting for exhibits, historic interiors, and hazardous areas. Where feasible, low-voltage halogen will be used in place of standard incandescent.
- d. Do not exceed recommended spacing criteria for overhead ambient lighting fixtures.

D5080 Miscellaneous Electrical Systems

D5080.10 Lightning Protection

1. Lightning Risk Assessment

Perform lightning risk assessment calculations based on NFPA 780 to determine if a Lightning Protection System (LPS) is required for the building. Design a lightning protection system with UL Master Label Certificate in accordance with NFPA 780, UL 96A.

2. Equipment and Location

The lightning protection system will be of the Franklin Rod type with air terminals along the rooftop, rooftop perimeter, and selected rooftop mechanical equipment; ground conductors, and dedicated ground rods. The lightning protection grounding system will be bonded to the electrical grounding system.

D5080.90 Miscellaneous Electrical Systems Supplementary Components

1. Seismic Design for Electrical Systems

a. New and Existing Buildings

New buildings and additions will be designed for seismic forces. If an existing building is required to meet the requirements of the NYC Seismic Code and a waiver cannot be obtained, the electrical retrofit work will meet such requirements.

b. Building Additions

For new additions, any items in the existing building that are integrated with the life safety systems in the new addition will meet the seismic requirements.

c. Items Requiring Restraint

Seismic restraints will be designed for all equipment and machinery necessary for life safety operations. Equipment and machinery will be anchored to the building structure. Coordinate with Structural work for attachments to building structural system. Electrical equipment and system components including the following will be restrained as required:

- i. Motors and switchgear serving fire pumps.
- ii. Transformers.
- iii. Control panels.
- iv. Major electrical conduit runs
- v. All life safety equipment power, lighting and control wiring conduits.
- vi. All conduits 2 1/2" diameter and larger (1 1/4" and larger in boiler rooms and mechanical rooms).
- vii. All cable trays regardless of diameter, weight and distance from the bottom of slab or structural member.

D60 Communications

D6000 Communications General

Refer to the Owner's Project Requirements (OPR) and the specific project requirements for additional telecommunication system requirements. The Telecommunications Systems will be integrated into the building design in a non-intrusive way, The Telecommunications Systems will be provided with a redundant power supply and connected to the building standby generator where provided. The Owner will request telecom/data service , or any required update of an existing service, from the service provider company. Coordinate the telecom/data system design with the telecom/data service provider's specifications and requirements.

Review and comply with all NYC Department of Information Technology and Telecommunications (DOITT) requirements and standards.

DoITT service delivery processes and procedures follow the industry standards of Information Technology Infrastructure Library (ITIL) v3 and ISO20000. All projects and applications hosted by DoITT must adhere to these standards for service delivery procedures, including Incident/Problem Management, Change Management, Asset/Configuration Management, Service Request Management, Service Level Management, Automated Monitoring /Alerting, and Automated Provisioning.

1. New Service

Submit to the telecom/data service provider a site plan with the property line indicated together with telephone/telecommunications requirements. Request a location for the service point of entry into the building. Coordinate the location and source of any additional planned or potential service, such as high-capacity internet lines. This also applies to cable television service when required.

2. Main Telecommunication Room

- a. The Building Main Telecommunication Room is utilized to terminate and interconnect outside cable/fiber with the backbone (data and/or voice) cable and/or fiber used throughout the building. It provides facilities for large splice containers, cable termination mounting, and possibly electrical protectors. This space is in addition to any space required for network switching equipment or active system components.
- b. Rooms will be sufficiently sized for cabinets, racks and other equipment using largest dimensions and heaviest weights so that working clearance requirements, space for future installations, and structural requirements are satisfied.
- c. The room will be provided with a low impedance isolated ground. The ground should be directly attached to the building electrical service ground. The telecom/data main grounding busbar will provide a dedicated extension of the building grounding electrode system for the telecommunications infrastructure. Bond each equipment rack, cable raceway, cable runway, cable tray, and line protector to the Telecommunication Grounding System.
- d. The sensitivity of the telecom/data equipment requires that the telecommunications cabling and power be effectively equalized to prevent loops or transients that can damage the equipment. The telecom bonding backbone (TBB) will provide a reduction and equalization of potential (voltage) differences between the telecommunications system equipment.
- e. The room will be located above the Base Flood Elevation (BFE) and will not be located beneath/adjacent toilets, showers, laboratories, kitchens, water tanks, cooling towers, or other locations where water supply, water re-circulation and liquid drainage are present.
- f. The room will not contain building services water pipes, air conditioning ducts, drainage pipes or other utilities crossing through the space.
- g. The room will be located away from any potential sources of electromagnetic interference such as electrical power switchgear, transformers, motors, generators, elevator equipment or other devices producing inductive electric loads with the potential for creating electromagnetic fields.

- h. Provide dedicated air-conditioning and fire protection to serve the room.
- i. A main telecommunication room will be designed to locate and centralize the main control equipment of the following systems:
 - i. Local Area Network.
 - ii. Telephone System.
 - iii. Cable TV System.
 - iv. Sound, Intercom and Security Systems.
 - v. Closed Circuit Surveillance System.
 - vi. Building Automation System (BAS).

3. Communication Closets

Design adequate communications closets to conform to the requirements of the utility company, and telecom providers. The communication closets will be centrally located and, in multi-story buildings, stacked strategically to increase vertical communication pathway arrangements.

4. Empty Conduit System

Empty conduit system will be provided for telecom, data and cable TV systems. Drag wires will be provided in all empty conduits. Conduit size will be a minimum of 2".

5. Other Special Purpose Systems

The following special systems will be designed as indicated in the Task Order and/or Project Objectives:

- a. Audio/Visual (A/V) presentation system in conference rooms and designated areas.
- b. Video teleconferencing facilities in designated areas. Empty conduit for roof mounted satellite antenna.
- c. Entry doorbell system.
- d. Entry door intercom system.
- e. Electric snow melting system.
- f. Electric heat tracing.

D70 Electronic Safety and Security

D7000 Electronic Safety and Security General

Refer to the Owner's Project Requirements (OPR) and the specific project requirements for additional electronic safety and security requirements. The Electronic Safety and Security systems will be integrated into the building design in a non-intrusive way. The Electronic Safety and Security system will be provided with a redundant power supply and connected to the building emergency or standby generator where provided.

D7050 Detection and Alarm

D7050.10 Fire Detection and Alarm

Fire Detection and Alarm Systems will be designed and installed in accordance with NYC Building, Electrical and Fire Codes and NFPA 72 as amended.

Fire alarm systems will be monitored by a central supervising station in accordance with NFPA 72 and approved.

The primary and secondary power supply for the fire alarm system will be provided in accordance with the New York City Electrical Code.

Fire Detection and Alarm System wiring will comply with the requirements of the with NYC Electrical Code and NFPA 72 as amended. Wireless protection systems utilizing radio-frequency transmitting devices will comply with the special requirements for supervision of low-power wireless systems in NFPA 72 as amended.

The Fire Detection and Alarm System control panel will be a type which a certificate of approval has been issued and will be installed in accordance with the NYC Building, Electrical and Fire Codes and NFPA 72 as amended.

All required fire alarm notification appliances and devices will be provided and will be listed for their purpose. Audible alarm notification appliances will be provided and emit a distinctive sound that is not to be used for any purpose other than that of a fire alarm notification. Visible alarm notification appliances must be provided in public areas, common areas and other locations as required.

Fire alarm riser diagrams will show all fire alarm devices indicated on the floor plans. Quantities of devices on the floor plans will match the quantities indicated on the riser diagram. Riser diagram will include class and style of circuits and levels of survivability. The riser diagram will show the interface of fire safety control functions.

1. Fire Alarm System

a. General

The fire alarm system will be a U.L. listed fully supervised, addressable microprocessor – based multiprocessing type. The Fire Alarm System will be integrated with the control and monitoring of building Fire Protection and Extinguishment Systems and Building Automation System (BAS) to override the normal control of HVAC equipment. In the event of fire The fire alarm system will annunciate at the main and remote annunciator panels and initiate occupant notification. The fire alarm system will be activated by:

- i. Automatic fire detectors.
- ii. Sprinkler waterflow devices.
- iii. Manual fire alarm boxes.
- iv. Automatic fire-extinguishing systems.

b. Remote Annunciator

A remote annunciator panel will be provided in a supervised location to annunciate the status of the fire, smoke, and sprinkler alarm systems.

c. Equipment and Locations

- i. Fire Alarm Control Panel (including smoke purge, where required) – at main building entrance lobby.
- ii. Printer – In supervised location or other location, as permitted
- iii. Remote Annunciator – At supervised location or other location, as permitted
- iv. Manual Pull Station – At each door leading to a building exit, in corridors, lobbies, places of assembly and as otherwise required to meet Code egress travel limitations.
- v. Visual Annunciators (Strobes) – Wall mounted in corridors, conference rooms, places of assembly, libraries, maintenance shops, toilets and other locations where required by Code. Visual annunciators must be unobstructed by other objects, visible from any position in the area, and a maximum of 15 ft. from the ends of corridors.
- vi. Audible annunciators (Speakers/horns) – At corridors and other locations where required by Code. Where locations coincide with visual annunciators, use combination Horn-Strobe device type.
- vii. Area Smoke Detectors – In mechanical rooms (including fuel storage tank rooms), electrical switchgear rooms, electric closets, main telecommunication rooms and closets, Audio/Video closets, elevator lobbies, elevator shaft, elevator machine rooms, non-sprinkled rooms storing combustible materials, and over compartmentalization or fire separation doors where magnetic door holders are provided.
- viii. Heat Detectors – In boiler room, kitchen, laundry room
- ix. Water flow and tamper switches for the Fire sprinkler system control valves.
- x. Elevator recall. (interlock with smoke detector in elevator lobbies, elevator shaft and elevator machine room)
- xi. Kitchen hood suppression system (Ansul System) – Activation must be indicated as an alarm on the Fire Alarm System.
- xii. Central Station Monitoring and, where required, Owner's designated remote monitoring station.

d. Existing Fire Alarm Systems

- i. The fire alarm systems' installations in certain public buildings fall under the following 5 categories:
 1. No fire alarm system installed in a particular facility.
 2. Functional Fire Alarm system is installed – filed with DOB and approved by FDNY.
 3. Functional Fire Alarm system installed – not filed with DOB and Not approved by FDNY.

4. Currently dysfunctional Fire Alarm System – Originally filed with DOB and approved by FDNY.
 5. Currently dysfunctional Fire Alarm System – Never filed with DOB nor approved by FDNY.
- ii. Where projects require HVAC replacement/modifications, the design alteration scope of work will comply with the latest Building and Mechanical Codes and require installation of all required smoke/duct detectors, fan shut down relays and fire smoke dampers. These devices will be integrated into the existing fire alarm system or provide local fan shut down control as approved by FDNY.
 - iii. To allow successful inspection, sign-off, approvals and close-out phases involving HVAC replacement scopes of work with each of the categories listed above, the following guidelines can be followed:
 1. Facilities with no fire alarm system installed:

Provide fire alarm devices (smoke detectors, shut-down devices, etc.) that will, in event of a fire or smoke condition, perform a local shut-down of the affected HVAC equipment.
 2. Facilities with existing functional Fire Alarm system – filed with DOB and approved by FDNY: Provide additional HVAC related fire alarm devices. The additional HVAC related fire alarm devices will be tied into the existing fire alarm panel. The modifications to the existing fire alarm system will be filed with DOB and submitted to FDNY for approval.
 3. Facilities with existing Functional Fire Alarm system – not filed with DOB and not approved by FDNY:

Prepare all documents necessary for filing a new Fire Alarm System with DOB and approval by FDNY. The documents will include all the additional HVAC related fire alarm devices, as well as all other (not HVAC related) fire alarm devices, and all modifications/replacement of existing devices, as required for filing of the entire system as being new. The design and installation will comply with all applicable codes and all authorities having jurisdiction.
 4. Facilities with existing dysfunctional Fire Alarm System – Originally filed with DOB and approved by FDNY:

Provide new HVAC related fire alarm devices, as well as all necessary corrective measures to bring the existing system into a fully functional and operational mode. The Fire Alarm system with its additional devices and the corrective measures provided, will be filed with DOB and submitted to FDNY for approval.
 5. Facilities with existing dysfunctional Fire Alarm System – Never filed with DOB nor approved by FDNY:

Prepare all documents necessary for filing a new Fire Alarm System with DOB and approval by FDNY. The documents will include all the additional HVAC related

fire alarm devices, as well as all other (not HVAC related) fire alarm devices, and all modifications/replacement of existing devices, as required for filing of the entire system as being new. The design and installation will comply with all applicable codes and be approved.

e. Sprinklers

Upon activation, sprinkler system water flow indicators and tamper switches for the fire alarm or sprinkler system will transmit a signal to the fire alarm system.

f. Ducts

Smoke detectors installed in ducts will be listed for the air velocity, temperature and humidity present in the duct. Duct smoke detectors will be connected to the building's Fire Detection and Alarm System. Activation of a duct smoke detector will initiate a visible and audible supervisory signal at a constantly attended location and perform the intended fire safety function in accordance with the NYC Building, Mechanical and Fire Codes and NFPA 72 as amended.

D7050.30 Fuel-Gas Detection and Alarm

1. Gas and Carbon Monoxide: New Buildings, Additions, and Major Renovation

a. Multiple-Station Systems

Provide multiple-station natural gas and carbon monoxide detector/alarm system with detectors adjacent to all gas- fired equipment located within the building (water heater, unit heaters, duct furnaces, etc.); between boilers; and (natural gas detector only) in the gas meter room and gas booster room, if applicable. Multiple-station system operations will be as follows:

- i. Upon detection of combustible gas and/or carbon monoxide, the individual leak detector will signal the alarm control panel.
- ii. The alarm control panel will then institute the following:
- iii. Close the main gas valve on the gas service (isolation valve with fusible link).
- iv. Electrically shut down all equipment.
- v. Start the explosion proof exhaust fan in the gas meter room, where applicable.
- vi. Digitally signal the BAS (if provided); and
- vii. Activate the audio/visual alarms in the boiler room (or mechanical room, for projects without boiler) and supervised location.

b. Standalone Single Stations

Provide standalone single station carbon monoxide detectors/alarms (in addition to multiple-station detectors as specified above) for all remaining spaces containing fossil fuel burning equipment (spaces with gas stoves

or dryers, labs, auto shops, generator room, indoor loading dock, etc.). Single station carbon monoxide detectors/alarms will annunciate locally by both visual and audible means.

c. Power

Primary power for single station detectors/alarms and for the multiple-station alarm control panel will be hard wired, supplied from a dedicated branch circuit, and connected to emergency power (where applicable). The multiple station alarm control panel will be in the boiler room (or mechanical room, for projects without boiler) and contain power supplies to feed the gas and carbon monoxide leak detectors, control valves, and the audio/visual alarms.

2. Gas and Carbon Monoxide: Existing Buildings

a. Standalone Single Stations

Provide standalone single station carbon monoxide detectors/alarms adjacent to all gas-fired equipment located within the building (water heater, unit heaters, duct furnaces, etc.); between boilers; and for all remaining spaces containing fossil fuel burning equipment (spaces with gas stoves or dryers, labs, auto shops, generator room, indoor loading dock, etc.).

b. Power

Primary power for single station detectors/alarms will be hard wired, supplied from a dedicated branch circuit, and connected to emergency power (where applicable).

D7050.40 Fuel-Oil Detection and Alarm

1. Fuel-Oil Burning Equipment

Provide leak detectors and level sensors for fuel-oil, level and capacity, high and low levels, adjacent to fuel-oil tanks and in rooms containing fuel-oil burning equipment, connected to a local audible alarm and to a remote alarm panel located in the supervising station.

D7050.50 Refrigeration Detection and Alarm

1. Cooling Systems

Mechanical rooms for cooling system equipment (refrigeration, chiller machine rooms) will be designed in accordance with the requirements of ASHRAE Standard 15: Safety Code for Mechanical Refrigeration and contain a refrigerant leak detector with audible and visual alarm. The detector, or a sampling tube that draws air to the detector, will be located in an area where refrigerant from a leak will concentrate. The alarm will be sent to the BAS system, if provided.

D7050.60 Water Intrusion Detection and Alarm

1. Pumps

Provide leak detectors for pumps, connected to a local audible alarm in the pump room and to a remote alarm panel located in the supervising station.

D80 Integrated Automation

D8010 Integrated Automation Facility and Controls

D8010.00 Building Automation Systems

The selection of Building Automation System (BAS) control and monitoring integration, interoperability and communication capability will be based on the general requirements of this Section and the Owner's Project Requirements (OPR) and specific project requirements.

The BAS architecture provided will allow for the full integration of data gathering devices, data storage devices, communication devices, building services equipment control, building services equipment monitoring and building environment status monitoring. The communication protocol of the BAS will be "open protocol" allowing maximum data acquisition and transmission capability between central control and end use devices. Proprietary software, hardware and system architecture that does not allow for full integration and open protocol functionality is not acceptable.

The BAS architecture will incorporate analog and direct digital control (Ddc) network devices consisting of primary and secondary communication pathways (bus) connecting high-level controllers with lower-level controllers, input/output devices and end user interface devices.

Industry standard communication protocols including ASHRAE Building Automation and Control network (BACnet) and Echelon-Motorola Corporation local operating network (LonTalk) are acceptable.

BACnet capable devices will communicate over a dedicated optical fiber, ethernet, ARCNET, RS-232, RS-485 or a low-bandwidth special purpose wireless network, including Internet Protocol (BACnet/IP) and Master-Slave Token-Passing (BACnet MS/TP).

The BAS will be capable of supporting internet Web services including Representational State Transfer (REST), Application Programming Interface (API) and Message Queuing Telemetry Transport (MQTT) integration that will enable integration with cloud-based Internet Protocol

(IP) networks and universal gateways for Internet of Things (IoT) applications.

1. General

- a. The BAS will be capable of scheduling building lighting and HVAC equipment operations and maintenance and adjusting building systems to optimize their performance to minimize overall power and fuel consumption of the facility.
- b. The BAS will have a graphical user interface, and provide trending, scheduling, downloading memory to field devices, real-time "live" graphic programs, parameter changes of properties, setpoint adjustments, alarm/event information, confirmation of operators, and execution of global commands. The BAS will record and archive all collected energy consumption data as described in this Section.

- c. BAS designs that integrate with other Information Technology (IT) systems are preferred to minimize costs and improve operations. Digital building control systems such as utility metering, HVAC building automation systems, lighting controllers, and renewable energy systems can share common communication protocols, compatible equipment, and uniform standards with other building IT services.

2. Direct Digital Control (Ddc) System Design Criteria

- a. Level of integration

Central operator station monitoring and control will be provided in the building.

- i. Central equipment (AHUs, rooftop units, boilers, chillers, etc.) will be provided with Human Machine Interface (HMI) Liquid Crystal Display that can display diagnostic error codes and system information. Provide Portable Operator's Terminal (POT) units to permit operator interface to facilitate controller management (and central unit controller management in addition to the central unit controller HMI interface), commissioning, diagnostics and general operator interface with the installed control system. The POT will be able to connect to all controllers.
- ii. Lighting systems controlled by a BAS will have independent power and control panels and networks. The BAS will monitor the status and energy consumption of the lighting systems.

- b. Automatic Temperature Controls

- i. Standalone, programmable single or multiple loop microprocessor PID controllers will be provided to control all HVAC subsystems.
- ii. PID control loops will be used. All chillers, boilers, terminal units, and air handling units will have self-contained BACnet or Lon Talk controllers, which can communicate with the BAS.
- iii. The control heating and cooling equipment in each zone will be provided by a thermostat or temperature sensor located in that zone. Perimeter systems will have at least one thermostat or temperature sensor for each perimeter zone.
- iv. Night setback and setup controls will be provided for all comfort conditioned spaces, even if initial building occupancy plans are for 24-hour operation. Air side economizer, morning warm-up or cool-down options will be part of the control system. Controls for the various operating conditions will maintain pressurization requirements during occupied and unoccupied periods.

- c. Automatic Humidity Controls

Indoor and outdoor enthalpy and/or humidity sensors will be provided. Sensors will be calibrated in-place during system startup and at least annually thereafter. Where precision humidity control is required, provide dew point control, for comfort control applications, RH sensors are permitted, provided they have been calibrated in-place and interfaced with dry bulb sensors so that the BAS can convert these two signals to a dew point value for control purposes.

d. IAQ Controls

Measurement and control instrumentation will be provided to ensure outdoor air intake rates are maintained during occupied and unoccupied hours.

e. Setpoint Reset Controls

i. Air Systems

Systems supplying heated or cooled air to multiple zones will include controls that automatically reset supply air temperature required by building loads or by outdoor air temperature.

ii. Hydronic Systems

Systems supplying heated and/or chilled water to comfort conditioning systems will include controls that automatically reset supply and return water temperatures as required by changes in building loads or by outdoor air temperature.

f. AM Startup

Morning startup cycles will minimize the outside air intake dampers during the summer/winter morning pick up period. If outside conditions are favorable, morning startup will purge the building with cool dry outside ambient air before the initiation of the air-conditioning cycle.

g. Energy Management and Conservation

The BAS will have the capability to allow building staff to monitor system performance and determine energy consumption.

i. HVAC control algorithms will include optimized start/stop for chillers, boilers, pumps, air handling units, exhaust fans, fan powered VAV and fan coil units, and all associated equipment. Control algorithms based on predicted weather patterns will be utilized if they are adaptive and self-correcting. A condenser water optimization control is required to optimize the chiller, tower, and pump energy consumption.

ii. Electrical power parameters, such as V, A, KW, KVAR, KVA, PF, KWH, KVARH, frequency, and percent THD, will be measurable for monitoring. See D50 Electrical Section for separate metering of power consumption monitoring requirements.

iii. Energy management measurements will be totalized and trended in both instances and time-based numbers. Energy monitoring data will be automatically converted to standard database and spreadsheet format and transmitted to a designated workstation. The measured energy data will be capable of being analyzed and compared with calculated energy consumption estimated during design.

h. BAS Control and Monitoring Capabilities

The systems and components that will be controlled or monitored by the central BAS include chillers, boilers, air handling units, cooling towers, exhaust fans, heat exchangers, pumps, VAV terminal units, fan coils,

finned tube radiation, air conditioners for computer rooms and other special spaces, building pressurization, lighting, electrical power, and emergency generators.

- i. The BAS will be capable of scheduling the operations of the systems and equipment for occupied hours, unoccupied hours, and weekends and holidays. Scheduling of equipment will be determined by standalone Ddc controllers with scheduling function or using time clocks as digital input into the Ddc controller when the controller is an application specific controller without scheduling function.
 - ii. All automatic valves and dampers will have positioners installed to indicate operational status.
 - iii. The BAS will be capable of receiving current sensor based digital signals from all field-installed controllers and calculating the electric energy, fuel, and water consumption by using appropriate voltages and phases.
 - iv. The BAS will provide for standalone operation of subordinate components. The primary operator workstation will have graphical user interface. Stand-alone control panels and terminal unit controllers will have text-based user interface panels, which are handheld or fixed.
 - v. The BAS monitoring capability will include logs of data created by user-selectable features.
 - vi. The BAS will have approximately 30% spare capacity for future expansion.
- i. Maintenance Schedules
- The central BAS will include application programs for scheduling maintenance of the mechanical and electrical equipment, including information on what parts and tools are needed to perform each task.
- j. BAS Retrofit/Repair with Existing Terminal Units to Remain
- For retrofit/repair work on conventional or BAS/Ddc control systems where the terminal units in the spaces are to remain and are controlled by electric or pneumatic controls, the new BAS I will be a hybrid of standalone central unit digital controls (boilers, chillers, rooftop units, air handling units, etc.) and the terminal units must be electrically or pneumatically controlled.
- i. If the terminal units in the spaces are controlled by pneumatic zone control valves (i.e., pneumatic thermostats are not located in each space) the climate control Scope of Work will include removing the pneumatic zone control valves and providing digital thermostats (or sensors/controllers) and control valves in each space.
 - ii. Those portions of the pneumatic system that are not salvageable will be replaced in kind with new pneumatic lines/equipment. Defective terminal systems' sensors, thermostats, actuators (i.e., those associated with terminal radiation control valves, any pneumatic VAV boxes, etc.) will be replaced with new pneumatic

components. Any defective pneumatic compressors, dryers, PRV stations, pneumatic main lines and branch lines will be replaced as required.

- iii. After the pneumatic devices (thermostats, control valves, etc.) have been replaced the existing pneumatic system will be tested to demonstrate acceptable functional operation and control.

- k. No existing BAS with New Terminal Units and Major System Equipment

In the case of installation of new terminal units (i.e. a new air conditioning unit for an existing building), the control system will be a digital stand-alone system without an interconnecting network.

- i. Salvaged air handling units will have pneumatic controls replaced with standalone electric direct digital control (Ddc).
- ii. New air handling units must be provided with new standalone electric direct digital controls (Ddc).
- iii. Major System Equipment including boilers, chillers and commercial rooftop units will be provided with stand-alone direct digital controls (Ddc).

F SPECIAL CONSTRUCTION AND DEMOLITION

F20 Facility Remediation

F2010 Hazardous Materials Remediation

1. Introduction

The design process must respond to environmental concerns and the project design must incorporate measures to mitigate adverse environmental impacts whenever feasible. The environmental review process for any project will address rules and regulations established by the NYC Department of Environmental Protection (DEP), NYS Departments of Health and Labor, and applicable United States Environmental Protection Agency (EPA), and Occupational Safety and Health Administration (OSHA) standards. While most environmental issues within buildings undergoing renovation are associated with the presence of asbestos-containing materials (e.g.; spray-on fireproofing, pipe insulation, and vinyl asbestos tiles) other hazards may be present. Examples of these include: lead based paint, polychlorinated biphenyls (PCBs), and biological contaminants (such as mold and pigeon droppings). Excavated soils may contain volatile organic compounds (VOCs), toxic metals, or other contaminants from past hazardous materials disposal practices.

DDC's Office of Environmental and HazMat Services (OEHS) and the Office of Geotechnical Investigations (OGI) has developed a strict set of special experience qualifications for Environmental Consultants and sub-contractors. In the case where DDC does not provide environmental services, the Consultant may be responsible for obtaining the services of a qualified firm or individuals licensed or certified to perform hazardous materials investigations in NYC. Any firm selected to provide such environmental services requires approval by DDC OEHS/OGI before they can participate in the project. When DDC provides environmental services, the

Consultant is expected to support and cooperate with the Agency's efforts.

On projects for which the Consultant is responsible for obtaining these environmental services, they shall meet the standards described below.

2. Asbestos-Containing Materials (ACM)

a. Investigator Survey

All buildings scheduled for construction/renovation, including recently constructed buildings or newly renovated areas, must be surveyed by a NYC Investigator to identify the presence or absence of ACM which could be impacted during construction/renovation.

b. Abatement in Contract Drawings

With limited exceptions, contract documents shall include abatement of all ACM that can reasonably be expected to be disturbed by construction activities.

c. Outside Construction Area

When inspecting for asbestos or preparing abatement contract documents, consider areas that may be impacted outside of the immediate construction area, nearby restricted access areas, and abatement phasing requirements.

d. Historical Reports

Historical asbestos survey reports have been compiled on a building-by-building basis. DDC OEHS maintains files of prior asbestos survey reports and must be contacted by the Consultant prior to any survey work.

3. Lead-Containing Materials

a. Protect Workers

The Consultant is advised that lead-containing materials have the potential to adversely impact the health of construction workers and others located adjacent to the work area. As such, appropriate precautions shall be specified, including OSHA Safe Work Practices.

b. Identify Waste in Bid Documents

Lead-containing materials to be disposed of may be designated as a hazardous waste. The Consultant will be responsible for identifying any lead waste disposal requirements and noting them in the bid documents.

c. Note Potential Lead Release in Bid Documents

The Consultant shall be responsible for identifying any construction tasks that could result in releases of lead for which the Contractor may become responsible and for noting them in the bid documents.

d. Regulations on Child Occupancy

In buildings that would be considered "child-occupied", the Consultant will be responsible for developing lead control procedures in conformance with the appropriate federal and state requirements. The sub-consultants

responsible to perform such work shall be EPA Lead-Safe Certified in accordance to the Lead Paint Renovation, Repair and Painting (RRP) Rule. Any work of that nature being performed in child-occupied facilities must be done by an EPA Certified Renovator or by workers trained by and supervised by a Certified Renovator.

4. Other Hazardous Materials

a. Site Contamination

Performing construction in areas of known site contamination is likely to increase project costs significantly by adding follow-up environmental investigation and reporting. In the design phase, the Consultant must review existing environmental due diligence reports and other historical Records to ascertain whether other contaminants may be present and to review and coordinate the hazardous material construction documents provided by DDC to assure they adequately address handling, removal, and disposal of those materials. DDC OEHS has had experience with such issues and may be consulted for assistance in developing specifications and coordinating with regulatory agencies.

b. Waste Management

Failure to adequately identify hazardous waste streams, use approved waste transporters, or use approved waste disposal facilities may expose the City to long-term liability and/or result in costly change orders. The Consultant shall ensure that all applicable hazardous waste rules and regulations are fully understood and addressed in specifications and contract documents.

c. PCB-Containing Materials

Oil-filled electrical equipment (transformers, bushings, capacitors, cooling and insulating fluids, contaminated soils, etc.) may pose a long-term liability to the City and are subject to existing EPA and state regulations. The presence of such materials must be identified before or during the Design Development phase and the Consultant shall provide appropriate guidance for handling and disposal.

d. Underground Storage Tanks

Underground storage tank systems (USTs) can threaten the environment and pose a long-term liability for the City. State and federal regulations concerning USTs must be followed. The Consultant shall identify the presence of all USTs that may be impacted by the construction work and include appropriate specifications in the contract documents.

e. Other Environmental Issues

The Consultant is responsible in the design phase for identifying any other additional environmental issues that may be created by the construction.

F30 Demolition

F3000 Demolition General

1. In addition to demolition procedures, the following must be considered when preparing the Design Documents:
 - a. Salvageable Materials
 - i. Determination of what items, if any, the Facility wants to be salvaged.
 - ii. Identification of items which will be removed by the Facility prior to demolition.
 - iii. Identification of items to be removed by the Consultant and turned over to the Facility.
 - b. Utilities
 - i. Determination must be made relative to utilities serving the structure to be demolished or affected by its removal. The work required for each individual utility must be specified (cut and plug, remove, abandon, etc.).
 - ii. In general, utilities serving a structure to be demolished should be terminated at the nearest manhole, valve, pole, etc. and totally removed for five feet outside the structure. Termination must include removal of wiring from abandoned conduits, and capping or plugging of piping and conduits at both ends.
 - iii. Buried heating and fuel storage petroleum tanks should be removed.
 - c. Site Access
 - i. All issues or restrictions related to accessing the demolition site and measures to be taken for protection of facility population or general public must be identified.
 - d. Scope of Work
 - i. The demolition means and methods should not be specified unless absolutely necessary. Identification of specific restrictions (site access, hours of operation, etc.) should be included. Coordinate with LEED requirements as outlined in Ch. 08: Sustainability and Resiliency.
 - e. Foundations
 - i. Determining the procedure for removal of foundations and backfilling basements frequently presents the largest challenge in preparing demolition contracts. The intended re-use of the site is often a major determining factor and should be reviewed with the Sponsor Agency early on. In general, exterior foundation walls should only be removed two feet below proposed Finish Grade. Interior building walls are to be removed to the level of the lowest basement floor, and basement floors need only be broken up for drainage purposes.

- f. Backfilling
 - i. If the demolition site will be returned to a landscaped area, the basement can typically be backfilled with masonry and concrete demolition debris. If a new building will be constructed on the site, such backfill should probably be avoided. However, the ultimate responsibility for critical backfilling should be placed on the new Building Contractor, NOT the Demolition Contractor.
- g. Recycling
 - i. To comply with the spirit of good sustainable design, it is a best practice to recycle. Coordinate with LEED requirements (See Chapter 08: Sustainability and Resiliency).

F3030 Selective Demolition

- 1. For all additions, extensions and renovations requiring partial demolition of an existing structure, the Consultant must review the Consultant's demolition drawings for their impact on the long-term stability of the structure. In special cases where the demolition work may affect the overall structural integrity of the existing building the structural engineer must prepare demolition drawings outlining temporary stability measures, sequencing, etc.
- 2. An evaluation and Structural Monitoring Plan will be developed for adjacent historic structures affected by the work.

G SITEWORK GENERAL

G00 Sitework General

- 1. **Site Utilitites**
 - a. During site design, the location of utilities (water, sanitary sewer, electricity, gas, communications, etc.) must be coordinated with other site design features and finalized.
 - b. Coordination with Service Providers:
 - i. The Consultant is responsible for coordinating the utility design with local utility companies and/or other service providers.
 - ii. The Consultant is to verify the utility systems have sufficient capacity and reliability to meet the building design requirements.
 - iii. DDC will negotiate rates and connection charges with utility companies, where applicable.
 - c. Utility Location
 - i. The Consultant must ensure that utility elements, such as electrical transformers, emergency generators, backflow preventers, and meters, are easily accessible by the utility companies.

- ii. Design utility lines to avoid street trees, large trees, and significant planting areas. Locate utility lines so that future maintenance and repair will not damage trees and plantings. Storm drainage pipes should be located in unpaved areas where possible.
- iii. Water lines should be located in the unpaved area behind curb lines or under sidewalks. Minimize locating water lines under streets, drives, or other areas where access is severely limited. Do not place main water lines under foundations or within the building footprint.
- iv. Locate sanitary sewer lines in unpaved areas where possible. Follow code requirements on separation of water and sanitary sewer lines.
- v. Manholes must not be located in the main pedestrian walkways, plazas, or entry courts.

G20 Site Improvements

G2000 Site Improvements General

1. Sidewalks, Parking Areas and Roadways

Projects may require either new or repaired street sidewalks, curbs, parking areas, driveway aprons, curb cuts or roadway pavements. The Consultant is advised to confirm with the DOB at an early stage whether a Builder's Pavement Plan (BPP) application will be required. Non-standard sidewalks require PDC and DOT approval.

- a. The extent of impervious surfaces must be minimized, and tree cover over paved surfaces must be maximized. Porous pavement and pavements with a high solar reflectivity index (SRI) are desirable when budget and site conditions allow.
- b. Tree plantings and vegetated areas are encouraged in all parking areas to provide both "green" infrastructure and shade for the pavement.
- c. Sidewalks, parking areas and roadways must comply with Accessibility Standards.
- d. In certain zones, parking lots must also comply with NYC Zoning Resolution 37-90 requiring perimeter landscaping in lots exceeding 18 stalls.

2. Site Drainage

All surface storm water runoff must be collected on site. Connection to City storm or combined sewers must conform to current DEP regulations. Surface grading must provide for drainage away from buildings. Reduce runoff by minimizing impervious surfaces; consider "green infrastructure" such as green roofs, enlarged tree pits, and bioswales; consider "gray infrastructure" such as blue roofs, porous pavement, rain gardens and below-grade stormwater storage and infiltration. See Plumbing Engineering section in this Chapter for additional drainage requirements.

3. Site Furnishings

Site furnishing may include benches, tree guards, railings, bicycle racks, fences, gates, waste bins, light fixtures, signage, kiosks, art installations, trellis work, and play equipment. Lighting in street rights-of-way to conform to DOT Street Design Manual.

4. Site Lighting

The Consultant must provide for outdoor lighting and electrical power systems and building illumination where required. Generally, unobtrusive lighting designs and luminaire placement is preferred. Site luminaires should complement and be integrated with other site elements. Place luminaires to reduce glare and light pollution. Provide fixture lamping, color and durability information, and catalog cuts for selection when specifying site lighting. Neutral white illumination is preferred. Luminaires must be resistant to vandalism and easily replaceable. Consider photovoltaic site lighting in lieu of hard wired where cost-effective.

Full cut-off fixtures and other technologies and methods that reduce nighttime light trespass are strongly preferred. Where feasible, using a larger number of shorter, more closely spaced, lower wattage fixtures are preferable to using a smaller number of higher, widely spaced, high wattage fixtures. For more information see Electrical Engineering section in this Chapter.

5. Recycled Materials

The use of recycled materials is encouraged where practical. Where feasible, recycle discarded material, salvage existing topsoil, and transplant existing plant material.

6. Ease of Maintenance

Maintenance considerations must be integrated into the design process, such that landscaped areas can be maintained in a cost-effective and efficient manner. Anticipated maintenance must not exceed the ability of the Sponsor Agency to adequately maintain the landscape.

G2050 Athletic, Recreational, and Playground Areas

1. Playground and resilient play surfacing design must meet the requirements and guidelines of the Sponsor Agency, the United States Consumer Products Safety Commission (CPSC), ASTM F1487, F1292-17a, and the NYC Building Code. Safe fall-zones must be provided. Playground design must comply with Accessibility Standards.

G2060 Site Development

G2060.10 Exterior Fountains

1. The use of water features, unless of very low water usage or using recycled water, should be reserved for places of high civic importance only. Water features where there may be public contact with the water may only utilize potable water supply and must be filtered and treated. When proposing decorative fountains and pools, the Consultant must identify the required maintenance, safety, water consumption, shut down, cost of operation, and winter season issues.

G2060.20 Fences and Gates

1. The design of site fencing should be appropriate to the building and the surrounding context. For historic buildings, restoration or replication of original fencing and gates must be considered, subject to current code requirements.

G2060.20 Fences and Gates

1. Secure bicycle parking must be provided in compliance with applicable zoning and building code requirements. This parking must be in view of building security personnel.

G2080 Landscaping

G2080.00 Landscaping General

1. Planting

- a. Plants must be selected based on the conditions of the site such as soil characteristics, moisture, temperature extremes, acidity, wind, and light, as well as their resistance to invasive pests or pathogens. The use of native and drought tolerant plant material is encouraged.
- b. Plants may include lawns, trees, shrubs, ground covers, climbing plants, and seasonal plantings. Plants must have well-established roots at time of planting. All plantings must conform to the Grade A ANSI standards of nursery stock, be free of pests and diseases, contain no broken branches, weeds or deleterious material and must not arrive on project site dried out.

i. Street Trees

Projects must provide for new or replacement street trees. Street trees must be selected from the current NYC Parks street tree species list. Approval for street trees is required from NYC Parks and from DDC. Tree pits must comply with all current NYC Parks requirements. For any tree removal located within NYC Parkland, the Consultant must conform to the Rules and Regulations of the NYC DPR, Section 5 - Rules Governing Tree Replacement.

ii. Maintenance Manual

For substantial planting designs, a written manual and schedule must be prepared by the Consultant for the Sponsor Agency users and submitted at the completion of construction.

iii. Invasive Plant Species, Pathogens, and Pests

Site design and site construction must conform to all regulations regarding control of invasive plant species, pathogens, and pests. For the current list of permitted, prohibited, and restricted plants, contact NYC Parks Central Forestry and Horticulture Division at <http://nyc.gov/parks>.

1. Plant Tagging and Field Services

Plant tagging by the Consultant is an additional service that includes the following:

a. Tagging of Plant Materials

The Consultant must engage the services of a licensed Landscape Architect to select, tag with DDC seals, and supervise the planting of all plant materials. All individual plants must be balled and burlapped or container-grown stock. Representative samples of ground cover grown in flats must be inspected and tagged at the nursery before such plants are prepared for shipment. All plant materials must be inspected for signs of invasive pest infestation prior to shipment. Any infestation must be immediately reported to the New York State Department of Agriculture and Markets (NYSDAM).

b. Inspections of All Plantings

In addition to supervising the planting operations, the Landscape Architect hired by the Consultant must inspect the final planting and notify DDC when it is appropriate to accept the planting and initiate the guarantee. Inspections of all plantings must be made by the Landscape Architect engaged by the Consultant throughout the maintenance and guarantee period, and sufficiently early so that replacement plants may be planted in the appropriate planting season. The Landscape Architect is to identify for replacement all plants found to be unhealthy or infested by invasive pests. At the expiration of the guarantee period the Landscape Architect must notify DDC as to whether or not the Consultant should be released from further obligation.

c. Preparing a Maintenance Report

The Landscape Architect must prepare a report for DDC indicating whether the Consultant is complying with the maintenance portion of the Contract and recommending actions required. Note that the planting acceptance and release are independent from acceptance of the general construction work. The report must be prepared at a time appropriate to the planting installation, as determined by the DDC Construction Project Manager.

d. Preparing a Maintenance Schedule

The Landscape Architect must prepare a written and graphic maintenance schedule and manual for all final project planting materials. Upon the approval of the manual, the Consultant must submit the original to the DDC Construction Project Manager. For each type of plant, the schedules and manual must identify the requirements for irrigation, fertilization, pruning, weeding, cultivating mulching, lawn care, seasonal plantings, plant replacement, pest control and disease control.

G2080.10 Landscape Irrigation

1. When required by the Agreement, irrigation must be provided sparingly for initial establishment, maintenance, cleaning, and watering of plantings.
2. Hose bibs are preferable and must be provided at spacing that allows a one-hundred-foot-long hose to reach all parts of the site without crossing entrance approaches.
3. Use non-potable water wherever feasible.
4. Irrigation using groundwater or stormwater, treated, stored, and distributed per DEP regulations is encouraged.
5. The irrigation system must be designed to provide water to plants only when needed. Use rain sensors or soil moisture sensors to prevent unnecessary watering. Avoid overspray onto paved surfaces. Drip irrigation systems are preferred.
6. Install all major components in protected, accessible locations. Provide freeze sensors as required. Irrigation controllers and remote sensing stations must be placed in vandal-proof unobtrusive locations and protected from freezing.
7. Install quick coupling valves throughout the system so that hoses can be connected to the system. Locate drain valves to permit periodic draining of the system.
8. Provide irrigation water meter separately from domestic water meter. Backflow prevention must be installed.
9. Provide automatic controls so watering can be scheduled at night or in the early morning to reduce water losses from evaporation. Use zoned irrigation systems so that different areas can be watered at different times.
10. Irrigation systems must be provided with a Smart Controller that incorporates an on-site rain or moisture sensor that automatically shuts the system off after a predetermined amount of rainfall or sensed moisture in the soil.
11. Specify training on proper operation and maintenance of the irrigation system for the appropriate facilities staff.

G30 Liquid and Gas Utilities

G3010 Water Utilities

1. The Consultant must ensure that utility elements, such as electrical transformers, emergency generators, backflow preventers, and meters, are easily accessible by the utility companies.
2. Design utility lines to avoid street trees, large trees, and significant planting areas. Locate utility lines so that future maintenance and repair will not damage trees and plantings. Storm drainage pipes should be located in unpaved areas where possible.
3. Water lines should be located in the unpaved area behind curb lines or under sidewalks. Minimize locating water lines under streets, drives, or other areas where access is severely limited. Do not place main water lines under foundations or within the building footprint.
4. Locate sanitary sewer lines in unpaved areas where possible. Follow code requirements on separation of water and sanitary sewer lines.
5. Manholes must not be located in the main pedestrian walkways, plazas, or entry courts.

G3020 Sanitary Sewer Utilities

1. Consultant to follow the regulations of NYC DEP.
2. Separate storm drains from sanitary sewers within the property limits.
3. Provide cleanouts 5 feet from the building on all service lines. Service lines should enter the main at a manhole. Provide drop manholes if the service line does not enter at the invert.
4. In areas where no public sewers exist, use of septic tanks and leach fields is acceptable. Install the septic systems in accordance with code. Locate septic systems where they can be expanded to meet future needs of the discharge system; unless otherwise required by the Sponsor Agency, plan for a 50% larger system.

G3030 Storm Drainage Utilities

1. Design the storm water system as required by DEP. Use gravity flow for all storm drain systems.
2. Where possible, locate storm drainage pipes in unpaved areas; offset inlets from main trunk lines to prevent clogging.
3. Rainwater not collected for reuse from the building roof drainage system must be discharged into the storm drain.
4. Storm Water Runoff Requirements:
 - a. The site design must manage storm water runoff.
 - b. The Consultant must conform to DEP requirements for storm water management. The Consultant must obtain any required DEP approvals for the storm water management plan.

G3090 Liquid and Gas Utilities Supplementary Components

1. Manholes must be secured from unauthorized access using tamper-proof bolts.

G40 Electrical Improvements

G4010 Site Electric Distribution Systems

The routing of site utilities and location of manholes must be determined early in the design process in coordination with the site civil engineer. The designer must coordinate with the utility company to determine the capabilities, rate structure options, and associated initial costs to the project and must evaluate the available utility service options.

1. Economic Analysis

The Consultant must perform an economic analysis to justify the service voltage and design option selected.

2. Electrical Power Services

For buildings less than 100,000 gross square-feet (gsf), utility power must be requested at the main utilization voltage, i.e., 460Y/265V or 208Y/120V.

For buildings greater than 100,000 gsf and less than 250,000 gsf, at least one electrical secondary service at a minimum of 460Y/265V must be provided. For

buildings 250,000 gsf and larger, or for campus sites, electrical service must be provided to the site, at medium-voltage distribution, for primary power distribution to substations.

3. Transformer Vaults

When a transformer vault is required by the utility company, the Consultant shall must coordinate location of vaults and must establish a reference number with the NYC Department of Transportation (DOT) Office of Permit Management and meet with DOT to secure vault grating location approvals. The Consultant must contact other City Agencies, as required, for coordination and securing approvals for new utility transformer vaults.

4. Primary Cable Selection

Medium-voltage cable selection must be based on all aspects of cable operation and on the installation environment, including corrosion, ambient heat, rodent attack, pulling tensions, potential mechanical abuse, and seismic activity. Conductors for new construction buildings rated above 150 amperes may be copper or aluminum, insulated with cross-linked polyethylene (XLP) or ethylene propylene rubber (EPR). Conductors rated 150 amperes and below must be copper. New cabling to be connected to equipment built or installed before 1980 must be investigated to determine compatibility of aluminum-to-copper terminations prior to specifying aluminum cabling. Insulation must be rated at 133 percent. Individual conductor size must not exceed 500 mcm.

5. Direct Buried Conduit

Direct buried Schedule 80 PVC, coated intermediate metallic conduit (IMC), or rigid galvanized steel must be used for the distribution of exterior branch circuits. The minimum direct buried conduit size must be 1.5 inches. Backfill around the conduits must be selected based on the thermal conductivity and be free of materials detrimental to the conduit surface.

6. Concrete Encased Duct Banks

Concrete-encased PVC Schedule 40 duct banks must be used where runs are under permanent pavements and where service reliability is paramount. Concrete-encased ducts must be provided with a cover that is at least 30 in. thick. Duct banks under railroads must be reinforced.

Ducts must slope toward manholes and all entries into buildings must have watertight seals. Changes in direction must be by sweeps with a radius of 4 ft. or more. Stub-ups into electrical equipment may be installed with manufactured elbows. Duct line routes must be selected to avoid the foundations of other buildings and structures. Electrical power and communication ducts must be kept clear of all other underground utilities, especially high-temperature water, steam, or gas. Direct buried duct banks must be continuously indicated by installation of tracer tape 12" above the exterior of the duct bank.

Where it is necessary to run communication cables parallel to power cables, two separate duct banks must be provided with separate manhole compartments. The same holds true for normal and emergency power cables.

Duct banks must be spaced at least 1 ft. apart.

Where redundant service is required (power, communications, and/or life safety), alternate and diverse paths with 1- hour fire separations must be provided.

7. Duct Sizes and Quantity

Ducts must be sized as required for the number and size of cables. All ducts for medium-voltage services must be a minimum of 4 in. inner ducts must be provided inside communication ducts wherever fiber optic cables will be used. Spare ducts must be included for planned future expansion; in addition, a minimum of 25 percent spare ducts must be provided for unknown future expansion and/or cabling replacement.

8. Manholes

Manholes must be spaced no farther than 500 ft. apart for straight runs. The distance between the service entrance and the first manhole must not exceed 100 ft. Double manholes must be used where electric power and communications lines follow the same route. Separate manholes must be provided for low and medium-voltage systems. Manholes must have clear interior dimensions of no less than 6 ft. in depth, 6 ft. in length, and 6 ft. in width, with an access opening at the top of not less than 30 in. in diameter. Medium-voltage manholes must be sized in accordance with utility company requirements. Manholes must have a minimum wall space of 6 ft. on all sides where splices may be racked. Manholes must be provided with pulling eyes, sumps, and grounding provisions as necessary.

9. Stubs

A minimum of two spare stubs must be provided (to maintain a square or rectangular duct bank), so that the manhole wall will not need to be disturbed when a future extension is made. Stubs for communications manholes must be coordinated with DOITT.

10. Handholes

Handholes may be used for low-voltage feeders (600V and below), branch circuits, or communications circuits. If used, they must be not less than 4 ft. in depth, 4 ft. in length, and 4 ft. in width, and must be provided with standard manhole covers and sumps of the same type provided for manholes. Generally, at least four racks must be installed. Where more than two splices occur (600V feeders only), a 6 ft. by 6 ft. manhole must be required.

11. Penetrations

Lighting and communication circuits that penetrate fire walls, fire barriers, fire partitions, smoke barriers, smoke partitions, and between floors must be properly sealed in accordance with the requirements of the NYC Building Code with approved firestopping materials.

12. Exterior Concrete Pads

Concrete pads constructed to support exterior mechanical and electrical equipment must be provided with sufficient conduit penetrations to provide the necessary power and control connections plus an additional 50 percent for future equipment additions and modifications. Spare conduits need not extend more than 4 ft. past the end of the concrete slab. All spare conduits must be capped at both ends.

G40150 Site Lighting

1. General

Exterior/site/security lighting must be provided where required by Sponsor Agency and Code around the perimeter of the building and at parking areas for safe passage and to deter theft and vandalism. Due to the aesthetics of exterior lighting, its impact on the building façade and the difficulty in describing multiple elevations

on a plan, it is essential that the Consultant provide complete exterior building elevations to clearly depict the location and mounting height of each fixture.

2. Light Trespass and Uplight Control Standards

- a. Lighting design must minimize light trespass from the building and site, reduce sky glow, improve nighttime visibility through glare reduction and reduce development impact on nocturnal environment.
- b. The exterior lighting should not exceed 80% of the Lighting Power Densities as defined by the latest ANSI/ASHRAE/IESNA standard 90.1, Exterior Lighting Section.
- c. The required light trespass and uplight control criteria included in this document are based upon the following guidelines: The Joint IDA (International Dark Sky) – IES (Illuminating Engineering Society) Model Lighting Ordinance (MLO) with User's Guide, June 15, 2011.
- d. All luminaires must minimize uplight and glare. Backlight must also be controlled when a luminaire is installed adjacent to property not owned by the Sponsor Agency.
- e. Full cut-off sources should be used for building entries and perimeter lighting.
- f. Fixtures at doorways should not exceed 10W. Building perimeter lighting should not exceed 20W. Wattage requirements may depend on actual application and illuminance requirements.

3. Exterior lighting must meet the IES 10th Edition Handbook recommendations and comply with the IDA/IES Model Lighting Ordinance (MLO) for lumen density limits and backlight, up-light, and glare (BUG) ratings or light pollution and light trespass performance method.

The IES Lighting Handbook along with other IES documents (RP-33, RP-20, RP-8, and DG-5) provide an industry accepted set of recommended practice for common exterior applications. Site conditions requiring enhanced lighting beyond these basic recommendations have also been evaluated by the IES and found to be specific to unusual surroundings or special property function. Guidance on when and how to provide appropriate enhanced lighting in these cases is outlined in "Guideline for Security Lighting for People, Property, and Public Spaces" (IES G-1). Guideline G-1 explains that effective lighting for safety and security should consider:

- a. Horizontal Illuminance, Vertical Illuminance, Uniformity/Shadows and Glare.
- b. Exterior luminaires and control systems must comply with all local zoning laws, and lighting levels for exterior spaces must not exceed the IES 10th Edition Lighting Handbook recommendations.
- c. Luminaires with instant strike light sources at all entrances and exits must be connected to the emergency lighting system.

4. Site Lighting

Illumination of exterior exit discharges must be in accordance with the requirements in NFPA 101. Flagpoles, if required, must be illuminated and controlled.

5. Open Parking Lots and Roadway Lighting

Parking lots and roadway lighting must be designed per IES Recommended Practice RP-8 and RP-20 current version in addition to the IES and IDA/IES MLO requirements.

6. Parking Structures

Parking structure lighting must be designed per RP-20 current version in addition to the IES and dimmed to at least 50% during periods of low activity and turned off when daylight is plentiful. Luminaires must meet the following standards:

- a. Efficacy of a minimum of 63 lumen per watt (LPW).
- b. Wet-location rated.
- c. Withstand mechanical vibration.
- d. Life of minimum 25,000 operating hours for LED fixtures before reaching the L70 Lumen output degradation with no catastrophic failures per IES standard LM-21.
- e. Lumen depreciation per IES standard LM-79.
- f. Luminaire classification per IES TM-15.

CHAPTER 07: COMMISSIONING

- A. INTRODUCTION
- B. COMMISSIONING AGENT
- C. SERVICES
- D. DELIVERABLES
- E. COMMISSIONING DESIGN GUIDANCE

A. INTRODUCTION

Commissioning is a quality control process for verifying that projects are designed, constructed, and operated as intended. It includes clearly documenting Sponsor Agency expectations, reviewing drawings to verify that these expectations are met, and site inspections and testing during the construction phase to make sure that installation conforms to the design.

B. COMMISSIONING AGENT

A Commissioning Agent is an owner's representative, managing the commissioning process and reporting directly to the owner. DDC retains third-party Commissioning Agents through a separate contract for projects that are pursuing LEED certification, for projects that require commissioning to comply with the New York City Energy Conservation Code, and for projects with large or complicated systems at the discretion of DDC and the Sponsor Agency. The Consultant shall assist and support the Commissioning Agent throughout the project. The Commissioning Agent will work with the Consultant team to clarify Sponsor Agency goals and make sure that the design addresses those goals through implementation of a Commissioning Plan. Please note that the term "Commissioning Agent" may refer to one or more individuals from one or more consulting companies.

C. SERVICES

1) COMMISSIONING MEETINGS

- a. The Consultant shall participate in a Design Phase Commissioning Kickoff Meeting prior to the final Schematic Design Submittal. At this meeting, the Commissioning Agent will present an overview of the commissioning process to the team. This meeting may be an allocated portion of a biweekly progress meeting.
- b. The Consultant shall participate in an Owner's Project Requirements (OPR) Development Meeting during early Design Development to gather any outstanding information required from the Sponsor Agency to complete the OPR.
- c. If applicable, the Consultant shall participate in a Monitoring-Based Commissioning Meeting during Design Development. At this meeting, the Consultant, his/her LEED Consultant, and the Commissioning Agent will present the requirements for the monitoring-based commissioning program. The Sponsor Agency will provide feedback to clarify their expectations and capabilities to support monitoring-based commissioning. The CxA will then provide a monitoring-based commissioning plan and the Consultant shall ensure that the final design supports the plan.
- d. The Consultant shall participate in other commissioning meetings as required throughout the process, at the discretion of DDC.
- e. The Consultant shall ensure the participation of the appropriate team members and sub-consultants in any and all commissioning meetings, including but not limited to the LEED Consultant, MEP Engineer, Lighting Designer, and Envelope Consultant.

D. DELIVERABLES

1) DOCUMENTATION OF PROJECT INTENT

The Consultant shall produce a narrative of the design intent, in the form of an Owner's Project Requirements (OPR) and Basis of Design (BOD). These documents shall memorialize the intent of the project, including the intended function, any project-specific requirements or expectations, and how the design proposes to meet these requirements.

The Consultant shall develop:

a. Owner's Project Requirements (OPR)

- i. The OPR shall clearly outline the project goals and the intended operation of the building. This shall include project scope, building use, occupancy information and schedules, budget constraints, energy efficiency goals, verifiable performance criteria, and operations and maintenance requirements. It must address all systems to be commissioned, as well as the building envelope.
- ii. The Consultant shall provide a draft OPR document with the SD submittal, and a final OPR Document with the DD submittal. The OPR shall be updated and resubmitted during CD at the discretion of DDC and will be required typically only in the event of significant change in project scope or intent.
- iii. For projects following an expedited design track, the Consultant shall submit the draft OPR two weeks after the SD2 submittal. The final OPR shall be included at the next submittal milestone.
- iv. Upon request, the Commissioning Agent will provide an OPR template to the Consultant team to guide the development of this document.
- v. DDC will hold an OPR Development Meeting to clarify the Sponsor Agency's expectations and incorporate this input into the document.
- vi. The Sponsor Agency must approve the final OPR.

b. Basis of Design (BOD)

- i. The Basis of Design explains how the proposed design will meet the requirements and expectations outlined in the OPR. It shall describe the selected systems and explain anticipated facility operation. The BOD shall document the rationale for the design, including codes and standards, direction from the Sponsor Agency, concepts, calculations, design methods, and software used. The BOD shall include a history of revisions to the project, explaining the reasons for changes throughout the project phases.
- ii. The Consultant shall provide a draft BOD document with the SD submittal, and a final BOD Document with the DD submittal. The BOD shall be updated and resubmitted during CD at the discretion of DDC and will typically be required only in the event of significant change in project scope or intent.
- iii. For projects following an expedited design track, the Consultant shall submit the draft BOD two weeks after the SD2 submittal. The final OPR shall be included at the following submittal milestone.
- iv. If required for compliance with LEED certification target, Low Energy Building measurement and verification, or the benefit of the project at the discretion of DDC, the BOD shall include a Monitoring-Based Commissioning Protocol. Such Protocol

shall include the elements outlined in Chapter 08: Sustainability and Resiliency, A Sustainability, Section 4 Deliverables, c Low Energy Intensity Buildings, iv Metering and Verification Equipment/Monitoring-Based Commissioning Protocol.

2) COMMISSIONING SPECIFICATIONS

- a. The Commissioning Agent will provide Commissioning specifications to the Consultant during the design process.
- b. The Consultant shall coordinate the Commissioning specifications with the project specifications and incorporate them into the project specifications no later than the 75% CD submittal.

3) DESIGNING FOR COMMISSIONING

The Commissioning Agent will perform design reviews of the Consultant's submittals. The Consultant shall respond, in writing, to all comments from the Commissioning Agent and incorporate their comments into the design documents. For LEED projects, the Consultant shall be responsible for formatting the comment responses for upload to LEED Online. Commissioning review comments shall be integrated into the Design Documents as required until all review comments are closed by the Commissioning Agent.

The commissioning review is intended to comment on system functionality and control, instrumentation, energy performance, water usage performance, access and maintainability, sustainability, and indoor air quality impact. Other areas of comment may include constructability, cost efficiency, LEED compliance, document clarity, and clarity of scope. A detailed list of commissioning review items is provided below, in Section E: Commissioning Design Guidance below.

4) CONSTRUCTION PHASE COMMISSIONING SUPPORT

Consultant shall provide support for commissioning activities during the construction phase of the project. Such support services include:

- a. Meetings and Site Visits: The Consultant shall attend the Construction Phase Commissioning Kickoff Meeting, and other commissioning meetings, site visits, and performance tests as required.
- b. Contractor Submittals: Consultant shall coordinate the review of Contractor submittals with the Commissioning Agent, prior to approving submittals. Commissioning Agent will review for conformance with Design Documents, and adherence to the requirements documented in the OPR and BOD. The Contractor shall incorporate the commissioning comments into their response to the Contractor.
- c. Requests for Information (RFI): The Consultant shall make any and all RFIs available to the Commissioning Agent, for incorporation into their testing procedures.
- d. Consultant shall support commissioning team and Contractor in resolution of issues, providing prompt clarification as required.
- e. Operations and Maintenance Manuals: Consultant shall coordinate the review of Operations and Maintenance Manuals with the Commissioning Agent, prior to acceptance. Commissioning Agent will review for accuracy and completeness of manuals. The Consultant shall incorporate commissioning comments into their response to the Contractor.
- f. As-Built Drawings: Consultant shall coordinate the review of As-Built Drawings with the Commissioning Agent, prior to acceptance. Commissioning Agent will review As-Built drawings for accuracy and completeness. The Consultant shall incorporate commissioning comments into their response to the Contractor.
- g. LEED Documentation: For all LEED projects, the Consultant shall review all LEED submittals, provide guidance as required, and assist in uploading the proper documents to the USGBC.

E. COMMISSIONING DESIGN GUIDANCE

- 1) The Commissioning Agent's review will typically include the following items, as applicable to the project scope. The Consultant shall incorporate these elements into the Design Documents:

a. General

- i. Concise and complete Commissioning specifications are included, both as a stand-alone administrative section (provided by DDC's General Conditions) and in individual equipment sections (provided by the Commissioning Agent). The Consultant shall incorporate these specifications into the project documents.
- ii. Drawings comply with the OPR and BOD.
- iii. Complete Operations and Maintenance (O&M) requirements are included in the specifications.
- iv. Drawings show important mechanical details such as coil piping, diffuser connections, and pumps, etc.
- v. Critical section views and exploded plan views are included for congested areas and mechanical rooms with restrictive ceiling heights.
- vi. Ductwork is drawn double-line for main trunks, around AHUs, and in corridors to verify adequate installation space and reduce interferences.
- vii. Duct and piping risers are labeled for size, service, and continuation point.
- viii. Equipment schedules are complete, list make and model numbers, match other drawings, and performance data appears sensible. Equipment schedule shall match equipment unit labels on plans.
- ix. Pipe sizes are shown on the plans; piping is clearly identified.
- x. Sheet notes are clear and adequate to describe the work.
- xi. Room names and numbers are shown.
- xii. Multiple, secondary equipment (e.g. VAV boxes) have distinctive, individual tag numbering and equipment schedules sufficient for identification of the equipment during TAB, commissioning, and building operation and maintenance; the tag number is consistent on all drawings and on the equipment schedule.

b. Demolition

- i. Limits of demolition are well-defined. New points of connection correspond to points of connection on the demolition drawings.
- ii. If covers and other accessories (e.g. fin tube covers) are removed during demolition, they are clearly labeled for replacement in the drawings indicating new work.
- iii. If demolition cross hatching is applied to an area, anything in the area that should not be removed is clearly defined.

c. Design Concepts

- i. Redundancy of the equipment has been considered and explained in the documents and complies with the OPR and BOD.

- ii. HVAC design has considered part-load and off-peak conditions; systems have adequate ramp-down function and can operate efficiently at less than full load (e.g. VAV, staging).
- iii. Constant volume HVAC equipment has features to control humidity at part load, such as hot gas bypass, reheat coils, or VFD compressors.
- iv. Temperature zoning appears correct. There is no conflict between interior and exterior zones. The number of zones seems appropriate for the building and use.
- v. Any space humidity requirements can be met by the specified equipment; humidifiers and/or dehumidifiers are included as needed.
- vi. Selected equipment and systems are generally considered reliable and easily maintained; systems are not unusual or unnecessarily complex.
- vii. Diversity has been applied to VAV system design, and AHUs are sized accordingly.
- viii. Minimum flowrates can be maintained through boilers and chillers with VFD pumps, or bypass loops are required.
- ix. Alternative HVAC system designs that might improve cost, efficiency, reliability, simplicity, zoning, space, maintenance, or other concerns should be considered.

d. Equipment Access

- i. Equipment has access space for service and maintenance.
- ii. Equipment has clearance space for tube pulls, removals, and door swings.
- iii. Equipment location can be safely accessed (e.g. hatches, permanent ladders, stairwells to roof, and clear passageways)
- iv. Equipment is not blocked by other equipment or utilities.
- v. Access doors and panels are shown on drawings with notes.
- vi. Instruments and controls are accessible.
- vii. AHU filters can easily be replaced. Panel swings are acceptable.
- viii. Valves are accessible and visible.
- ix. Access spaces between AHU coils for cleaning have been provided.
- x. Avoid installing equipment above hard ceilings.
- xi. Avoid installing VAV's or reheat coils above furniture or partitions.
- xii. Large equipment can be feasibly installed or rigged through doors, roofs, basements, halls, etc. Access allows equipment to be replaced in future.
- xiii. Adequate clearance for electrical panels is provided.
- xiv. Space exists for future additional equipment, if applicable.
- xv. VFD cabinets and DDC panels are shown on walls or equipment.

e. Noise and Vibration

- i. Equipment has vibration/spring isolators or inertia bases.
- ii. Piping near equipment has spring hangers.
- iii. Connections to rotating equipment have flex connectors.
- iv. Sound traps are installed in ductwork, if required.
- v. Equipment is not installed below or above sound-sensitive areas.
- vi. Ductwork has acoustical lining.

f. Commissionability and Testing, Adjusting, and Balancing (TAB)

- i. Isolation valves are provided at all equipment.
- ii. Pressure gages, thermometers, P/T plugs and flowmeters are available at all equipment for testing.
- iii. Branch volume dampers in ductwork are provided.
- iv. Sufficient straight duct sections are included for manual pitot traverses or airflow monitoring stations.
- v. Balancing valves are shown at base of main piping risers.
- vi. Pumps have appropriate balancing accessories. Coils have balancing valves.
- vii. Airflow diagrams are recommended to aide with air balancing and zoning analysis.
- viii. Water system flow diagrams are included to show piping circuit design, pump accessories, air control devices, and make-up water connections.
- ix. The Testing and Balancing specification is adequately detailed and certification requirements are included.

g. Ductwork

- i. No ductwork is exposed to the weather. All ducts from roof top equipment enter straight down through roof curbs for equipment.
- ii. Duct seal class and pressure class is specified or shown on plans. Duct gages should comply with SMACNA guidelines.
- iii. There are no excessive duct fittings around air handling units, creating high-static system effects and excessive losses.
- iv. VAV boxes have uniform inlet connections.
- v. Rectangular to round duct transition to VAV has the recommended minimum length for proper flow development.
- vi. Volume dampers are shown at all diffusers and grilles.
- vii. Fire dampers are located at appropriate wall/floor penetrations. Access doors are provided at fire dampers.
- viii. Duct sizes are designed for proper velocity (random check).
- ix. Duct liner is clearly specified and locations are indicated.

h. Typical Issues

- i. The distance between the cooling tower basin and the condenser pumps allows for adequate Net Positive Suction Head.
- ii. Drawings show the Engineer has considered the existing structural elements and other components as potential interferences in routing ductwork and piping (e.g. using "high" ducts in shallow ceiling).
- iii. Roof penetrations for piping and ducts are kept to a minimum, and all go down through equipment curbs. Where required, penetrations are better through vertical walls (such as roof equipment penthouses).
- iv. Piping and duct penetrations through walls and slabs should be sealed
- v. Relief valves for boilers, chillers, and other equipment are shown along with vent piping.
- vi. Chemical water treatment equipment is shown for piping systems.
- vii. Alternate piping methods (e.g. Victaulic, PEX, crimping) are specified or permitted.

- viii. Specifications are included for pipe pressure testing and cleaning and duct leakage testing.
- ix. Vents are shown at high points of piping systems or required by notes.
- x. Heaters are provided in stairwells, entrances, toilet rooms, and mechanical rooms.
- xi. Ventilation or cooling has been provided for electrical closets and elevator equipment rooms.
- xii. If glycol solution is needed for freeze protection, the pumps, coils, and other equipment are rated for glycol.
- xiii. Freeze protection schemes (heat tracing, insulation, pumps, etc.) are indicated.
- xiv. Piping is not installed in electrical rooms or complies with all code clearance requirements.
- xv. Automatic isolation valves are provided at multiple chillers and boilers. Where possible, isolation valves shall be easy to access without the aid of ladders.
- xvi. Return air path and/or ductwork is clearly shown.

i. Air Handling Units and Fans

- i. AHU Schedule has appropriate and required data: e.g. face velocity, coil heat balance, flowrates, filter efficiencies, and static pressures.
- ii. Fan motors have 20% safety margin over calculated brake horsepower, to allow for adjustments during TAB and inefficient field duct conditions.
- iii. Condensate drain traps are detailed and sufficient height is available. Condensate drains should be sloped away from the unit and piped to the nearest drain.
- iv. Adequate access space is provided between heating and cooling coils for cleaning and temperature sensors.

j. VAV boxes

- i. Responsibility for providing/mounting/installing VAV controls is clearly stated.
- ii. Drawing details show a minimum of 3 duct diameters of straight duct upstream of inlet.

k. BAS/BMS and Controls

- i. Detailed and complete written sequences of operation are provided for all systems, and all equipment has a corresponding sequence of operations.
- ii. Control points are labeled on flow diagrams/schematics.
- iii. Sufficient points are available to facilitate performance verification and O&M.
- iv. The BAS includes adequate trending and reporting features.
- v. VAV duct static pressure sensor locations are shown.
- vi. Chilled and hot water loop differential pressure sensor locations are indicated, and isolation valves and pressure gages are provided at transmitters.
- vii. Room thermostats and space humidity sensors are shown.
- viii. Flowmeters and air monitoring stations have proper downstream dimensions.
- ix. A BACnet or Lonworks generic DDC interface has been specified for equipment (e.g. chillers, boilers, RTUs) and vendor responsibilities are clearly noted. Specified BAS protocol is compatible with equipment controller protocols
- x. A BAS point list is included. Control or monitoring points to be available to BAS from other equipment's control panels (e.g. chiller) is provided.

- xi.** Sequences of Operation correspond to AHU and other equipment details on the drawings.
- xii.** Boiler/Chiller room safety equipment, interlocks, and alarms are specified.
- xiii.** Chillers and boilers have automatic isolation valves if needed for lead/lag sequencing.
- xiv.** Controls schedule/part number list is included on the drawings.

I. Sequence of Operations

- i.** Morning warm-up and cool-down modes are described.
- ii.** Economizer sequence is applied. Enthalpy sensors are used, if appropriate.
- iii.** Occupied and unoccupied sequences are described.
- iv.** A fire and emergency power response matrix is provided for HVAC systems, lighting, alarms, and generator during power outage or fire alarm.
- v.** The emergency shutdown and fire alarm sequences are described.
- vi.** Chilled water system sequences are provided, including start/stop, temperature control, lead-lag, loading and unloading, and primary-secondary operations.
- vii.** VFD control of pumps and fans is described.
- viii.** Ventilation mode (Carbon dioxide) control is described, including overrides with temperature.
- ix.** Energy and/or heat recovery sequences are explained, with setpoints.
- x.** Freeze protection strategies are included.
- xi.** Mechanical Room ventilation is described, including refrigerant leak mode
- xii.** Kitchen Exhaust and make-up air sequence are described; including Ansul suppression system equipment interlocks.
- xiii.** Hot water heating system sequences including start/stop, temperature control, lead-lag, primary-secondary operations are provided. Heat recovery feature has been explored.
- xiv.** Supply fan and return fan tracking strategy is provided.
- xv.** Sequences are included for stand-alone equipment not interfaced to BAS.

m. Indoor Air Quality

- i.** Outdoor air intakes at louvers or rooftop units are not close to exhaust fans, cooling towers, plumbing vents, or boiler stacks.
- ii.** Outdoor air intake louvers are not close to loading docks, traffic, or dumpsters.
- iii.** Exhaust fans serve photocopy rooms, storage rooms, break rooms, labs, etc.
- iv.** Ventilation rates will be met when VAV boxes are at minimum air flow condition, and calculations or procedures are included.
- v.** Air filters are the appropriate efficiency for the application, and meet applicable LEED requirements. Filter rack appropriate for filter size and specification.
- vi.** The use of duct liner and exposed insulation in AHUs has been evaluated as a potential source of microbial contamination and debris, and the potential for such contamination has been minimized.
- vii.** Demand control ventilation strategies using CO2 sensors have been considered. Sensors have been located adequately and protected from tampering.

n. Operations and Maintenance

- i. Valves are provided at all piping risers and main branches. Valves meets recognized quality standards.
- ii. O&M Manual requirements are included in the specifications.
- iii. Owner orientation requirements are included in the specifications.
- iv. Equipment warranty requirements are detailed in specifications.

o. Plumbing

- i. AHU condensate drains are piped to floor drains.
- ii. Floor drains have trap primers where needed.
- iii. Floor drains are properly vented.
- iv. Proper backflow prevention devices are specified.
- v. Hot water return system is indicated.
- vi. Domestic make-up water is shown for HVAC systems fill.
- vii. Roof drains are combined with overflow drains.
- viii. Plumbing drawings include riser diagrams with pipe sizes and fixture units shown.
- ix. A domestic water booster pump is provided if required.
- x. Specifications include sterilization of domestic water piping.
- xi. Gas pressure regulators are provided at appliances or equipment, if needed.
- xii. Water hammer arrestors are included in the specifications, if needed.

p. Coordination

- i. The voltages and phase information provided on the mechanical equipment schedules match the electrical drawings.
- ii. MEP equipment structural, space, and clearance requirements have been reviewed.

q. Electrical

- i. Emergency generator loads are listed, and support life safety, data backup, communications, heat, food refrigeration, or other Sponsor needs.
- ii. Sequences of operation are specified for emergency generators, automatic transfer switch, and uninterruptible power supply.
- iii. Fire and Emergency Power Response Matrix are included.
- iv. Furnishing and installation of duct smoke detectors are coordinated with Trades.
- v. Drawings show important typical Electrical details such as conduit penetrations, ductbank sections, grounding, lightning protection, cable supports, power, and control connections at fixtures, equipment and components, manholes, and handholes.
- vi. Drawings show important Schedule Details such as Cable and Conduit Schedules, Panel Schedules, Lighting Fixture Schedules, Specialty Wiring Device Schedules (or equivalent details), and Low Voltage and Alarm Component Schedules (or equivalent details).
- vii. Drawings show important One Line, Riser, and Block Diagrams such as Overall Power one line; Sub System Swbd or MCC one lines; Process and Instrumentation Diagrams (P&IDs); Power, Fire Alarm, and Low Voltage Risers; and Major Interconnection Block Diagrams.

- viii.** Circuits on emergency power should be clearly indicated on the plans.
- ix.** Major conduit runs are laid out to ensure there are no conflicts with piping and ductwork. Plan drawings show large numbers of conduits as a bank of conduits drawn to scale (in width) with a section taken to show height and width dimensions and conduit identifications, not as a single line.
- x.** Temporary power is shown and/or specified in adequate detail to be accurately bid and to provide the temporary power required to execute the work. It is clear who provides temporary power for the other Contractors, who pays the Utility Bills, and how they are paid.
- xi.** Specifications require vendor or Contractor submit Factory Test procedures and check lists.
- xii.** Equipment has clearance space for circuit breaker rack out, removals, door swings, etc.
- xiii.** Equipment location can be safely accessed: hatches, ladders, clear passage ways. Room for future growth is provided, if appropriate.
- xiv.** Electrical equipment rooms do not have other unrelated systems running through them.
- xv.** Access doors and panels are shown on drawing or with notes.
- xvi.** All mechanical equipment and controls are included on power plans (e.g. condensate pumps, small heaters, small booster pumps, BAS panels, heat tracing, chemical treatment equipment, automatic valves, VAV box transformers, air compressors).
- xvii.** Power to plumbing automatic flush valves and faucets has been coordinated. Power to electronic trap seal primers is provided.
- xviii.** Furnishing and installing of motor starters, disconnect switches, VFDs is clearly defined by Trade.
- xix.** Convenience receptacles and lighting are provided at rooftop HVAC units and fans, if required.

r. Envelope

- i.** The construction documents include documents for a partial building enclosure mockup, if applicable.
- ii.** The air barrier, insulation, vapor barrier, and weather resistant barrier are continuous. Interruptions in any of these barriers create opportunities for the development of condensation and moisture infiltration in the exterior walls or roof.
- iii.** The wall system is free of thermal bridges, which may be a source of condensation within the wall system in cold climates.
- iv.** The details describing interruptions in the typical exterior wall system (typically around windows, doors, and skylights) ensure adequate joinery in air, vapor, weather, and thermal barriers bridging the typical wall with the window and door systems.
- v.** Materials within the exterior wall systems provide adequate accommodation of differential movement resulting from thermal stresses.
- vi.** The materials within the exterior wall systems accommodate movement resulting from moisture absorption and evaporation. Some envelope materials are absorptive which cause changes in size and movement that must be properly accommodated during design.

- vii.** All joinery of exterior wall systems is detailed to ensure no water infiltration paths, and the building is designed to be completely watertight. Liquid water can penetrate a wall system via gravity, capillary suction, surface tension, kinetic energy, hydrostatic pressure, and air pressure. All wall systems are designed to ensure adequate drainage paths for water to exit.
- viii.** All components of the exterior wall systems can safely permit the naturally occurring movements that all buildings experience during their lifetime. Sealant joints are included and sized appropriately to allow for the natural deflection of structural beams, lintels, and angles. Adequate construction tolerances are provided between wall systems and structural systems, and between distinct wall systems. Details depict the actual sizes of wall components.
- ix.** Roof assembly is complete. If rigid insulation is used, adequate materials are provided to protect insulation boards during construction. Adequate protection from moisture migrating out of the concrete roof slab is provided.
- x.** Adequate drainage is provided for all surfaces of the roof. Drainage is not to be impaired by normally deflecting structural roof members, mechanical equipment, inadequate slope, etc.
- xi.** Adequate descriptions are provided for all roof penetrations, including plumbing vents, roof drains, supports/legs/curbs for all mechanical equipment, mechanical piping, conduits, roof hatches, etc.
- xii.** Materials within the roof system allow for adequate accommodation of differential movement resulting from thermal stresses.
- xiii.** Effective and current field testing (performance testing) methods are specified, as agreed by DDC and the Sponsor Agency.
- xiv.** Review of construction drawing details for compliance of materials with thermal resistance values per design.

CHAPTER 08: SUSTAINABILITY AND RESILIENCY

- A. SUSTAINABLE DESIGN
- B. RESILIENT DESIGN

A. SUSTAINABLE DESIGN

1) INTRODUCTION

NYC and DDC have a long history of supporting sustainable design, starting with the *High Performance Building Guidelines*, published by DDC in 1999. Mayoral initiative followed with *PlaNYC* in 2007 (updated 2011) and the *Greener, Greater Buildings Plan* of 2009.

Mayor de Blasio's 2014 initiative, *One City: Built to Last*, followed this trajectory, enacting laws to ensure that the City leads by example in efforts to reduce greenhouse gas emissions from buildings. Pursuant to Local Law 66-2014, which committed the City to reduce its greenhouse gas emissions 80% by 2050, the Mayor's Office of Sustainability published *New York City's Roadmap to 80 x 50*.

The latest *OneNYC 2050* strategic plan reaffirms these commitments, and is supported by a set of new local laws known as the Climate Mobilization Act, requiring even greater effort to reduce greenhouse gas emissions and achieve carbon neutrality by 2050.

DDC approaches all projects it administers with the goals of reducing energy use, conserving water and other natural resources, and creating a healthy and resilient city. Environmentally sustainable, high performance design and construction standards shall be fully integrated into all projects. At a minimum, the Consultant shall meet the requirements of all City green buildings laws. Where feasible, and without adding to the project's cost or schedule, the Consultant's design shall exceed the minimum legal requirements for energy efficiency, water use, stormwater management and indoor air quality.

2) NYC GREEN BUILDING LAWS

The Consultant is responsible for complying with all relevant local, state and federal regulations applicable to the project. The following are some local laws, directives and guidelines that apply to DDC projects at the time of publication. This list is provided for the Consultant's convenience and is by no means exhaustive. The Consultant is responsible for researching all applicable laws, including all new laws effective at the time the project is initiated.

- a. New York City Energy Conservation Code (NYCECC): The Consultant shall design the project per the NYC ECC current at the time of filing and provide all documentation required to meet current Department of Buildings submission requirements. The Consultant is advised that the energy code updates approximately every three years.
- b. Local Law 86-2005 (LL86) mandates energy and water efficiency and Leadership in Energy and Environmental Design (LEED) certification for certain buildings. This law is codified in Chapter 9, Section 224.1 of the NYC City Charter and is still applicable for buildings added to the capital plan prior to July 1, 2017.
- c. Local Law 32-2016 (LL32) is an update to LL86's LEED requirements, and Local Law 31-2016 (LL31) is the new low energy intensity buildings law which updates most of the energy performance requirements. These laws are codified in the same section of the charter as LL86.
- d. Local Law 118-2005 establishes Environmentally Preferable Purchasing (EPP) requirements for eligible projects not required to pursue LEED under Section 224.1.

- e.** Local Law 66-2014 (LL66) commits the City to reduce its greenhouse gas emissions 80% by 2050, relative to 2005 levels, in order to help limit global warming to 2.0°C above pre-industrial levels.
- f.** Executive Order 26-2017 (EO26), requires City agencies to reduce the energy consumption of their building portfolios 20%, relative to 2017 levels, by 2025.
- g.** Local Law 97-2019 (LL97) mandates a 40% reduction in greenhouse gas emissions from City government operations by 2030 and 80% reduction by 2050.

The Consultant shall consult with the Sponsor Agency to determine the impact of the project on these targets and establish energy consumption and greenhouse gas emissions goals for the project that reflect the requirements of LL66, EO26, and LL97. The goals statement shall incorporate the findings of any energy audits, as applicable, per section A.4.b.i.

- h.** Local Law 22-2008 requires the City to publish its greenhouse gas inventory on an annual basis.
- i.** Local Law 94-2019 (LL94) mandates sustainable roofing zones on all new buildings, new roofs resulting from enlargement of existing buildings and existing buildings replacing an entire roof deck or roof assembly. 100% of available roof space must integrate either a solar photovoltaic electricity generating system, a green roof system, or a combination thereof. LL94 also updates reflectance requirements for cool roofs.
- j.** Local Law 6-2016 (LL6) requires new municipal buildings and HVAC retrofits to utilize the online NYC Geothermal Pre-Feasibility Tool to assess ground-source heat pumps (GSHP) as an alternative to other HVAC system designs. If the screening tool finds that a full or hybrid GSHP system is potentially viable for the project, LL6 requires a comprehensive engineering and cost analysis. If the analysis finds that GSHP has the best net present value of all alternatives considered, LL6 requires that GSHP be selected for implementation.
- k.** Local Law 24-2016 requires all projects to provide the Department of Citywide Administrative Services (DCAS) an assessment of the solar photovoltaic (PV) potential of each city building with a floor area of 10,000 gsf or more, and to identify the cost, energy cost savings, and greenhouse gas emissions reductions of a PV system that fulfills this potential. Required procedures are outlined in the DCAS Solar 100 Report.
- l.** Local Law 130-2013 introduces Electric Vehicle Capacity requirements for parking lots and facilities to support electric vehicle charging stations.
- m.** Executive Order 359-2013 requires all municipal new and major renovation projects to complete the City's Active Design Guidelines checklist and implement the Active Design Guidelines and DOT Street Design Manual guidelines determined to be relevant and appropriate to the project. It also requires all municipal LEED projects to pursue the Design for Active Occupants credit, whenever practicable.

3) PERFORMANCE REQUIREMENTS

a. System-Based Energy Cost Reductions

Certain mechanical and electrical systems projects, which are not subject to whole building energy performance requirements, or the low energy intensity criteria (see section c below), are required to meet minimum 5-10% energy cost reduction targets beyond code.

b. Whole Building Energy Cost Reductions

In addition to possible LEED requirements, certain projects over \$12 million in construction cost and not required to be low energy intensity buildings (see section c below) are required to exceed energy cost reduction beyond code by specific percentages.

- i. Projects over \$12m shall be designed to achieve a minimum 20% energy cost reduction relative to the NYCECC in effect at the beginning of Design Development, and up to an additional 5-10% reduction if there are additional energy efficiency measures with a simple payback of seven years or less.
- ii. Projects over \$30m shall be designed to achieve a minimum 25% energy cost reduction, and up to an additional 5% reduction if there are additional energy efficiency measures with a simple payback of seven years or less.
- iii. **Energy cost reductions shall be calculated using LEED methodology.**

Refer to the Mayor's Office of Environmental Coordination website for more information. Should the construction cost increase above a higher threshold at any time before the final construction Certificate to Proceed, the associated energy cost reduction target for the higher threshold applies. Therefore, projects close to the thresholds shall be designed with this in mind.

c. Low Energy Intensity Buildings

Most new buildings, additions, and major renovations are required to be designed and constructed to use half the energy of a similar conventional building. "Half" is defined as 50% of an ASHRAE 90.1-2013 baseline or half the Energy Use Index (EUI) of buildings of a similar type as determined by the city's benchmarking database (as measured in kBtus of source energy per sf of building area per year). There is a third, typically stricter, compliance path similar to the Passive House standard.

Energy performance needs to be considered early in the design process. It is, therefore, imperative to use an Integrative Process per Sections A.3.j and A.6.f.i. Simple box models are required before a Schematic Design can be approved. Updated and further developed energy models are required at each subsequent phase.

d. Onsite Energy Generating Buildings

Low energy intensity projects pursuant to "c" above shall consider the feasibility of design and construction of a building that generates 10% or more of its total energy needs onsite.

e. Net Zero Energy Building

Low energy intensity projects pursuant to "c" above that are three stories or fewer must also consider the feasibility of design and construction of a building that generates 100% of its energy needs onsite.

f. Water Efficiency

All projects shall be designed to maximize water efficiency. For LL86 and LL32 projects involving the installation or replacement of plumbing fixtures with domestic plumbing costs greater than \$500,000, the City Charter mandates a minimum 30% potable water use reduction, to be calculated using the methodology prescribed in LEED.

g. Stormwater Management

Stormwater in NYC is managed with two system types.

- i. Combined sewers combine stormwater and sanitary waste into one conveyance system which typically transports wastewater to a treatment plant for processing. During heavy rainfall, these systems overflow into local waterways at a combined sewer outfall (CSO). Reducing the quantity of flow in these areas is paramount.

Some limited areas in the combined sewer network have high-level storm sewer lines which allow stormwater to overflow while prioritizing the sanitary waste to be treated. Projects in areas with high-level storm sewers are subject to the requirements of the City's MS4 permit (see below).

- ii. The Municipal Separate Stormwater Sewer System (MS4) has separate stormwater and sanitary sewers. The stormwater drains through city infrastructure and into local waterways with no or only very limited treatment. This also includes "direct drainage" sites where the water drains directly into a waterway without passing through any city infrastructure and "overland sites" where the water may pass over city streets but not through dedicated stormwater conveyance infrastructure. Maintaining the quality of the water is paramount in these areas.

The Consultant shall confirm which stormwater system applies to their project and meet the applicable requirements. Projects in MS4 areas and high-level combined sewer areas must comply with the general NYC MS4 (SPDES Number NY-0287890) from the NYS Department of Environmental Conservation. Five aspects of the permit impact capital construction projects:

- i. Site Assessments: The Departments of Transportation, Environmental Protection, Police, Fire, Sanitation, and Parks and Recreation are required to conduct assessments of their properties and create a plan to eliminate or reduce pollutants of concern from entering waterways. Many of these plans will require capital improvements. Therefore, these plans shall be used in the scoping and development of any capital project.
- ii. Illicit Discharges: All NYC employees are mandatory reporters of illicit discharges. The Consultant shall also report any illicit discharges to the DDC project manager, sustainability project director, and 311.
- iii. Green Infrastructure: All projects over \$2 million which generate stormwater will need to be assessed for the feasibility of green infrastructure per the process in the MS4 permit.
- iv. Construction Permits: Projects over one acre of disturbed area (soon to be reduced to 20,000 square feet) are required to prepare a Stormwater Pollution Prevention Plan (SWPPP) and obtain a permit from the Department of Environmental Protection. (Formerly, such permits were issued by NYS Department of Environmental Conservation.)
- v. Post-construction Permits: For certain projects, post-construction measures are necessary and will require a Post-Construction permit.

The Consultant shall ensure that all projects conform to all federal, state, and local laws regarding stormwater management and assist in obtaining all permits.

Projects that are required to be Low Energy Intensity Projects must also assess feasibility of green infrastructure.

As a matter of good practice, all projects should incorporate green infrastructure where practicable.

h. Environmentally Preferable Purchasing Projects

Environmentally Preferable Purchasing (EPP) is typically required of projects 15,000 sf of interior project area and greater. This is based on project size, not building size. This includes projects that involve multiple buildings, if the total interior area exceeds the threshold. Conversely, projects smaller than 15,000 sf in larger buildings are exempt.

Projects that are required to comply with the LEED provisions of Section 224.1 (LL86 and LL32) are exempt. Projects that are required to comply with the system-specific requirements of Section 224.1 are only exempt for the portions of the project for said systems.

EPP projects are required to follow the Mayor's Office of Contract Services (MOCS) Minimum Standards for Construction Products which cover issues such as, but not limited to, efficiency requirements for lighting and HVAC equipment, minimum recycled content requirements, and VOC content limits.

i. LEED Projects

Local law requires projects in certain occupancies to be designed to meet the standards set forth in the United States Green Building Council's (USGBC) LEED rating system. Projects must meet Gold, Silver (only for legacy projects grandfathered under LL86/05), or Certified requirements in addition to meeting any energy and water efficiency requirements.

Since the cost thresholds in the laws are based on construction cost as per the final construction Certificate to Proceed from the Office of Management and Budget, projects shall be designed to meet LEED standards if the estimated construction costs approach the current inflation-adjusted thresholds. Also, if the scope expands to "substantial reconstruction" as defined by the law or the occupancy changes, certain provisions of Section 224.1 might then become applicable. The Consultant is responsible for identifying scope or occupancy changes that might affect the applicability of these laws and codes and communicating this information to the DDC project manager and sustainability project director.

Projects shall be registered and certified with the Green Building Certification Institute (GBCI). All tasks, submittals, and filing/registration activities required to successfully meet this standard and receive formal certification shall be the responsibility of the Consultant.

j. Integrative Process

In the publication *One City: Built to Last*, the City re-committed to reducing greenhouse gas emissions 80% by 2050 with public buildings leading the way as "models for sustainability." Superstorm Sandy made us all too aware of the need for building more resilient buildings. The City's Active Design Guidelines promote physical activity and health in design. DDC's Water Matters promotes water conservation and DDC's Project Excellence program elevates the role of design in creating our public buildings and spaces.

DDC requires an Integrative Process (IP) that focuses on collaboration and helps to avoid the pitfalls of a siloed systems approach. While this process is iterative and requires more up-front investment in time and effort, it helps avoid unnecessary changes.

To be effective, the IP requires all professionals and stakeholders, from design to operations, to be part of the process from an early stage. The architect, or prime Consultant, should serve as the integrative process facilitator.

Early in the design process, after the initial Pre-Schematic Design investigation, the Consultant shall coordinate an all-hands-on-deck meeting or series of meetings to address:

- i. Site issues and design constraints
- ii. Sustainable design
- iii. Energy and water management
- iv. Resilient design
- v. Active design and wellness

All projects that are applying for LEED certification shall follow the process of and pursue the LEED Integrative Process credit. Furthermore, for water-related strategies, attention should be paid to minimizing impact on the combined sewer system or the municipal separate stormwater sewer system (MS4) as applicable.

k. Project-Specific Expertise

As applicable, the Project Team shall demonstrate in-house proficiency in the following areas, as described below:

i. Energy Auditing Services:

ASHRAE Level II energy auditing services including thermographic analysis of building envelopes.

ii. Envelope Design Services:

Computer-aided structural analyses, thermal bridge analyses, and hygroscopic (WUFI) analyses, as well as completed design of airtight building enclosures as demonstrated by blower-door testing.

iii. LEED Services:

Project Team must include at least one LEED expert at all times that has directly, as the primary contact person, certified a minimum of 10 LEED projects at Gold level or higher under version 3 or later and has experience working on at least 10 additional LEED certified projects at Gold level or higher under version 3 or later. Consultant must demonstrate this by providing LEED Online records. Incomplete certification efforts or completed certifications documented primarily by another person, Consultant or sub-consultant do not qualify.

iv. Energy Modeling Services:

LEED-compliant computer-aided energy model analyses using software in compliance with ASHRAE 140 – 2017 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs, as well as completed design of buildings with low energy consumption as demonstrated by post-occupancy measurements.

v. Energy Efficient Lighting:

LEED-compliant computer-aided room-by-room illuminance, daylight, and glare analyses, including plan analyses with a maximum 3x3-foot grid.

vi. Photovoltaic Design Services:

Computer-aided solar yield calculations using PVWatts, HelioScope, or similar software, as well as completed design of PV systems including safety, structural, Fire Code, and electrical analyses.

vii. Ground-Source Heat Pumps:

Project Team must include sufficient expertise for the LL6 assessment to engineer and analyze conventional and ground source heating and cooling systems; evaluate construction and maintenance costs, greenhouse emissions, and equipment life expectancy; and calculate net present value/cost. For geothermal design and construction administration, Project Team must include both geologic and mechanical engineering expertise and experience on installed geothermal systems demonstrated to the satisfaction of the Office of Sustainable Design.

4) DELIVERABLES

Deliverables shall be provided by the Consultant per the schedule below (Section 5 table) and updated in subsequent submissions based on updated information and DDC and Sponsor Agency comments. For each deliverable, provide the applicable calculations, narratives and supporting documents necessary to demonstrate that requirements are met. Provide explanations and calculations where appropriate for items that are determined to be “not feasible.” For additional LEED-specific deliverable requirements, see Sections 6 and 7.

The Integrative Process necessitates a comprehensive approach to integrating sustainability into the design. Consultants on all DDC projects are expected to initiate a high level of sub-consultant coordination from the beginning of design and sustain this level of coordination through construction. While the below checklist indicates required deliverables, it's understood that an integrative design approach will precede these deliverables. Should any project phase be skipped, initial deliverables shall be provided in the preceding phase, not subsequent. For projects without a Pre-Schematic phase, those deliverables shall be provided during the investigative sub-phase of Schematic Design.

Refer to the Project Objectives for additional deliverables that may be required.

a. NYC Energy Conservation Code (NYCECC)**i. NYCECC Compliance Path Approach**

The Consultant shall identify the proposed path for energy code compliance.

ii. EN Sheet - MEP Systems**iii. EN Sheet - Building Envelope****iv. Energy Modeling Form**

When this compliance path is to be utilized, the consultant shall provide the completed energy model form in excel format and the modeling input and output files that correspond to the form.

b. Systems and Whole Building Energy Performance**i. Energy Audit Report, as applicable**

For existing buildings, if a recent LL87-2009 energy audit and retro-commissioning study or a DDC-prepared energy audit was completed for the building, a copy will be provided by DDC. If such an audit has not been conducted, DDC may direct the Consultant to provide a whole-building ASHRAE Level II Energy Audit, including thermographic analysis of the building envelope. The audit shall follow the format required by LL87 and include all energy conservation measures to support a deep energy retrofit consistent with the goals of LL66 and EO26. The Consultant shall review the results of the audit, consider any changes implemented in the building since the audit, and incorporate into the project those Energy Conservation Measures (ECMs) that have the highest potential to reduce energy consumption.

ii. Energy Analysis/Modeling Report, as applicable

For projects with specific energy cost savings targets for building systems or the whole building per Section 224.1, the Consultant shall provide calculations and/or modeling, to the satisfaction of the DDC Office of Sustainable Design, to demonstrate compliance.

c. Low Energy Intensity Buildings**i. Approach Path and Energy Use Intensity (EUI) Target**

The Consultant shall investigate the implications of a low-energy intensity building, as defined in the City Charter, and determine:

1. the appropriate compliance path
2. the specific EUI target the building will be designed to meet
3. approximate energy end use distribution.

ii. Energy Analysis for all Design Alternatives

The Consultant shall provide "simple box" models of each proposed design option to demonstrate that the required EUI target is attainable and what efforts (envelope R-values, fenestration specifications, equipment efficiencies, etc.) must be made to achieve that target. The Consultant shall provide an evaluation for all design alternatives based on performance, initial cost, ease and costs of maintenance, energy cost and greenhouse gas production, space requirements, noise levels, and payback periods.

iii. Energy Model Report

The Consultant shall provide an energy model of the chosen Schematic Design scheme that confirms the project will meet its energy efficiency target. Modeling shall be performed in accordance with local law and LEED requirements using software in compliance with ASHRAE 140 – 2017 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs and approved by the DDC Office of Sustainable Design. Additional models or variations of one model might be necessary to meet all local laws, the energy code, and LEED requirements. The findings of the model shall be summarized in a Report comparing baseline and proposed performance in terms of real site and source energy units (kBtus), costs (\$), and greenhouse gas equivalent (MtCO₂e) on a whole building and per unit area basis. The model and report shall be further developed during subsequent phases. Updates to the report should be identified with bold text (or some other means of identification). A final report shall be submitted at 100% Construction Documents with such formatting removed.

iv. Metering and Verification (M&V) Equipment / Monitoring-Based Commissioning Protocol

The Consultant shall develop monitoring-based procedures and identify points to be measured and evaluated to assess performance of energy- and water-consuming systems to address the following:

1. Roles and responsibilities
2. Measuring requirements (meters, points, metering systems, data access)
3. The limits of acceptable values for tracked points and metered values (where appropriate, predictive algorithms may be used to compare ideal values with actual values)

4. The elements used to evaluate performance, including conflict between systems, out-of-sequence operation of systems components, and energy and water usage profiles
5. An action plan for identifying and correcting operation errors and deficiencies
6. Training to prevent errors
7. Planning for repairs needed to maintain performance, and
8. The frequency of analyses in the first year of occupancy (at least quarterly.)

The Consultant shall include all required equipment and metering points in the base design of the building. M&V during operations will not be conducted by this Consultant.

v. On-Site Renewables Feasibility Study

The Consultant shall investigate the feasibility of generating on-site renewable energy and incorporate it into the design as practicable.

vi. Net Zero Feasibility Study

For low energy intensity buildings three stories and fewer, the Consultant shall investigate the feasibility of constructing a net zero energy building. If feasible but not being constructed as a net zero energy building, the Consultant shall generate a report justifying this decision.

vii. For Low Energy Intensity Projects that are not required to pursue LEED Certification, provide the following items from the LEED Project Deliverables Table in Section 7, per the phase indicated:

1. Environmental Programming Matrix
2. Solar/Wind Analysis
3. Building Occupancy Group Determination
4. Energy Goals Statement
5. Energy Analysis Plan

d. Mayor's Office of Environmental Coordination (MOEC) Project Intake

The Consultant shall complete and submit the draft MOEC Project Intake Form to DDC within 30 CCDs of the General Contractor's notice of award, and the final form at the end of construction. More information can be found on the MOEC Reporting page.

e. Greenhouse Gas Emissions Assessment

The Consultant shall submit a greenhouse gas emissions assessment on the form provided by DDC Office of Sustainable Design using the methodology found in the NYC Mayor's Office of Sustainability's "Inventory of New York City Greenhouse Gas Emissions" to determine the coefficients for converting energy use into metric tons of carbon dioxide equivalent (MtCO₂e). GHG emissions in the Citywide Inventory are calculated and reported per the guidance of the Global Protocol for Cities (GPC), which is the worldwide standard for GHG emission reporting. This assessment shall be updated at each submission.

f. Other Energy Deliverables**i. Solar Assessment (LL24-2016)**

For roof replacements, new buildings, and additions, provide an analysis of the project's solar PV potential, including both building and site. Include cost, energy cost savings, and greenhouse gas emissions reduction estimates. Incorporate the report's findings into the other energy performance deliverables.

ii. Sustainable Roofing Zone (LL94)

1. Provide specification for roofing materials in compliance with Section BC 1511 of the New York City Building Code.
2. Provide compliance information within the code analysis section of the investigative SD sub-phase, and supporting design documentation in each phase.

iii. Geothermal Pre-Feasibility Tool (LL6-2016)

If the Pre-Feasibility Tool or DDC's Office of Sustainable Design (OSD) indicates that a full or hybrid GSHP system is viable for the project, the Consultant shall estimate the mechanical loads of the building and use DDC OSD guidance on using mechanical loads to determine pre-feasibility during the investigations sub-phase of Schematic Design. If the Tool or OSD continues to indicate that a full or hybrid GSHP system is viable for the project with the proposed mechanical loads, the Consultant shall present at least one GSHP mechanical scheme during Schematic Design. The Consultant shall provide a comprehensive engineering and cost analysis following the requirements of the law to determine whether the GSHP option has the best net present value of all alternatives considered and, if so, describe the proposed system. If the GSHP system will not be implemented, the Consultant must provide a justification in accordance with the law.

iv. Electric Vehicle Capacity (LL130-2013)

Consultant shall demonstrate compliance with required electric vehicle charging capacity in the design documents.

g. Water Use Reduction

The Consultant shall provide calculations demonstrating potable water use reduction using the LEED methodology.

h. Stormwater Management**i. Stormwater Management Assessment**

The Consultant shall verify the stormwater system as combined sewer, combined sewer with high-level storm sewer, MS4, direct drainage, or other system and determine city, state, and federal stormwater management requirements including possible on-site detention or infiltration and permitting requirements. The Consultant shall also review any site assessments conducted through the MS4 permit and incorporate the best management practices and other improvements in the implementation plan as practicable.

ii. Green Infrastructure Analysis

For all new construction projects, any projects that include site work, and projects over \$2 million that generate runoff in the MS4 zone, the Consultant shall study the feasibility of Green Infrastructure. For projects in the MS4 zone, this analysis shall be in accordance with the requirements of the City's MS4 permit. Green infrastructure shall be incorporated in the design as practicable.

iii. Stormwater Pollution Prevention Plan (SWPPP)

For projects subject to the City's MS4 Construction and Post-Construction Program, the Consultant shall prepare the SWPPP in accordance with the MS4 permit for all construction and post-construction requirements including maintenance protocols. The Consultant shall serve as the engineer-of-record on the permit and be prepared to make changes to said plan to accommodate the ways and means of the Contractor and resubmit the plan for DEP approval as necessary during mobilization and construction.

i. Environmentally Preferable Purchasing (EPP) Projects

The Consultant shall provide:

i. EPP-Compliant Specifications

Provide specifications in compliance with the Mayor's Office of Contract Services (MOCS) Minimum Standards for Construction Products which cover issues such as, but not limited to, efficiency requirements for lighting and HVAC equipment, minimum recycled content requirements, and VOC content limits.

ii. EPP Report

Provide an EPP Report in compliance with the MOCS standards. Report shall be updated as directed by DDC.

j. Active Design

Consultant shall provide Active Design checklists per the Active Design Guidelines published by NYC and the Center for Active Design.

5) PERFORMANCE REQUIREMENTS PROJECT DELIVERABLES TABLE

Deliverables shall be provided by the Consultant per the table on the following page, and updated in subsequent submissions based on updated information and DDC and Sponsor Agency comments. For each deliverable, provide the applicable calculations, narratives and supporting documents necessary to demonstrate that requirements are met. Provide explanations and calculations where appropriate for items that are determined to be "not feasible." For additional LEED-specific deliverable requirements, see Sections A.6 and A.7

The Integrative Process necessitates a comprehensive approach to integrating sustainability into the design. Consultants on all DDC projects are expected to initiate a high level of sub-consultant coordination from the beginning of design and sustain this level of coordination through construction. While the below checklist indicates required deliverables, it's understood that an integrative design approach will precede these deliverables. Should any project phase be skipped, initial deliverables shall be provided in the preceding phase, not subsequent. For projects without a Pre-Schematic phase, those deliverables shall be provided during the investigative sub-phase of Schematic Design. Refer to the Project Objectives for additional deliverables that may be required.

KEY:

X: First submission of applicable calculations, narratives and supporting documents necessary to demonstrate that requirements are met.

—●: Continue to update documents for each subsequent submission through to endpoint. Updates to text should be identified in bold or some other means of identification. Final report shall be submitted at 100% CDs with such formatting removed.

	Project Deliverables	Capital Project Phases											CPSD		
		Pre-SD	SD			DD		CD		Construction					
			Int. I	Int. II	100%	50%	100%	75%	100%	Bid & Award	Constr. Admin	Post-Constr.	Stage I	Stage II	Stage III
Energy Code	NYCECC Compliance Path Approach	X											X		
	EN Sheet - MEP Systems						X								
	EN Sheet - Building Envelope						X								
	Energy Modeling Form						X								
Systems and Whole Building Energy Performance	Energy Audit Report	X										X			
	Energy Analysis Report			X										X	
Low Energy Intensity	Approach and EUI Target	X											X		
	Energy Analysis for all Design Alternatives			X										X	
	Energy Model Report				X										
	M&V Equipment/ Monitoring Based Commissioning Protocol						X				X				
	On-site Renewables Feasibility Study		X											X	
	Net-Zero Feasibility Study		X											X	
	LEED Project Deliverables (see Section 4.c.vii)	X												X	
MOEC	Project Intake Form								X		X				
GHG	Greenhouse Gas Emissions Assessment				X									X	
Energy Other	Solar Assessment				X									X	
	Sustainable Roofing Zone		X												
	Geothermal Pre-Feasibility Tool		X									X			
	Electric Vehicle Capacity						X							X	
Water	Water Use Reduction						X							X	
Site/Stormwater	Stormwater Management Assessment		X											X	
	Green Infrastructure Analysis				X								X		
	Stormwater Pollution Prevention Plan						X						X		
EPP	EPP Compliant Specifications						X						X		
	EPP Report							X							
Active Design	Active Design						X							X	
Climate Resiliency Design Guidelines	Risks	X										X			
	Planning	X										X			
	Risks Summary and Abatement				X								X		
	Other Mitigation Strategies						X								

6) LEED PROJECT DELIVERABLES

For LEED projects, the Consultant shall provide the following deliverables per the schedule below (Section 7 table). The Consultant shall update deliverables in subsequent submissions based on updated information and DDC and Sponsor Agency comments.

All documentation shall be updated, as applicable, at the end of each phase of design, reflect the documents submitted for that phase and be consistent with each of the project's other LEED deliverables. Changes to text should be bold and date of revision provided.

DDC requires an integrative design approach, which will necessitate a comprehensive approach to integrating sustainability into the design. Consultants on all DDC projects are expected to initiate a high level of sub-consultant coordination from the beginning of design and sustain this level of coordination through construction. While the below checklist indicates required deliverables, it is understood that an integrative design approach will precede these deliverables. Should any project phase be skipped, initial deliverables shall be provided in the preceding phase, not subsequent. For projects lacking a pre-schematic phase, the Consultant shall provide the deliverables during the first investigative sub-phase of schematic design.

a. Environmental Design Workshop:

This goal-setting workshop to integrate high performance standards into the project shall be organized and facilitated by the Consultant and attended by the Consultant team, DDC representatives, and Sponsor Agency representatives, including facilities maintenance and operations staff. For this meeting, the Consultant shall prepare for discussion preliminary drafts of the following deliverables:

i. Environmental Programming Matrix:

Using the template provided by DDC, describe the preferred conditions of each space including size, occupancy, hours of use, temperature, ventilation, lighting and acoustics. The Environmental Programming Matrix shall be updated at the end of Schematic Design and Design Development.

ii. Solar/Wind Analysis:

For new construction, additions, and substantial reconstruction, provide a site-level sun path diagram and wind rose diagram indicating adjacent structures, and narratives indicating how they will inform the massing, orientation, fenestration, and shading of the project. Early "simple box" modeling of these parameters is required for Low Energy Intensity projects and LEED projects.

iii. Energy Audit Report, as applicable:

For existing buildings, if a recent LL87-2009 energy audit and retro-commissioning study was completed for this building, a copy of the report will be provided by DDC, if available. The Consultant shall review the results of the audit, consider any changes implemented in the building since the audit, and incorporate into the project those Energy Conservation Measures (ECMs) that have the highest potential to reduce energy consumption. If such an audit has not been conducted, DDC may direct the Consultant to provide a whole-building ASHRAE Level II Energy Audit, including thermographic analysis of the building envelope. The audit report shall follow the format required by LL87 but shall address all ECMs listed in the 2017 Request for Information issued by DCAS for "Deep Energy Retrofits in Support of EO26," which will also be provided by DDC.

iv. Project Specific LEED Checklist:

Provide a standard LEED checklist of targeted credits to meet local law requirements, and a brief description of how each credit impacts the specific project.

v. Project-Specific LEED Plan:

As based on the LEED checklist, the Consultant shall provide description of each credit's applicability to the project, the strategy proposed to achieve targeted credits, sub-phase to be completed, and assignment of responsibilities for the entire Project Team. Provide explanations and calculations where appropriate for credits that are determined to be "not feasible" for this project. The LEED Plan shall be updated at the end of Schematic Design, Design Development, 75% Construction Documents and 100% Construction Documents. Changes to text should be bold and date of revision provided.

vi. Site Plan Indicating LEED Project Boundary:

The LEED project boundary must include all contiguous land that is associated with the project and supports its typical operations. This includes land altered as a result of construction and features used primarily by the project's occupants, such as hardscape (parking and sidewalks), septic or stormwater treatment equipment, and landscaping. See USGBC website for further guidance. The LEED project boundary must be approved by OSD.

vii. Building Occupancy Group Determination:

The primary occupancy group to be used for the project building, as classified in accordance with the New York city construction codes.

viii. Energy Goals Statement:

In addition to providing the minimum energy requirements for the project as established by code and/or local law, the Consultant shall work with the Client's energy manager, capital Project Team and facilities staff to establish energy consumption and greenhouse gas emissions goals for this project that reflect the urgency of LL66 and EO26. For existing buildings, the goals statement shall incorporate the findings of a previous LL87 energy audit or a new audit.

ix. Energy Analysis Plan:

Identify the energy analysis software, methodology, occupancy schedule, temperature set points, energy rates, and other parameters to be used in the energy analysis for the project and propose energy efficient measures and systems to be studied. Separate analyses may be required to demonstrate compliance with LEED, local law, and code.

b. Registration**i. LEED Online Registration:**

If the project is required to pursue LEED certification, the Consultant shall register the project with GBCI and invite "ddcsustainability@ddc.nyc.gov" to the project's LEED Online record. For City-owned projects, register project as "City of NY – [Project Name]."

ii. LEED Online Submission:

The Consultant shall submit the preliminary LEED Design application to LEED Online within 30 CCDs of the General Contractor's notice of award. The Consultant shall manage the review comments, collect and develop the additional project information as needed, and submit the final LEED Design application.

c. Energy**i. HVAC Evaluation for all Design Alternatives:**

The Consultant shall provide an HVAC Evaluation for all design alternatives, based on performance, initial cost, ease and cost of maintenance, energy cost and greenhouse gas production, space requirements, noise levels and payback periods.

ii. Energy Model Report:

The Consultant shall provide an energy model of the chosen Schematic Design scheme that confirms the project will meet its energy efficiency target, including energy cost reduction targets. Modeling shall be performed in accordance with local law and LEED requirements using software in compliance with ASHRAE 140 – 2017 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs and approved by the DDC Office of Sustainable Design. Additional models or variations of one model might be necessary to meet all local laws, the energy code, and LEED requirements.

The Consultant shall provide the findings of the model in an Energy Analysis Report. The report shall include a comprehensive analysis of energy use, energy cost and greenhouse gas emissions for the selected design (on a whole building and per unit area basis), demonstrating compliance with LEED, local law and code. The analysis shall specify recommended energy efficiency measures (EEMs) and payback periods.

The report shall be updated at the end of Design Development, 75% Construction Documents and 100% Construction Documents, reflecting the documents submitted for that phase. Changes to text should be bold and date of revision provided. The final report shall be submitted with such formatting removed.

d. Environmental Construction Workshop

The Environmental Construction Workshop shall be conducted within 30 CCDs of the project's construction kickoff to review the construction requirements and procedures for the project and to identify and assign responsibility for specific strategies to fulfill the targeted LEED certification level and other City sustainability requirements. This meeting shall be organized and facilitated by the Consultant and attended by the construction manager, Contractor, primary (MEP) sub-contractors, Sponsor Agency representatives and DDC representatives. The meeting shall address, at a minimum:

- i.** Requirements of all LEED construction credits applicable to the project
- ii.** Erosion and Sedimentation Control (ESC) Plan and procedures
- iii.** Construction and Demolition Waste Management (CDWM) Plan and procedures
- iv.** Indoor Air Quality Management (IAQM) Plan and procedures

- v. Submittal requirements and routing, including assignment of responsibilities and frequency of LEED construction documentation updates
- vi. Construction site signage
- vii. Flush-out or air quality testing requirements and scheduling

The Consultant shall review and approve the ESC, CDWM and IAQM Plans, as applicable, and the CDWM and IAQM Plans prepared by the Contractor in advance of the Construction Kickoff Meeting. The Consultant's services during construction shall also include compliance review and tracking of LEED submittal information for materials and products, collection and compilation of all LEED construction credit information from the Contractor and construction manager. The Consultant shall provide to DDC monthly updates on documentation of all LEED construction credits and submit all credit documentation to GBCI within two months of substantial completion of construction.

e. LEED Credit Deliverables

Refer to USGBC LEED Reference Guide for the project's required measures and deliverables and provide accordingly, except for where DDC's required deliverables are more stringent as outlined in section A.6.f. below.

All documentation shall be updated, as applicable, at the end of each phase of design, reflect the documents submitted for that phase and be consistent with each of the project's other LEED deliverables. Changes to text should be bold and date of revision provided.

For each LEED credit deliverable, provide the applicable calculations, narratives and supporting documents necessary to demonstrate that credit/prerequisite requirements are met. Narratives should summarize the design approach to credit compliance and identify the project-specific design and specifications requirements to be incorporated into the design documents. Provide explanations and calculations where appropriate for credits that are determined to be "not feasible."

f. Additional Deliverables for Specific Credits:

i. IP Credit: Integrative Process

1. Pre-Schematic Design:

Early in the pre-schematic design phase, the Consultant shall:

- a. Conduct preliminary energy and water research and analysis, including a "simple box" energy model.
- b. Engage DDC in Integrative Process (IP) Workshop planning and agenda development, as outlined in section A.3.j. for Sustainable Design and B.3.b. for Resilient Design.
- c. Prepare summary presentation of studies and analyses results to present at the workshop. Send all analyses and studies included in the requirements to DDC at least 3 days before the workshop.
- d. Lead the IP Workshop, to be held separately from the Environmental Design Workshop. Facilitate in identifying, clarifying and evaluating integrative design opportunities. Listen to and synthesize DDC and Sponsor Agency responses to identified challenges, opportunities and next steps.
- e. Within two weeks after the IP Workshop, provide a summary of potential strategies and follow up actions required, along with responsible parties for each.

- f. Complete the IP worksheet.
- g. Provide an IP report that includes the following:
 - i. Energy and Daylight Related Systems:

Document how the energy and daylight analysis has informed the building design, location of building on site, MEP systems and energy use. Include the following, as applicable:

1. Established performance targets, per project's energy requirements by code and laws, including Energy Cost Reduction targets and Geothermal Screening Tool results
2. Building and site program
3. Building form and site layout
4. Building envelope and façade elements on different orientations
5. Modification to, or significant downsizing of building systems (e.g., HVAC, lighting, controls)
6. Modifications to exterior materials, interior finishes, and other systems
7. Assessment of on-site renewable energy potential
8. An updated "simple box" energy model that evaluates energy load reduction strategies

- ii. Water Systems:

Document how the water budget analysis informed building and site design decisions and the systems outlined below. Demonstrate how at least one on-site non-potable water supply source was analyzed to reduce the burden on the NYC municipal supply or wastewater treatment systems. Include the following, as applicable:

1. Site location in a combined sewer or MS4 area, and the applicable requirements
2. Monthly and annual rainfall volume landing on site and building roof
3. Monthly and annual site and building water use
4. Rainwater quantity and quality management systems
5. Landscaping, irrigation, and site elements
6. Roofing systems and/or building form and geometry
7. Potential locations for green infrastructure
8. All supply sources. Assess and quantify all potential non-potable water supply sources, such as on-site rainwater, greywater, and HVAC equipment condensate

9. Annual Water Demand Analysis. Calculate annual water demands for building; match with potential supply sources

10. Potential cost impact associated with installing proposed water-conserving systems

iii. Other systems, as applicable

iv. Meeting Minutes of IP Workshop

ii. LT Credit: High-Priority Site

Provide initial narratives and supporting documents in Pre-Schematic Design.

1. For Option 3, if brownfield remediation is part of the project's scope of work, provide the following deliverables:

a. Design Development: Incorporate remediation requirements into specifications and details, and provide a narrative summarizing the actions necessary to remediate the site and the results of these actions.

b. Construction Administration: Provide documentation from authority having jurisdiction confirming that remediation has been completed to its satisfaction.

iii. EA Credit: Enhanced Commissioning

Refer to Section 4, Low Energy Intensity Deliverables for Monitoring-Based Commissioning Protocol. Provide deliverables as indicated in the Section 5 Deliverables Table.

7) LEED PROJECT DELIVERABLES TABLE

Refer to USGBC LEED Reference Guide for the project's required measures and deliverables and provide accordingly, except for where DDC's required deliverables are more stringent, as outlined in Section A.6.f. Refer to Sections A.6.b.ii and A.6.d for timeline details on the LEED Online Submissions.

All documentation shall be updated, as applicable, at the end of each phase of design, reflect the documents submitted for that phase and be consistent with each of the project's other LEED deliverables. Changes to text should be bold and date of revision provided. For each LEED credit deliverable, provide the applicable calculations, narratives and supporting documents necessary to demonstrate that credit/prerequisite requirements are met. Narratives should summarize the design approach to credit compliance and identify the project-specific design and specifications requirements to be incorporated into the design documents. Provide explanations and calculations where appropriate for credits that are determined to be "not feasible".

KEY:

X: First submission of applicable calculations, narratives and supporting documents necessary to demonstrate that requirements are met.

—●: Continue to update documents for each subsequent submission through to endpoint. Updates to text should be identified in bold or some other means of identification. Final report shall be submitted at 100% CDs with such formatting removed.

	LEED Project Deliverables	Capital Project Phases											CPSD		
		Pre-SD	SD			DD		CD		Construction					
			Int. I	Int. II	100%	50%	100%	75%	100%	Bid & Award	Constr. Admin	Post-Constr.	Stage I	Stage II	Stage III
LEED Project Kick Off	Environmental Design/Construction Workshop	X								X			X		
	Environmental Programing Matrix	X											X		
	Solar/Wind Analysis	X											X		
	Energy Audit Report, as applicable	X											X		
	Project-Specific LEED Checklist	X								X			X		
	Project-Specific LEED Plan	X								X			X		
	Site Plan Indicating LEED Project Boundary	X											X		
	Building Occupancy Group Determination	X											X		
	Energy Goals Statement	X											X		
	Energy Analysis Plan	X											X		
Registration	LEED Online Registration				X										
	LEED Online Submission								X		X				
Energy	HVAC Evaluation for all Design Alternatives			X										X	
	Energy Model Report				X										
LEED Credit Deliverables	Integrative Design Workshop - Energy and Water	X											X		
	IP Credit: Integrative Process	X												X	
	LT Credit: Sensitive Land Protection	X												X	
	LT Credit: High-Priority Site	X									X			X	
	LT Credit: Surrounding Density	X												X	
	LT Credit: Access to Quality Transit	X												X	
	LT Credit: Bicycle Facilities				X									X	
	LT Credit: Reduced Parking Footprint				X									X	
	LT Credit: Green Vehicles				X									X	
	SS Prerequisite: Construction Activity Pollution Prevention							X							
	SS Environmental Site Assessment	X												X	
	SS Site Development, Protect/Restore Habitat				X										
	SS Open Space				X										
	SS Rainwater Management				X									X	
	SS Heat Island Reduction				X										
	SS Light Pollution Reduction						X								
	WE Outdoor Water Use Reduction				X										
	WE Indoor Water Use Reduction				X										
	WE Building-Level Water Metering				X										
	WE Cooling Tower Water Use						X								
	WE Water Metering						X								

CHAPTER 08: SUSTAINABLE DESIGN

A. SUSTAINABLE DESIGN

	LEED Project Deliverables	Capital Project Phases											CPSD		
		Pre-SD	SD			DD		CD		Construction					
			Int. I	Int. II	100%	50%	100%	75%	100%	Bid & Award	Constr. Admin	Post-Constr.	Stage I	Stage II	Stage III
LEED Credit Deliverables (cont.)	EA Minimum/ Optimize Energy Performance			X											
	EA Building-Level Energy Metering/ Advanced Energy Metering					X									
	EA Fundamental Refrigerant Management						X								
	EA Fundamental and Enhanced Commissioning				X										
	EA Demand Response						X								
	EA Renewable Energy Production						X								X
	EA Enhanced Refrigerant Management						X								
	EA Green Power and Carbon Offsets								X						
	MR Storage and Collection of Recyclables							X							
	MR Construction and Demolition Waste Management Planning							X							
	MR PBT Source Reduction-Mercury						X								
	MR Building Life-Cycle Impact Reduction						X								
	MR BPDO-EPDs							X							
	MR BPDO-Raw Materials Sourcing							X							
	MR BPDO-Material Ingredients							X							
	EQ Minimum Indoor Air Quality Performance						X								
	EQ ETS Control						X								
	EQ Enhanced Air Quality Strategies						X								
	EQ Low-Emitting Materials						X								
	EQ Construction IAQ Management Plan							X							
	EQ IAQ Assessment						X								
	EQ Thermal Comfort						X								
	EQ Interior Lighting						X								
	EQ Daylight						X								
	EQ Quality Views						X								
	EQ Acoustic Performance						X								
	ID Innovation/ Pilot Credits						X								
	ID Active Design						X								
	ID LEED AP with Specialty						X								

B. RESILIENT DESIGN

1) INTRODUCTION

A changing climate and rising sea levels will challenge NYC in the coming years. Resilient design, broadly speaking, delivers projects capable of adapting to these changes. Well-coordinated tactics that can evolve and adapt over time can create robust buildings, infrastructure, neighborhoods and services.

2) CLIMATE RESILIENCY DESIGN GUIDELINES

The City is taking a proactive stance against potential environmental threats. In March 2019, the Mayor's Office of Resiliency (MOR) issued the third version of their Climate Resiliency Design Guidelines (CRDG). While these guidelines are not mandatory at present, resiliency needs to be an integral part of all new city projects. These guidelines should serve as a starting point to incorporate resiliency into our planning and design process as we begin to understand the risks we face. Refer to the latest version of the CRDG available on MOR's website.

3) DELIVERABLES

For each of the applicable deliverables listed below, refer to the Sustainable Design's Section 5 Deliverables Table for anticipated deliverables by phase.

a. Risks

As part of the initial investigation and research phase of Schematic Design, the Consultant shall investigate the risks that climate change poses to the project. The findings shall be on the agenda of the Integrative Process meeting or a separate Resilient Design meeting, as appropriate.

Using the CRDG as a basis, the Consultant shall investigate the following risks:

i. Increased Heat

The CRDG address two aspects of increased heat: increasing the urban heat island effect and the resultant increased demand on building systems.

1. Heat Island Effect

The Consultant shall design all projects to reduce their contribution to the heat island effect as practicable. For projects pursuing LEED certification, the design shall pursue the two Heat Island Effect credits, one for the roof and one for non-roof. Non-LEED projects can also use these credits as a guide.

2. Building Systems and Enclosure

While the impact of increased heat on building systems will likely be significant, the time frame in which these changes will occur exceeds the useful life of most HVAC equipment. According to the CRDG, it is not necessary to design building mechanical systems for these increased temperatures.

On the other hand, most of our buildings will eventually experience these increased temperatures. The useful life of the building enclosure long exceeds the time frame in which we expect to see significant increases. Passive strategies, namely increased insulation, window performance, and air tightness, will help mitigate the impacts of rising temperatures and contribute to a more energy-efficient building from the onset. These and other strategies, such as operable windows, also provide for passive survivability when systems fail.

The Consultant shall give due attention to thermal expansion, warping, softening, or other forms of material change, as well as accelerated degradation of structural integrity caused by excessive heat.

The Consultant shall also investigate any alternate or emergency uses for the facility, such as libraries being used as cooling centers. Depending on the criticality of the facility, redundancy or back up power might be necessary.

ii. Increased Precipitation

The NYC Panel on Climate Change (NYC PCC) predicts that the City will see increased precipitation in “normal” storms as well as more intense precipitation events.

1. Design Storm:

The CRDG lay out the process the Consultant shall use to determine increased DEP requirements for CSOs, MS4, and direct drainage. These findings should be incorporated into the Integrative Process meeting for water-related issues.

During schematic design, for projects with DEP retention requirements, the Consultant shall provide a baseline design based on the current DEP requirements and an up-sized design to meet the increased retainage suggested by the CRDG. The Consultant shall also provide a cost estimate for this alternate.

2. Intense Precipitation Events

Although not specifically addressed in CRDG v. 3.0, the City is at risk for severe flooding due to intense precipitation events such as the flooding in Islip, NY on August 12-13, 2014, 13.57" of rain over 24 hours was recorded. Had this storm tracked 40 miles to the east, portions of the city would have been devastated. In such an event, the flow would exceed the capacity of roof drains and storm sewer systems and the water would find its way through scuppers and the streets. In many cases, very simple design adjustments can prevent significant flooding or reduce the damage from flooding.

The Consultant shall investigate the risks associated with Intense Precipitation Events that greatly exceed typical design capacities and explore the ways in which drainage systems would fail or overflow. Attention should be paid to both environmental risks, such as relatively low-lying sites, and building-specific risks, such as roof overflows. The intent of this investigation is to discover potential hazards and avoid them.

Once the results of the City's assessment of intense precipitation events is published, the Consultant shall incorporate those findings into their designs.

Unlike hurricanes, these events are usually sudden and unpredictable, so they do not offer a chance to prepare barriers or other deployable structures. Management of Intense Precipitation Events must be built into the original design.

iii. Sea Level Rise (SLR)

The NYC PCC predicts up to 75" of SLR by 2100 in the worst-case scenario. The middle range prediction is 22-55", which will have severe adverse impacts on many city facilities.

1. Tidal Inundation

The CRDG lays out the process the Consultant shall use to determine the design flood elevation based upon expected tidal inundation due to Sea Level Rise (SLR). Since tidal inundation will be a regular occurrence, all designs should prevent any damage or loss of use to the facility for the expected life of the project.

The Project Objectives will present preliminary information on tidal inundation due to SLR. The Consultant shall verify all information.

2. Storm Surge

The CRDG lay out the process the Consultant shall use to determine the design flood elevation (DFE) for storm surge, incorporating the effects of SLR. Ideally, all facilities will be able to handle storm surge passively, but in some cases special designs incorporating wet or dry floodproofing might be necessary. There is usually advanced warning of flood threat, so deployable structures may be acceptable, but not preferred.

The Project Objectives will present preliminary information on current DFE and future DFE based on the CRDG and the determine degrees of resilience to explore.

The Consultant shall identify impacts, base code compliance, CRDG compliance and professional best practices. During Schematic Design, the Consultant shall design, present, and cost out CRDG-compliant as well as non- or partially-compliant schemes so that the City can ascertain the benefits and costs of multiple perspectives.

b. Planning

Following the initial schematic design investigation sub-phase, the Consultant team shall conduct a Resilient Design meeting. Depending on the issues discovered, this may either be a dedicated meeting or be part of a larger Integrative Process meeting.

For each of the above risks, the discussion should include:

- i.** Is this an issue at all? High elevations are not at risk for flooding due to SLR but may be affected by intense precipitation.
- ii.** Can we avoid the issue through design? Consider raising the elevation of the building above the design flood elevation or the surrounding area.
- iii.** Can we design around it? Wet or dry floodproofing, while not desirable, may be viable options. Refer to the latest versions of the NYC Building Code and ASCE 24 Flood Resistant Design and Construction to determine options, as based on project specifics.
- iv.** How? Identifying design constraints at this early stage will help set the course for a successful project.
- v.** Costs associated? Many solutions can be free or have very little impact on the budget when incorporated early.
- vi.** What risks cannot be avoided? Some projects must accept a certain level of risk. This exercise will help the Sponsor Agency identify those risks.

c. Risk Summary and Abatement

As Schematic Design progresses, the Consultant shall address all risks and design issues for each option presented. At the culmination of Schematic Design, the Consultant shall present all the required design features necessary to address climate resilience issues.

During subsequent design phases, the Consultant shall ensure that further developments and/or modifications of the design continue to address all climate resilience issues. Systems shall be integral with the design whenever possible.

d. Other Mitigation Strategies

In some cases, design alone will not be sufficient to assure resilience. Whenever special systems will need to be implemented (e.g. deployment of flood barriers), or where special procedures will be necessary (e.g. relocating vehicles or storage to higher ground), the Consultant shall prepare a Climate Resilience Action Plan to clearly communicate to the building operators the steps necessary to protect the asset(s) and how to train staff in their proper use. An outline of this document shall be presented at 100% Design Development with the full document at 100% Construction Documents. Drafts shall be presented at the 75% interim submissions for both.

Simplicity and brevity is appreciated.

CHAPTER 09: PERCENT FOR ART

- A. INTRODUCTION
- B. THE PERCENT FOR ART LAW
- C. GENERAL INFORMATION FOR THE CONSULTANT
- D. APPROACHES TO COMMISSIONING PUBLIC ART
- E. PERCENT FOR ART CONTRACT
- F. ARTWORK REVIEW INFORMATION
- G. ARTWORK PAYMENTS
- H. DELIVERABLES

A. INTRODUCTION

The Percent for Art Program offers City agencies the opportunity to acquire, commission, or restore works of art specifically for City-owned buildings throughout the five boroughs. Managed by the City's Department of Cultural Affairs (DCLA), the Percent for Art Program has commissioned hundreds of site-specific projects in a variety of media — painting, new technologies, lighting, mosaic, glass, textiles, sculpture, and works that are integrated into infrastructure and architecture — by artists whose sensibilities reflect the diversity of New York City. Percent for Art seeks to commission works from the broadest range of artists from all backgrounds. By bringing artists into the design process, the City's civic buildings and public spaces are enriched. For more information and to view examples of past Percent for Art projects visit: www.nyc.gov/percent.

As the City's primary capital construction project manager, the Department of Design and Construction (DDC) partners with DCLA to implement the Percent for Art program on eligible capital projects. For each eligible capital project, an art project manager from DDC's Public Art Unit and a representative of the Percent for Art Program at DCLA, join the project management team for the duration of the project. Completed artworks become a part of the collection of the City of New York.

B. THE PERCENT FOR ART LAW

Since 1982, New York City's Percent for Art law (Local Law 65/1982) has required that one percent of the budget for eligible City-funded construction projects be spent on public artwork. The Percent for Art law is defined in Chapter 9 § 224 of the New York City Charter, and procedures related to the implementation of the law are described in Title 43 § 2 of the Rules of the City of New York.

1) EXCERPTS FROM THE RULES OF THE CITY OF NEW YORK: "PERCENT FOR ART LAW PROCEDURES"

a. Applicability

"These regulations apply to projects listed in the city's capital budget and include each line project and each project of a multi-project effort generally described in a lump sum budget line. Individual projects, including multi-year projects, which are part of a major improvement program or betterment at a specific site, may be subject to these rules as set forth below."

b. Exemptions

"In the scope of each capital project, the Design Agency [DDC] shall specifically state, either, that: the project is an eligible project, as defined in § 224 of the Charter; or the project is not an eligible project."

"The mayor may exempt a capital project from the provisions of this section if, in his/her sole judgment, the inclusion of works of art as provided thereby would be inappropriate."

c. Implementation

"It is the intent of the Percent for Art Law that the works of art be an integral part of and compatible with the project being constructed. Hence, the procedures called for in these regulations are meant to commence at the earliest stages of project design to assure that the project construction schedule has incorporated into it the schedule to be followed for the creation, acquisition, or restoration of the works of art to be included therein."

2) EXCERPTS FROM THE NEW YORK CITY CHARTER: “WORKS OF ART”

a. Eligible Capital Projects

“Works of art shall be provided for each capital project which involves the construction or the substantial reconstruction of a city-owned public building or structure the intended use of which requires that it be accessible to the public generally or to members of the public participating in, requiring or receiving programs, services or benefits provided thereat.”

b. Art Allocation

“An amount not less than 1% of the first \$50,000,000 and 1/2% of any amount in excess of \$50,000,000 of capital funds appropriated by the city for each such capital project, other than funds appropriated for the acquisition of real property, shall be allocated for works of art; provided, however, that this section shall in no case require, but shall not prohibit, the expenditure of more than \$900,000 for works of art for any capital project, nor more than the sum of \$4,000,000 for all works of art in any fiscal year.”

C. GENERAL INFORMATION FOR THE CONSULTANT

1) OVERVIEW OF KEY RESPONSIBILITIES

The Consultant shall:

- a.** Design any site preparation required to integrate the artwork with the design of the capital project, including engineering and detailing or accommodating all resources necessary to support the artwork;
- b.** Participate in meetings and give presentations;
- c.** Provide project materials and information to the Artist;
- d.** Make payments to the Artist for services performed;
- e.** Advise the Artist of all applicable statutes, ordinances, and regulations of any governmental regulatory body having jurisdiction over the project and monitor the Artist's compliance with said requirements;
- f.** Coordinate reviews of the artwork at key milestones;
- g.** Monitor compliance by and act as liaison to the Artist with regard to certain procedures as set forth in the Percent for Art contract for the project.

D. APPROACHES TO COMMISSIONING PUBLIC ART

The art allocation can be used in several different ways, as described below. The approach employed will be based on the specific considerations of each project.

1) ARTIST FULL SERVICES

The Artist is responsible for designing, fabricating, and installing a site-specific artwork. The Consultant ensures that the capital project has been designed to properly receive the artwork at installation.

2) ARTIST DESIGN ONLY

The Artist collaborates with the design team to develop an artwork that is fully integrated into the design of the capital project. The Contractor is responsible for installing the artwork as part of the construction of the capital project.

3) ARTWORK PURCHASE

Readily available artworks may be chosen and purchased for pre-determined locations within the capital project. The Consultant manages transport, delivery, installation, and any other vendor services in relation to the artworks.

4) ARTWORK CONSERVATION

Existing artwork is accessed and conserved by professionals. When appropriate, the art allocation can be used for restoring or refurbishing existing artworks for the site, the moving of artworks to the eligible project from another site, storage of artwork offsite while building renovation is in process, or any other appropriate alternative recommendations. The Consultant manages the conservation project and ensures that any necessary site preparation is completed before the installation or re-installation of the artwork.

E. PERCENT FOR ART CONTRACT

Upon selection, the Consultant shall retain and contract with the selected Artist(s). The Artist shall be responsible for providing the artwork, as described in the Percent for Art contract. The actual contract utilized will be determined by the specifics of a given project and the artwork approach pursued.

F. ARTWORK REVIEW INFORMATION

The artwork shall be reviewed and approved at key milestones, as described in the Percent for Art contract for the project.

1) REVIEWING ENTITIES

a. Core Review Group

All artwork reviews are conducted first by the Core Review Group (CRG). The CRG includes representatives of:

- i. The Consultant
- ii. The Department of Design and Construction
- iii. The Department of Cultural Affairs
- iv. The project Sponsor Agency
- v. The facility user, if applicable

b. Community Board

Once an artwork proposal is approved by the CRG, and before Conceptual review by the Public Design Commission, the proposal should be presented to the local community board.

c. Public Design Commission

All Percent for Art commissions must be reviewed by the Public Design Commission (PDC). Artwork reviews should be coordinated with PDC reviews of the capital project and submitted in tandem as shown below, whenever possible. For the installation of new artworks, PDC reviews the project at three points: Conceptual review, Preliminary review, and Final review. For more information, including submission checklists for each review, please refer to requirements regarding Artwork Installation on the PDC website at www.nyc.gov/designcommission.

	Capital Project Reviews	New Art Work Reviews
Submit in Tandem	Preliminary Review	Conceptual Review
	Final Review	Preliminary Review

2) CONCEPTUAL REVIEW

Artworks should be submitted for Conceptual review and approval early in the design process and will be reviewed at a committee meeting prior to a public hearing. If any significant design changes are made in design development after Conceptual approval, the project must be submitted for committee review and approval prior to proceeding to fabrication drawings.

3) PRELIMINARY REVIEW

Preliminary review and approval by the Public Design Commission shall take place when the design has been fully developed. Approval at this stage means that a work of art can be fabricated and installed.

In addition, any conservation, restoration, repair, alteration, replication, removal, or relocation of any City-owned artwork must be submitted to the Public Design Commission for Preliminary review and approval before the work begins. Artworks shall not be sold, disposed of, altered, modified in any way, or relocated without the prior written approval of the Public Design Commission.

4) FINAL REVIEW

Final review by the Public Design Commission does not occur until installation of the artwork is complete. Final review and approval are based on the submission of color, archival-quality photographs documenting the completed work in situ.

G. ARTWORK PAYMENTS

The Consultant is responsible for payments to the Artist. The artwork allowance will be added to the Consultant's scope of work through a Task Order and identified as an allowance in the Consultant's payment requisitions. The artwork allowance is calculated based on the capital budget for the project and is allocated as a lump sum amount that is paid out according to the Fee Schedule in the Percent for Art contract for the project.

1) FEE SCHEDULE

A typical Fee Schedule for a Full Service Percent for Art project follows for reference. Please refer to the actual Fee Schedule in the signed Percent for Art contract for the project for the specific terms.

Payment	Milestone	Percent of Total
A	Initial Proposal	6%
B	Conceptual Design	7%
C	Preliminary Design	7%
D	Notice to Fabricate	25%
E	Fabrication 50% completion	25%
F	Fabrication 100% completion	15%
G	Installation	10%
H	Final Acceptance	5%
	Total	100%

2) PAYMENT PROCESS

When a payment milestone can be approved according to the requirements described in the Fee Schedule, the following process is used to submit and process a payment to the artist:

- a. The Consultant or DDC's Public Art Unit notifies the artist and CRG of approval of the milestone.
- b. The Artist submits an invoice to the Consultant for the payment milestone that has been reached, along with any required documentation.
- c. When preparing a payment requisition to DDC, the Consultant adds a corresponding percentage of the Consultant's fee for artwork to the amount of the artist's invoice.
- d. The Consultant includes the Artist's invoice and any required documentation in their next payment requisition to DDC.
- e. DDC has up to 30 days for review. At any point during the review period, DDC auditors may reject the requisition and ask the Consultant to revise and resubmit it. The 30-day review clock starts over upon resubmission.
- f. The City issues payment to the Consultant;
- g. Upon receipt of funds from the City, the Consultant issues payment to the Artist as soon as possible or within 10 business days.

H. DELIVERABLES

1) CAPITAL PROJECT DELIVERABLES

a. Pre-Design or Schematic Design Phase

i. Initial Artwork Meeting

The Consultant is asked to participate in a brainstorm meeting to consider opportunities for artwork and any constraints within the project scope. The Consultant may recommend general locations and site parameters for the artwork, a concept (i.e. media, style, materials), and/or artists to be considered. An overview of the Percent for Art process is provided during the meeting.

ii. Workshop/Design Charrette (optional)

If requested, a charrette may be held with project stakeholders and/or potential artists under consideration. The Consultant will prepare and present opportunities for artwork and any related constraints within the context of the proposed project. The Consultant will use the charrette to gather feedback about the site, initial artwork ideas, and to assess compatibility with the Consultant's design approach, and Sponsor Agency or community goals and preferences. This charrette may be conducted in lieu of Artist Selection Panel 2, depending on the project.

iii. Artist Selection Panel 1 (Managed by DCLA)

1. The Consultant will present a brief overview of the project and art opportunities to the artist selection panel. The presentation should include project scope, site designs, art opportunities and any related constraints, budget, schedule, and any other considerations relevant to the panelists, Sponsor Agency, site context, and/or local community.
2. During the panel, DCLA staff will present approximately 30 to 60 different artists to be considered for the project. The group of artists considered may include suggestions from: the Consultant, Project Team, panelists, community members, and/or elected officials, among others. A DCLA staff person chairs the panel and the voting panelists choose a small group of artists to be considered as finalists, generally 3 to 6 artists.
3. The voting panelists include three arts professionals from the neighborhood or borough where the project will be located and one representative each from DCLA's Percent for Art Program, DDC's Public Art Unit, and the Sponsor Agency. The Consultant and all other participants are considered advisory panelists. An invitation to participate in the selection panel in an advisory capacity is also extended to representatives of the Public Design Commission, local community board, and local elected officials.

iv. Artist Orientation

1. DDC and DCLA staff will arrange a project orientation for the artist finalists. The orientation meeting may be conducted on site, where appropriate. During the meeting, the Consultant and Project Team will provide an overview of the project and neighborhood context, current design, artwork budget, opportunities and constraints for the artwork, and potential locations, if identified.

2. The Consultant shall distribute electronic file copies of the current design materials to the artist finalists before or immediately following the Artist Orientation. The materials will include: a project narrative that includes project history, mission, vision and scope; a design description that includes site map, existing site photos, proposed plans, and renderings or other visuals that will inform the artists about the project, site, and opportunities; a community profile; drawings of identified art locations and opportunities; and project sponsor information.
3. The Consultant shall also be available to respond to questions or requests for additional information from the artists, as requested.

v. Artist Selection Panel 2 (Managed by DCLA)

1. The Consultant will present a brief overview of the project and art opportunities to the artist selection panel. The Consultant shall participate as an advisor to the panel.
2. Each artist is given a 30-minute time slot to present his/her proposal and/or past work to the panel.
3. The voting panelists select an artist(s) who will be awarded the commission, plus one or more alternates. Afterward, DCLA will notify the artist finalists of the outcome of the panel.

vi. Percent for Art Contract

1. Upon selection, the Consultant shall retain and contract with the selected Artist(s), using the approved Percent for Art contract for the project, as provided by the City.
2. If applicable, Payment Milestone A (Initial Proposal) is payable upon contract signing and submission of an initial proposal for the artwork

b. Design Development Phase

i. Artist Conceptual Design Development

The Consultant will participate in meetings with the artist and/or Project Team throughout the Conceptual Design development process.

1. The Artist's Conceptual Design phase usually begins with a kick-off meeting with the artist and CRG/Project Team.
2. The Consultant shall distribute electronic file copies of the current design materials to the artist, as requested. The materials requested may include: a project narrative, location maps, photos of the existing site and neighborhood context, existing and proposed site plans, and drawings, renderings, or other visuals.
3. Throughout the Design Development phase, the Artist and Consultant shall work together to integrate the artwork into the project design and the Consultant shall advise the artist and Project Team of any applicable regulations, design parameters, and/or potential issues.

ii. Artist Conceptual Design Review

1. Core Review Group
Upon the Artist's submission of a completed Conceptual Design proposal, the Consultant shall arrange for review of the Conceptual Design proposal by the CRG.

2. Community Board

Once the Artist's Conceptual Design proposal has been approved by the CRG, and before Public Design Commission review, the City will schedule a presentation to the local community board for the project, if applicable. The Consultant will attend the community board meeting to answer any relevant questions and give a presentation if requested.

3. Public Design Commission

Following the presentation of the Artist's Conceptual Design proposal to the community board or, if no such presentation is made, after the Conceptual Design is approved by the CRG, DDC, and DCLA will submit the artist's proposal to the Public Design Commission for Conceptual review. During the period in which the Public Design Commission is considering the Conceptual Design proposal, the Artist and Consultant shall be available to meet with the Project Team, Percent for Art Program, and/or Public Design Commission to discuss the Conceptual Design proposal and make revisions as requested. The Consultant shall accompany the artist to the Public Design Commission hearing for the artist's Conceptual Design proposal, if applicable, and be prepared to answer any relevant questions.

If applicable, Payment Milestone B (Conceptual Design) is payable upon approval by Public Design Commission of the Conceptual Design proposal for the artwork.

c. Construction Documents Phase**i. Artist Preliminary Design Development**

After Public Design Commission approval of the Artist's Conceptual Design proposal, the Artist will prepare and submit to the Consultant a detailed Preliminary Design proposal for the artwork. The Preliminary Design proposal should specify the materials, dimensions, weight, finish, proposed site preparation requirements, proposed installation method, and any additional modifications to the site necessary to prepare it for the artwork. To assist the artist in preparing the Preliminary Design proposal, the Consultant shall furnish to or obtain for the artist all drawings, material samples, and other similar documentation necessary to enable the artist to prepare the Preliminary Design proposal in compliance with any applicable legal requirements.

ii. Artwork Site Preparation/Design Integration

The Consultant is responsible for coordinating the design of the selected site with the artwork, including engineering and detailing all resources necessary to support the artwork and/or accommodating electrical, structural, landscaping, lighting, footings, plumbing, and any other loads imposed by the artwork; provided, however, that all such work shall have been fully outlined and approved in advance by the City as part of the approved artwork design. By 75% CD review, the CDs shall note all artwork locations on relevant drawings and all required site preparation shall be detailed, including any drawings, dimensions, specifications, notes, and/or other information required by the Contractor; or that are necessary for proper coordination during construction.

iii. Artist Preliminary Design Review**1. Core Review Group**

Upon the Artist's submission of a fully developed Preliminary Design proposal, the Consultant shall arrange for review of the Preliminary Design proposal by the CRG.

2. Public Design Commission

Following CRG approval of the artist's Preliminary Design proposal, DDC and DCLA will submit the artist's proposal to the Public Design Commission for Preliminary review. During the period in which the Public Design Commission is considering the Preliminary Design proposal, the artist and Consultant shall be available to meet with the Project Team, Percent for Art Program, and/or Public Design Commission to discuss the Preliminary Design proposal and make revisions as requested. The Consultant shall accompany the artist to the Public Design Commission hearing for the artist's Preliminary Design proposal, if applicable, and be prepared to answer any relevant questions.

If applicable, Payment Milestone C (Preliminary Design) is payable upon approval by Public Design Commission of the Conceptual Design proposal for the artwork.

d. Construction Administration Phase

i. General Construction Coordination

The Consultant will monitor construction progress, with special attention paid to ensuring that site preparation for the artwork is scheduled appropriately, executed correctly, and coordinated with any relevant sub-contractors.

ii. Artwork Shop Drawings Review

The Consultant, along with the CRG, shall review all shop drawings, including materials, means, and methods, and provide comment. The Consultant should inform the CRG in writing of any proposed deviation from the approved Preliminary Design for the artwork. Significant changes in the appearance, color, or dimensions of the artwork may require submission of an amended Preliminary Design proposal to the Public Design Commission for review. Upon approval of shop drawings for the artwork, a Notice to Fabricate will be issued by DDC. Fabrication should not commence before a formal Notice to Fabricate is issued.

If applicable, Payment Milestone D (Notice to Fabricate) is payable upon the artist's submission of approved schedule for fabrication and installation, and receipt of a Notice to Fabricate.

iii. Artwork Inspection at 50% Fabrication

The Consultant, along with the City, will inspect the artwork at 50% fabrication completion and provide comment. The Consultant should inform the CRG in writing of any deviation from the approved Preliminary Design and/or shop drawings for the artwork. Upon approval by the CRG, DDC will issue a letter documenting the approval.

If applicable, Payment Milestone E (50% Fabrication) is payable upon 50% completion of the fabrication of the artwork, as determined by the CRG.

iv. Artwork Inspection at 100% Fabrication

The Consultant, along with the City, will inspect the artwork at 100% fabrication completion and provide comment. The Consultant should inform the CRG in writing of any deviation from the approved Preliminary Design and/or shop drawings for the artwork. Upon approval by the CRG, DDC will issue a letter documenting the approval.

If applicable, Payment Milestone F (100% Fabrication) is payable upon completion of the fabrication of the artwork and preliminary acceptance of the artwork by the CRG.

v. Artwork Installation

Once installation of the artwork is complete, the Consultant, along with the City, shall inspect the artwork along with any related plaques or signage and provide comment. The Consultant should inform the CRG in writing of any deviation from the approved Preliminary Design for the artwork, or if there are outstanding construction issues that affect or may affect the artwork. If, after artwork installation, there will be ongoing or future construction activities that could affect the artwork, the Consultant shall ensure that appropriate measures are being taken to protect the artwork. Upon approval by the CRG, DDC will issue a letter documenting the approval.

If applicable, Payment Milestone G (Installation) is payable upon determination by the CRG that the artwork as installed is ready for review and acceptance by the Public Design Commission.

vi. Post-Installation

After installation approval and the resolution of any missing, incorrect, or incomplete items affecting the artwork, the Artist shall submit their final deliverables to the City, including installation photos of the artwork in situ. DDC and DCLA will then submit the artwork installation photos to the Public Design Commission for Final Review.

vii. Artist Payment

If applicable, Payment Milestone H (Final Acceptance) is payable upon Final Acceptance of the artwork by the Public Design Commission and completion of all other service required of the artist under the Percent for Art contract, including submission to Percent for Art of all required documentation.

2) CAPITAL PROJECT SCOPE DEVELOPMENT (CPSD) DELIVERABLES**a. New Artwork**

The Consultant should assess the applicability of LL 65/1982 (the Percent for Art Law) to the capital project. If the Consultant determines that Percent for Art likely applies, an anticipated approach, budget, and possible locations or other recommendations related to the commissioning of new artworks should be included in the Phase 3 and Final CPSD Reports.

b. Existing Artwork

If the project includes existing artwork(s), commissioned through the Percent for Art program or otherwise, the Consultant should also assess the applicability of LL 65/1982 (the Percent for Art Law) to the capital project regarding artwork conservation or relocation. If the Consultant determines that Percent for Art likely applies, an anticipated approach, budget, and locations or other recommendations related to the conservation or relocation of the existing artwork(s) should be developed and included in the Phase 3 and Final CPSD Reports. Any measures necessary to protect existing artwork(s) during construction should also be identified in the Final CPSD Report, even if the artwork is not likely eligible for conservation through the Percent for Art Program.

CHAPTER 10: REGULATORY APPROVALS

- A. INTRODUCTION
- B. REGULATORY APPROVAL SERVICES
- C. REGULATORY APPROVAL DELIVERABLES
- D. DEPARTMENT OF BUILDINGS
- E. NEW YORK CITY COMMUNITY BOARDS
- F. PUBLIC DESIGN COMMISSION
- G. LANDMARKS PRESERVATION COMMISSION
- H. ADDITIONAL REGULATORY AGENCIES

A. INTRODUCTION

The Consultant is responsible for filing complete applications and documentation, and for obtaining all approvals for the project in accordance with current requirements of the appropriate regulatory entities and utility companies.

B. REGULATORY APPROVAL SERVICES

It is the professional responsibility of the Consultant to ensure that the project's design satisfies all applicable codes and regulations. The Consultant shall file complete applications and documentation to obtain required approvals from the appropriate regulatory entities and utility companies. The Consultant shall include projected dates for all required regulatory approvals and utility company applications in the overall project schedule and update the status on a regular basis.

- 1) The Consultant shall file for utility service requests at the earliest possible time because review periods can be of considerable duration. Where the same utility company provides electric, gas, and/or steam service, requests for such services must be made at the same time. The Consultant shall include a plot plan of the proposed building, with the desired points of service entry measured from a fixed surveyed point. The Consultant will submit a copy of accepted service requests to the DDC Project Manager.
- 2) Immediately upon filing any application, the Consultant shall submit copies to the DDC Project Manager and the Office of Community Outreach & Notification (OCON). The Consultant must follow through to insure rapid handling and examination, to minimize time loss. The Consultant must notify the DDC Project Manager if any delays occur. Copies of responses from regulatory agencies and utilities must be submitted to the DDC Project Manager.
- 3) When approvals have been received and changes are subsequently made which affect the work, the Consultant shall arrange to file amendments and receive approvals for the revised work. The Consultant shall advise the DDC Project Manager and OCON of any developments which conflict with submittals under review or submittals previously approved by regulatory agencies.
- 4) The Consultant shall provide documents required for permitting amendments and sign-offs.

C. REGULATORY APPROVAL DELIVERABLES

1) DELIVERABLES BY PHASE

Copies of all regulatory agency approvals of both plans and applications shall be included in the required milestone submissions.

a. Schematic Design

- i. Any regulation that impacts the siting or other schematic development of the project must be resolved prior to the conclusion of the SD phase to ensure that there are no fatal flaws in the selected scheme. This includes zoning issues requiring a determination (ZRD1), egress easements, or other property line issues that may impact the building's footprint.
- ii. Public Design Commission Review. See section in this Chapter for requirements.

b. Design Development

i. Determinations by the New York City Department of Buildings (DOB)

Any item requiring clarification or pre-consideration by the DOB must be filed as a Construction Code Determination (CCD1) and fully resolved by the conclusion of the DD phase. Approved CCD1s are to be included with the DD Submission.

The DOB has primary responsibility for the enforcement of the NYC Building, plumbing, mechanical, fuel and gas, electrical, energy conservation codes, the Zoning Resolution, portions of the NYS Multiple Dwelling Law and Labor Laws, as well as the enforcement of regulations relating to construction, alteration, maintenance, use, occupancy, safety, and sanitary conditions of buildings in New York City. The DOB also issues violations for non-compliance with the Building Code. Some NYC Building Code items and filings also require approval by the DEP, DOT, FDNY, OER, or other agencies. Projects adjacent to waterways are reviewed by the New York City Department of Small Business Services (SBS) rather than the DOB.

ii. Hazardous Materials

When hazardous material abatement is not performed by DDC, the Consultant shall file the appropriate documentation with DEP and DOB.

iii. Public Design Commission Review. See section in this Chapter for requirements.

iv. Landmarks Preservation Commission. See section in this Chapter for requirements.

c. 75% CD

i. Plan/Work Applications

The initial DOB Filing Set should be completed and filed with the DOB before the 75% CD phase. Electronic filings are preferred by DDC. The Consultant shall file appropriate applications with DOB for project work. The Consultant shall be governed by DOB application and approval procedures as related to individual application type, such as New Building, Alteration, Use Permits, Public Assembly, etc.. Any filings with other Agencies having Jurisdiction must also be initiated prior to the 75% CD Phase. Filing ID numbers shall be provided as part of the submission.

ii. **Special Inspections/Progress inspections**

Special/progress inspections are paid for and furnished by DDC. For each project DDC will identify the Registered Professional responsible for the special/progress inspections. The Consultant is responsible for identifying all items that will require special inspections. This information should be provided to DDC four weeks prior to the projected pre-filing date at the DOB. After the application is approved, DDC will designate the special/progress Inspection provider who will perform the inspections.

iii. **Builder's Pavement Plan (BPP)**

The Builder's Pavement Plan Unit of the DOB and DOT reviews and approves paving applications that are required for all new buildings and Alt 1 projects. Paving plans must show sidewalks, street trees, curbs, roadway work, street modifications, sidewalk vaults, drainage across sidewalks, and planned legal sidewalk, road, and curb elevations as established by DOT or by official waiver of legally established grades.

iv. **Department of Small Business Services (SBS)**

The Waterfront Permits unit at SBS, instead of DOB, reviews and approves construction on properties adjacent to the waterfront and certain other specialty projects.

v. **Public Design Commission Review.** See section in this Chapter for requirements.

vi. **Any related existing violations which will be corrected during the process of the application shall be included in the application process.**

d. **100% CD**

Any objections received by any authority having jurisdiction are to be submitted with the 100% CD Submission.

i. **B-Scan/DOB Now: Build**

The Consultant shall provide copies of DOB approved plans and applications to DDC to be held at the project construction site. The documents shall bear original DOB approval stamp. Whenever E-filing, or DOB Now Filing, Consultant shall include DDC staff (CPM, PM, Deputy Director and Director) as delegates.

ii. **Amendments**

The Consultant must file amendments for changes implemented during construction that cause the executed work to differ from that for which approvals were originally obtained from the regulatory agencies.

iii. **Sign-offs and Certificate of Occupancy**

Consultant participation may be required during the sign-off and the Certificate of Occupancy process at the DOB. Any related existing violations corrected during the process of the application shall be administratively closed out.

iv. **Record Set**

The Consultant shall also provide a digital copy of scanned, approved plans and applications on a digital storage device for DDC's records.

D. DEPARTMENT OF BUILDINGS

1) BACKGROUND AND HISTORY

a. Background

- i. The Department of Buildings (DOB) promotes the safety of all people that build, work, and live in New York City by regulating the lawful use of over one million buildings and construction sites across the five boroughs. The Department enforces the City's Construction Codes, Zoning Resolution, and the New York State Multiple Dwelling Law.
- ii. The Department enforces compliance with these regulations through its review and approval of building plans, permitting and licensing functions, and inspections.

2) DEPARTMENT OF BUILDINGS REVIEW IS REQUIRED IN THE FOLLOWING INSTANCES:

- a. Building Systems Installation & Modifications
- b. Alterations
- c. Renovations
- d. Demolition
- e. Construction Equipment
- f. New Buildings

3) SUBMISSION REQUIREMENTS

- a. DOB is in a process of modernizing its submission interfacing. As a result, there are currently three approaches to submitting initial applications. They are:
 - i. Manual paper filing which should be avoided at all costs. Forms may be found here: <https://www1.nyc.gov/site/buildings/about/forms.page>
 - ii. Hub Filing otherwise called E-filing or E-submit. This method is first generation of e-filing and has 4 variants (Development Hub, Hub Full-Service, Hub Self-Service, NYC Development Hub) <https://a810-efiling.nyc.gov/eRenewal/loginER.jsp>
 - iii. DOB Now: Build not to be confused with DOB Now: Safety, DOB Now: Inspections, DOB Now: Licensing which is the second-generation e-filing and DDC preferred method of filing. <https://a810-dobnow.nyc.gov/publish/#/> For more, see their FAQ and Resources sections.
 1. Each of the above forms of filing has three variants for review type:
 - a. Plan examined (DDC preferred variant)
 - b. Self-Certification of objections
 - c. Self-Certified

2. Closeout inspections have two variants:
 - a. Self-Certified usually called Directive 14
 - b. Agency inspection usually called Non-directive

b. Minimum DOB submission requirements for first review are:

- i. Initial Application form (PW1, PA1, Laa1 or other)
- ii. 3 sets of plans conforming to Bscan standards
- iii. Cost affidavit (PW3)
- iv. Identification of special and progress inspections (TR forms)
- v. Asbestos Form or filing with DEP

c. Upon receipt of initial objections from DOB the applicant shall schedule meetings with the plan examiner to resolve objections. Objections are usually resolved by processing a Pre-approval amendment:

- i. Submitting a PW1 to clerical staff and an AI1 form listing resolution by objection number and meeting with the plan examiner in office or virtually
- ii. Meeting with plan examiner and their supervisor (for objections not resolved in previous step)
- iii. Meeting with Chief plan examiner (for objections not resolved in previous step)
- iv. Submitting a formal reconsideration process for Commissioner's review or Technical review
- v. Getting mayoral override or affected agency waiver

4) TIMING OF SUBMISSIONS

Projects are submitted prior to 75% CD. As determined complex projects requiring DOB Zoning or Building Code pre-determinations may also require submission earlier in the timeline. On occasion, relatively simple projects may be filed at about 90% CD. Approval shall be attained prior to construction kickoff meeting.

5) POST-APPROVAL AMENDMENTS

DOB has a process to amend initial approvals via the Post Approval Amendment process. This process is basically the same as the initial approval. Changes are submitted to DOB / Changes are reviewed / Objections are resolved via appointments and approval is obtained.

E. NEW YORK CITY COMMUNITY BOARDS

1) BACKGROUND AND HISTORY

Community boards are local representative bodies. There are 59 community boards throughout the City, and each one consists of up to 50 unsalaried members, half of whom are nominated by their district's City Council members. Board members are selected and appointed by the Borough Presidents from among active, involved people of each community and must reside, work, or have some other significant interest in the community. Each community board is led by a District Manager who establishes an office, hires staff, and implements procedures to improve the delivery of City services to the district. While the main responsibility of the board office is to receive complaints from community residents, they also maintain other duties, such as processing permits for block parties and street fairs. Many boards choose to provide additional services and manage special projects that cater to specific community needs, including organizing tenants associations, coordinating neighborhood cleanup programs, and more.

2) RESPONSIBILITIES & COMMITTEES

a. Responsibilities, include but are not limited to:

- i. Dealing with land use and zoning issues: CBs have an important advisory role and must be consulted on the placement of most municipal facilities in the community. Applications for a change in or variance from the zoning resolution must come before the board for review, and the board's position is considered in the final determination.
- ii. Assessing the needs of their own neighborhoods: CBs assess the needs of their community members and meet with City agencies to make recommendations in the City's budget process.
- iii. Addressing other community concerns: Any issue that affects part or all of a community, from a traffic problem to deteriorating housing, is a proper concern of community boards. It is important to note that while community boards serve as advocates for their neighborhood, they do not have the ability to order any City agency or official to perform any task. Despite this limitation, boards are usually successful in resolving the problems they address.

b. Committees:

Board committees do most of the planning and work on the issues that are brought to action at community board meetings. Each community board establishes the committee structure and procedures it feels will best meet the needs of its district. Committees may be functional committees that deal with specific Charter mandates (e.g. "Land Use Review" and "Budget" committees) or agency committees that relate to a particular agency (e.g. "Police" and "Sanitation" committees), among other structures. Non-board members may apply to join or work on board committees, which helps provide additional expertise and manpower.

3) CONSULTANT RESPONSIBILITIES

- a. Community Boards have pre-set meeting dates/times/locations. This is something to keep in mind when LPC or PDC approval is required before DOB permits may be issued. The Consultant must anticipate the need to present to the community board and as soon as possible and with the knowledge and assistance of DDC-Office of Community Outreach & Notification (OCON). It is much more likely to be added to the agenda for any particular committee one or two months in advance than it is to be added on an agenda that is only a few days or weeks away.
- b. Community Boards generally do NOT have any meetings in July or August (Summer Hiatus)
- c. The Consultant must prepare presentations and must attend/present as required by the needs of the project and by DDC.

F. PUBLIC DESIGN COMMISSION

1) OVERVIEW

a. Background

The Public Design Commission (PDC) is New York City's design review agency. PDC approval is required for work on City-owned property as stipulated in Chapter 37 of the New York City Charter. PDC reviews projects during design, construction, and closeout, and PDC approval is required to obtain a building permit and a Certificate of Occupancy from the Department of Buildings (DOB). By properly planning for PDC review, teams can ensure an efficient process that does not impact the project schedule. All submissions and communication with PDC are managed via DDC's PDC liaisons, who are responsible for guiding teams through the review and approval process and handling all PDC-related matters on behalf of the agency.

b. History

PDC was originally established as the Municipal Art Commission in 1898 to regulate public art and architecture. Created in response to the City Beautiful movement, the Art Commission was established as part of the City Charter that consolidated the five boroughs into a single municipality. It was renamed the Public Design Commission in 2008 to better reflect its mission: "As an advocate for excellence and innovation in the public realm, the PDC works to ensure the quality and viability of public projects, programs, and services for New Yorkers in all five boroughs for years to come." Additional information can be found on the Commission's website at: <http://www1.nyc.gov/site/designcommission/index.page>

c. People

PDC is comprised of eleven Commissioners serving pro bono and a staff headed by an executive director. As stipulated by the City Charter, the Commissioners include an architect, landscape architect, painter, sculptor, and three lay members, all of whom are nominated by the Fine Arts Federation and appointed by the mayor. They also include one representative of the Mayor's office, the Metropolitan Museum of Art, the New York Public Library, and the Brooklyn Museum.

d. Purview

PDC reviews permanent works of architecture, engineering, landscape, and art on City-owned property, where “permanent” is defined as lasting for 365 days or more. PDC reviews exterior work only, regardless of whether that work is visible, except in the case of art. PDC reviews all artworks on City-owned property, both exterior and interior, and serves as the curator and caretaker of the City’s public art collection.

Properties designated as NYC landmarks are subject to review by the Landmarks Preservation Commission (LPC) instead of PDC. However, PDC has binding jurisdiction over construction of new structures and works of landscape architecture within scenic landmarks. Additionally, PDC has binding jurisdiction of all works of art on City owned property, including designated Landmarks. In cases where PDC review is binding, LPC has advisory review and a written Advisory Report from LPC must accompany the submission to PDC. See Landmarks Preservation Commission section in this Chapter for more information, including jurisdictional purview, and to PDC’s website for additional jurisdictional information: <http://www1.nyc.gov/site/designcommission/review/jurisdiction.page>

e. Role of DDC’s PDC Liaisons

DDC’s Project Excellence team serves as the liaison to PDC, managing the submission process and handling all PDC-related matters on behalf of the agency and its Consultants. The team provides guidance on civic design requirements and best practices to aid projects in receiving timely approval. DDC’s PDC liaisons advise teams on the required PDC approvals, provide up-to-date guidance on submission requirements, and provide an in-depth review of all draft submissions before they are submitted to PDC. All communication between project teams and PDC is handled via the liaisons, who further assist in acquiring the requisite agency signoffs from DDC and partner agencies. Liaisons are key stakeholders in all projects requiring PDC review and approval and remain engaged from project kickoff through design and construction.

2) REQUIRED REVIEWS**a. Overview**

PDC reviews and approves projects during design, construction, and project closeout. PDC Commissioners meet once a month to review projects submitted by all agencies City-wide. To be reviewed at PDC’s monthly meeting, projects must be listed on DDC’s monthly transmittal and submitted to PDC on the required date. Before a project can be submitted to PDC, a complete draft of the submission must be reviewed and approved by DDC’s PDC liaisons. PDC’s monthly meeting calendar is posted on their website, and DDC’s PDC liaisons maintain and distribute a calendar that includes draft submission deadlines.

b. Stakeholder Review and Approval

Before a project can be submitted to PDC for review and approval, it must be reviewed and approved by all stakeholders, including the DDC Program Unit, A&E, and Project Excellence teams, the Sponsor Agency, and any other agencies with jurisdiction over the project or site. In addition, the community is given the opportunity to review projects prior to PDC review through the Community Board process.

All projects subject to the Uniform Land Use Review Procedure (ULURP) must be reviewed by PDC at a conceptual level during the application and pre-certification phase, and prior to ULURP certification. Submission should be made at or around the same time as the Department of City Planning (DCP) inter-divisional meeting.

See the Additional Regulatory Agencies section in this Chapter for additional information on partner agency and Community Board requirements.

c. Review of Capital Projects During Design

During design, the requirements for PDC review and approval depend on project type, scope, and complexity. Large or complex projects such as new buildings, major additions or renovations, and master plans, require at least three levels of design review. Standard projects, such as façade replacements, ADA upgrades, and site improvements, typically require two levels of design review. Projects with limited exterior scope, such as system upgrades, may qualify for a single level of design review. Teams must consult with DDC's PDC liaisons at project kickoff and throughout design and construction to identify all required PDC reviews.

i. Conceptual Review

Conceptual review and approval occurs at Schematic Design Interim II Submission, after selection of a schematic design scheme. It is required for all new buildings and significant additions, major infrastructure, master plans, or other large-scale or complex projects. As noted above, all projects subject to the Uniform Land Use Review Procedure (ULURP) must receive PDC conceptual review prior to ULURP certification. PDC conceptual review occurs prior to review by Community Board.

ii. Preliminary Review

Preliminary review and approval occurs at Schematic Design Final Submission. It is required for all projects that were reviewed at a conceptual level, and for all other projects with exterior work unless they qualify for a single design review as described below. PDC preliminary review occurs after review by the Community Board. If the design changes substantially after this milestone, the project must be submitted for interim review as described below.

iii. Final Review and Combined Preliminary/Final Review

Final review and approval occurs at approximately 75% CD and is required for all projects with exterior work, including those that were reviewed at conceptual and preliminary levels. Projects with limited exterior scope, such as system upgrades, roof replacements, or window replacements, may qualify for a single combined preliminary/final review at this milestone as identified by DDC's PDC liaisons. PDC preliminary/final review occurs after review by the Community Board.

Final approval by PDC is required to obtain a building permit from the Department of Buildings and must be secured before construction can proceed. If the design changes after this milestone, the project must be submitted for amended final review as described below.

iv. Interim Review

Interim review and approval occurs between preliminary and final review, and may be required to address any conditions of approval stipulated by PDC at preliminary review. Interim review is also required when the design changes substantially after preliminary approval. DDC's PDC liaisons guide the team in determining whether interim review is required or appropriate.

v. Informal Review

Informal review is available for complex and high-priority projects with expedited timelines, including projects receiving an Emergency Declaration. It occurs during a pre-schematic or master plan phase, or during the early stages of schematic design. Informal review does not take the place of the required design reviews but, for time-sensitive projects, can aid in achieving Commission buy-in and support early decision-making.

d. Review of Capital Projects During Construction**i. Amended Final Review/Construction Change**

Amended final review and approval occurs when the design changes after the project has received final approval. When this occurs during construction, amended final review is also known as "construction change review," and design revisions must be submitted to PDC prior to proceeding with the work. To expedite the approval process, construction change submissions have an abbreviated set of requirements and may be submitted outside the typical review cycle upon coordinating with DDC's PDC liaisons.

ii. Extension of Approval

Extension of approval occurs when the final approval expires prior to the start of construction. Final approval by PDC is conditioned on construction commencing within two years.

e. Review of Capital Projects During Closeout**i. Final Sign-off**

Final sign-off occurs when the construction of a project is complete. It is required to demonstrate that the project was built as approved.

Final sign-off by PDC is required to close out a building permit and obtain a Certificate of Occupancy from the Department of Buildings.

f. Waivers for Replacement-in-Kind

For projects eligible for a PDC waiver, the waiver request occurs after a permit application has been submitted to DOB and DOB has returned an objection identifying the requirement for PDC review. Waivers are available for projects where the exterior work is strictly limited to repair or replacement-in-kind, with replacement components having the same specifications, size and finish as existing components. Replacement of exterior mechanical equipment does not typically qualify for a waiver. DDC's PDC liaisons will advise whether the project qualifies for a waiver.

g. Review of Artwork

Artwork is subject to separate review and approval by PDC, including the installation of new artwork through the Percent for Art program and the conservation or relocation of existing artwork. DDC's PDC liaisons and Public Art team provide guidance on submission requirements and coordination with capital project submissions.

i. Percent for Art

PDC requires Percent for Art projects to be submitted for conceptual, preliminary, and final review. Conceptual review and approval occurs early in the design process and should occur when the associated capital project is submitted for preliminary review. Preliminary review and approval of Percent for Art projects occurs prior to fabrication, and requires information on the fabricator, installation specifications, maintenance requirements, and maintenance funding. Final review and approval occurs after installation of the artwork and is required to demonstrate that the work was installed as approved. As with capital projects, interim review may be required to resolve any conditions of approval or to address substantial changes after approval. DDC's PDC liaisons guide the team in determining whether interim review is required or appropriate. See Chapter 09: Percent for Art.

ii. **Artwork Relocation and Conservation**

PDC requires any conservation, repair, alteration, removal, or relocation of existing City-owned artwork to be submitted for preliminary and final review. For complex projects or when additional guidance is needed, projects can be submitted for conceptual review before requests for proposals (RFPs) are completed and/or before a conservation team has been engaged. Preliminary review and approval occurs prior to the start of work. Final review and approval occurs after the work is complete and is required to demonstrate that the work was executed as approved.

3) SUBMISSION REQUIREMENTS

Each type of PDC review has specific submission requirements, many of which are detailed on checklists specific to the submission (conceptual, preliminary, etc.) and project type (structures, open spaces, etc.) DDC's PDC liaisons provide the relevant checklists and submission instructions. For submission types that do not have a checklist, DDC's PDC liaisons identify the items required for the submission.

For any submissions that require an application as identified on the checklist, DDC's PDC liaisons are responsible for completing the application, obtaining the required agency signatures, and delivering the original application to PDC.

4) SUBMISSION PROCESS

Successful review and approval by PDC requires that teams work closely with DDC's PDC liaisons throughout the project to accurately plan for all required approvals.

a. Early Planning

The team must consult with DDC's PDC liaisons early in the design process to identify the required PDC approvals. This early coordination ensures that the PDC review and approval process does not impact the overall project schedule. DDC's PDC liaisons remain key stakeholders throughout the design and construction process and will guide the team in planning for PDC approvals in the event of scope or design changes.

b. Pre-Submission Planning

Two to three months prior to submitting for PDC review, teams must reach out to DDC's PDC liaisons to obtain the current review calendar, submission checklist, and project-specific instructions and guidelines.

c. Submission and Review of Drafts

DDC requires that a complete draft of the submission, including all items on the checklist, be provided to DDC's PDC liaisons by noon two weeks prior to the PDC submission date. Additional time may be required for large or complex projects that require submission by multiple agencies.

Prior to submission of a draft, the design of the project must be approved by the DDC Program Unit and A&E team, in addition to the Sponsor Agency and any other agencies with jurisdiction over the site. DDC's PDC liaisons review the draft for completeness and clarity of the submission, conformance to PDC requirements and guidelines, alignment with city-wide standards and best practices, and appropriateness of the design. Multiple draft revisions may be required within the two-week period prior to PDC submission.

For certain high-priority projects, DDC may require the Consultant to present the project in person at DDC before it is submitted to PDC. This meeting generally occurs at least one week prior to the submission to PDC.

d. PDC Submission

PDC requires submission of hard copies, samples and models, and digital files as described below. With the exception of the application form and Community Board letter, all items are the responsibility of the Consultant. DDC's PDC liaisons complete the required application form, obtain the requisite agency signature(s), and deliver the monthly transmittal, signed application, and Community Board letter to PDC.

i. Submission of Digital Files

DDC submits all digital files to PDC directly. A complete digital submission, including a checklist and all indicated items, must be submitted to DDC's PDC liaisons by noon on the day before the PDC submission date.

ii. Submission of Hard Copies

Hard copies are delivered by the Consultant to the north entrance of 1 Centre Street and dropped off in the mail room for screening. All materials must be clearly labeled with the project name and addressed to the Design Commission at City Hall, Third Floor. Hard copy submissions are due on the submission date by noon and may not be delivered early.

iii. Submission of Samples and Models

Large or delicate samples and models may be delivered directly to PDC's offices on the third floor of City Hall on the submission date. Such deliveries must be coordinated in advance with DDC's PDC liaisons, who will arrange a delivery time with PDC staff.

After PDC has completed their review, the Consultant will be required to pick up any models or large samples at a pre-arranged time coordinated via DDC's PDC liaisons.

e. PDC Review

Upon submission to PDC, the project is reviewed by staff and informal committees of Commissioners. PDC provides feedback including questions, requests for information, and requests for revision. These requests are conveyed to the team via DDC's PDC liaisons and require timely response due to the limited review period.

f. PDC Meeting

Three business days prior to the monthly meeting, PDC distributes a meeting agenda via DDC's liaisons. The agenda includes three sections: Committee, Consent, and Public Hearing. Projects on the Committee Agenda will be presented to PDC by the Consultant, with the DDC and Sponsor Agency teams in attendance. Projects listed on the Consent Agenda are recommended for approval at the meeting and do not require attendance by the team. Projects may be scheduled for a Public Hearing if a member of the public wishes to testify.

The meeting agenda is limited to the major types of design review submission (conceptual, preliminary, and final review, with interim review submissions occasionally presented). Other submission types, such as construction changes, are handled via communication with DDC's PDC liaisons and are not included on the meeting agenda.

i. Meeting Attendance

Meetings are typically held in PDC's offices on the third floor of City Hall, and teams presenting a project on the Committee Agenda are required to arrive 45 minutes in advance of their scheduled presentation. However, meeting times and locations are subject to change and will be confirmed by DDC's PDC liaisons.

PDC will have the team's submitted presentation displayed on a screen, and samples and models will be laid out on a table. Teams may not bring any new material to the meeting.

g. Approval and Documentation

Following the monthly meeting, PDC distributes formal communication documenting the results of their review. The type of communication depends on the type of review. In addition, PDC meetings are video recorded and may be viewed via a link on PDC's website. All communication from PDC is distributed via DDC's PDC liaisons.

i. Interagency Communication Memo

Projects that were presented at the monthly meeting as part of the Committee Agenda will receive an interagency communication memo summarizing feedback from the Commission and identifying the next step. Formal approval is not granted by the interagency communication memo, but the project may be recommended for approval at PDC's next meeting.

ii. Certificate and Perforated Drawing Set

Projects on the Consent Agenda will receive a numbered certificate, which serves as the formal documentation of PDC approval. The certificate types are as follows: Conceptual (for Percent for Art projects only), Preliminary, Final, and combined Preliminary/Final. Preliminary certificates may include conditions of approval that must be addressed in subsequent submissions.

Certificates for final approval include the following conditions: that construction must commence within two years of the certificate date, and that photographs be submitted for final sign-off upon completion of the work. For projects receiving final approval, PDC also provides a perforated drawing set for record of the approved design.

iii. Email

PDC may require that a project be revised and resubmitted at a subsequent submission date before it is calendared for the monthly meeting. This type of request is communicated via email to DDC's PDC liaisons.

For submission types not listed on the monthly meeting agenda, including construction changes, final sign-offs, and some interim submissions, PDC's response will be provided by email via DDC's PDC liaisons. This email serves as the formal documentation of PDC's review and approval.

G. LANDMARKS PRESERVATION COMMISSION

1) BACKGROUND AND HISTORY

- a. The Landmarks Preservation Commission (LPC) is the mayoral agency responsible for designating and protecting New York City's architecturally, historically, and culturally significant buildings and sites. Since its creation in 1965 by the Landmarks Law, Section 3020 of the New York City Charter, and Chapter 3 of Title 25 of the Administrative Code, LPC has granted landmark status to more than 36,000 buildings, including 1,415 individual landmarks, 120 interior landmarks, 11 scenic landmarks, and 144 historic districts in all five boroughs. The agency consists of eleven commissioners comprised of at least three architects, a historian, a realtor, and a planner or landscape architect, as well as at least one commissioner from each borough. The paid chair leads the agency and a staff headed by the executive director.
- b. The objective of designating landmark properties is to "safeguard the city's historic, aesthetic, and cultural heritage" and to "foster civic pride in the beauty and accomplishments of the past." Protection of designated properties is achieved through mandatory review and approval of plans for restoration, alteration, addition, reconstruction or other proposed changes.
- c. The LPC has jurisdiction over all properties that are either designated or pending designation as NYC landmarks. The four types of landmark designation are individual (exterior), interior, scenic, and historic districts. In addition, projects undergoing City Environmental Quality Review (CEQR) fall under LPC jurisdiction. Properties reviewed under CEQR or other environmental laws might be listed on or eligible for the New York State or National Registers of Historic Places or meet criteria for local designation, even if they are not New York City designated landmarks. CEQR review covers historic, aesthetic, cultural, archaeological, and architectural resources.
- d. Coordination between LPC and the Public Design Commission
Areas of overlapping jurisdiction between the LPC and the PDC have been minimized with the adoption of Local Law 77 (1995). If the project primarily concerns an individual landmark, or a project within an historic district, the LPC will conduct the only design review, and PDC review will not be required. For these projects LPC review and approval will be binding. However, all projects within scenic landmarks, except for work on existing buildings, and all works of art as defined by the PDC will continue to require review by both the PDC and LPC.

2) DDC HISTORIC PRESERVATION OFFICE

The DDC Historic Preservation Office assists and guides the Consultant in the completion of all steps leading to approval of the project by the Landmarks Preservation Commission and by other entities having jurisdiction over historic properties such as the State Historic Preservation Office (SHPO). The DDC Historic Preservation Office should be contacted at the outset of projects potentially within the jurisdiction of the LPC to verify the designation status of the property. Assistance is provided throughout the application and approval process, and HPO may also monitor the job during construction. The schedule of LPC submission deadlines and hearings is available on the LPC website. Please note that "landmark quality" properties also are identified by the DDC Historic Preservation Office. (See Historic Preservation Design Criteria in Chapter 06: Design Criteria of this Guide for details).

3) PROCEDURES

There is usually only one formal application to the Landmarks Preservation Commission for a given project; however, there are sometimes two or more separate submissions. The first submission accompanies the application form for the proposed work. This is typically done during the Design Development phase when a clear design direction has been determined. At this point a Landmarks Preservation Commission staff member will be assigned to the project, and the likely level of action, either staff review or public hearing, will be established.

The second required submission is for the final approval, issued in the form of a permit or report. This submission includes final construction documents including specifications. For some simple and straight-forward projects, a single submission near the end of design will be sufficient. When a submission for final approval has been deemed complete by LPC staff, the Commission has 45 business days to issue a report.

For more complex projects, such as those involving a Pre-Schematic Phase or extensive alterations to a landmark, it is important to involve the LPC early. For these projects it is useful to have a pre-submission meeting with the LPC staff to discuss project scope and possible alternative design strategies. It is also useful to discuss the scope of work and get advice on appropriate presentation materials. Initial contact could be by telephone or by a meeting, depending on the nature of the project. HPO will guide the Project Team on the appropriate timing for interactions with LPC based on the nature of the project.

For projects that require a pre-submission meeting with LPC, the Consultant shall prepare all information as required to discuss alternate strategies, schematic designs or scopes of work with the LPC staff. DDC will receive and review the Consultant-prepared materials prior to the meeting with LPC. This meeting should include the Sponsor Agency, the Consultant, staff of the DDC Historic Preservation Office, the DDC project manager and team leader. After approval by DDC, the Consultant will deliver the required submission materials to the LPC.

4) SUBMITTAL REQUIREMENTS FOR INITIAL APPLICATION

Please see the Permit Application Guide on the LPC website <http://NYC.gov/landmarks> for the latest submission requirements for various types of work. These may specify materials in addition to the general illustrative materials described below. All submission materials must be approved by DDC prior to submitting to the LPC. Two sets are required for the LPC and two sets for DDC.

a. Application Form

The application form will be prepared by the HPO staff, with the Chief of Historic Preservation entered as "Person Filing Application," and the Associate Commissioner of A&E signing as "Owner."

b. Landmark Presentation Illustrative Materials

Materials illustrating the proposed design shall include a full and complete set of drawings, renderings, photographs, and photo-montages that clearly and completely describe all the proposed work that affects the protected features, interior or exterior, of the landmark structure or site. Materials will typically show, side by side, historic, existing, and proposed conditions. These typically include all relevant floor plans, building sections, exterior elevations, interior elevations if applicable, details, and building and site context.

c. Samples

One set of material and color samples with supporting product literature and identification specifications is required.

d. Research

Relevant research, test reports, and documentation shall be submitted with the application.

e. Presentations to the Landmarks Preservation Commission Staff

Accompanied by DDC staff and the Sponsor Agency representative, the Consultant is required to make presentations to the LPC staff.

f. Mock-Up Requirements

For all rooftop additions and/or mechanical equipment installations, the Consultant will be required to provide all necessary information for the construction of a wood or light steel frame mock-up matching the overall size and configuration of the proposed addition/equipment. Photographs of the completed mock-up shall be part of the LPC submission package. In certain cases, the mock-up may be required to remain in place for a period of time to allow Commission members an opportunity to visit the site. Costs for the construction of the mock-up shall be identified as a reimbursable expense or part of the construction budget, depending on the direction of the DDC project manager.

5) SUBMITTAL REQUIREMENTS AND PROCEDURES FOR A PUBLIC HEARING (IF REQUIRED)

Projects requiring public hearing review can be scheduled about five weeks after the Commission receives a substantially complete application. Hearings are held on at least two Tuesdays per month, generally during normal business hours. The scheduled time for each item on the day's calendar is posted on the LPC web site at the end of the week before the hearing.

If a public hearing is required for LPC review, the Consultant must first present the proposed project to the appropriate committee of the local community board prior to the hearing. The Sponsor Agency will typically take the lead in scheduling this with the assistance of DDC and the Consultant. Usually one presentation to the CB committee is sufficient. However, depending on the nature of the proposed project, the Consultant may be required to present to the full Community board as well. LPC requires that the community board have the opportunity to review the project and submit a written resolution by the time of the scheduled Landmarks public hearing.

It is at this stage that the Consultant must include OCON for input regarding the presentation that the Consultant plans on showing to the Community Board. OCON may require some revisions be made and provide the Consultant with contacts and guidance on engaging the Community Board. Once the presentation has been executed, the Consultant will ask the Community Board to provide a "resolution" letter which is then included as part of the submission to LPC.

Please note that most of the 59 Community Board's Committees meet only once per month and do not meet at all in July and August.

Illustrative materials for the public hearing are as described in section (4) above. In addition, the Consultant must provide 12 sets of 11 by 17-inch, color copies of the presentation for distribution to the LPC commissioners. Digital presentations in final form can be submitted by PDF or thumb-drive about one week prior to the hearing. Presentation boards are also acceptable.

At the close of the public hearing, the Commission will vote on the project, request revisions or additional information, or defer action. A vote, which requires a majority of the 11 commissioners, may be to approve, approve with specified modifications, approve with revisions to be worked out with staff, or deny. A vote (other than a denial) will result in issuance of a Status Update Letter describing the action taken. This letter will indicate that a permit (or report) will be issued upon review of final contract documents that conform to the Commission's approval.

6) SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL

Final Construction Documents shall include:

- i. Two sets of signed and sealed drawings and one set of specifications each for LPC and DDC.
- ii. One set of material and color samples as well as related product literature and specifications.

7) CHANGES DURING CONSTRUCTION

If there are changes to the design during construction that deviate from the approved LPC drawings, the Consultant shall prepare for submission to LPC all necessary drawings and documentation illustrating the changes, with a letter requesting an amendment prepared by the HPO staff.

8) NOTICE OF COMPLIANCE FROM LPC

At the end of the construction phase, LPC will issue a Notice of Compliance if so requested. The LPC Notice of Compliance is a requirement by the Department of Buildings before its final sign-off. The Consultant shall submit to DDC final photographs with key of all work that affected any of the protected features of the landmark structure or site. DDC will forward these photographs to LPC with a request for issuance of a Notice of Compliance. The Consultant shall also submit to DDC and LPC as-built drawings for any portions of the work that deviate from the LPC-approved drawings. After determining that all the work was completed in accordance with the approved plans and specifications as well as any amendments to the approval, LPC will issue the Notice of Compliance.

H. ADDITIONAL REGULATORY AGENCIES

Depending on circumstances, approval may also be required from other agencies. The following list is intended as a guide and should not be considered comprehensive.

1) NYC DEPARTMENT OF CITY PLANNING (DCP) AND THE CITY PLANNING COMMISSION (CPC)

The DCP and the CPC have overall responsibility for zoning variances, special permits, and Uniform Land Use Review Procedure (ULURP). ULURP is required for zoning changes, site selection, acquisition and disposition of City owned property, select concession contracts, select revocable consents, permits, and map changes. Consultant services in support or preparation of ULURP shall be identified in the Agreement.

2) NYC DEPARTMENT OF TRANSPORTATION (DOT)

DOT is responsible for operations relating to streets, bridges, and tunnels, and the issuance of necessary permits. These include review and approval, as necessary, by:

a. Administrative Superintendent of Highway Operations (ASHO)

ASHO may place a hold on a permit when the proposed work location is scheduled for resurfacing by DOT in the near future or was resurfaced within the past 18 months.

ASHO may release the hold if the proposed work can be scheduled or designed in a way that does not interfere with planned or recent work. ASHO may also place a hold when the proposed work location is part of a DDC street reconstruction project, in which case DDC will review the permit and seek to coordinate the proposed work with the reconstruction

b. Bureau of Permit Management and Construction Control (the Bureau)

The Bureau issues permits relating to the maintenance and repair of public roads, streets, highways, parkways, bridges, and tunnels. Permits are required to be taken out by the Contractor for street closings, sidewalk and roadway construction, protective bridges (sidewalk sheds) and other similar construction operations. The Consultant may be required to prepare necessary drawings.

c. Office of Franchises, Concessions, and Revocable Consent (OFCRC)

Approval from the OFCRC of DOT is required for any construction extending beyond the property line, whether above or below street level, that is not exempt by provisions of the NYC Building Code, and underground tunnels, vaults, and utilities. It is required for other work, including the construction of bridges over streets and tunnels or utilities under roadways. Such approval can be withdrawn at any time (revocable consent). Any above ground work, requiring revocable consent will also require the approval of the PDC or LPC.

3) METROPOLITAN TRANSIT AUTHORITY (MTA)

If the proposed construction could infringe upon or adversely affect structures of subsurface, surface, or elevated transit systems, it will be necessary to receive the approval of the MTA prior to receiving approval by the DOB.

4) FIRE DEPARTMENT (FDNY)

The FDNY's Bureau of Fire Prevention enforces all laws and rules pertaining to the prevention of fire.

5) NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)

The NYC DEP enforces all laws and rules pertaining to environmental conditions and hazardous materials and includes:

a. Asbestos Control Program

While DEP oversees asbestos reporting and abatement in the City, DDC has primary responsibility for identifying asbestos containing materials at DDC projects and developing drawings and specifications for their abatement (see Section A-1 of this Appendix, Part A, "Design Process", and Part K, "Hazardous Materials"). In most instances, the Consultant's responsibility is limited to identifying potential areas of asbestos containing material and coordinating other work with abatement work. Asbestos forms may need to be filed with DEP regardless of whether the overall project requires filing with DOB.

b. Bureau of Environmental Planning and Analysis

The Bureau supports the City and State Environmental Quality Review processes (CEQR and SEQOR) through which City agencies may be required to assess, disclose, and plan for the mitigation of the environmental consequences of projects (see NYS Department of Environmental Conservation below). Consultant services in support of CEQR/SEQOR, including environmental assessment statements (EAS) and environmental impact statements (EIS), shall be identified in the Agreement.

c. Division of Air and Noise Policy, Permitting and Enforcement

This division regulates activities and equipment that emit atmospheric contaminants, including demolition activities that can produce airborne particulate matter, boilers that can produce noxious gases, and construction vehicles that can produce both kinds of contaminants. This division also enforces the NYC Noise Code, Local Law 113. The Consultant is responsible for ensuring that noise-producing elements of the project scope, such as outdoor mechanical equipment, comply with code.

d. Bureau of Water and Sewer Operations (BWSO)

BWSO authorizes the repair or replacement of water and sewer lines, the installation of backflow prevention devices, and the connection of domestic water, sprinkler, sanitary, and stormwater systems to City water and sewer mains. BWSO also provides water pressure tests for connections to new domestic water and sprinkler systems and confirms the availability of sewer service for new sanitary and stormwater systems. If applicable to a project, BWSO approvals are required to obtain DOB approvals (see Appendix A-1 Section I, "Plumbing Engineering Design Criteria").

e. Bureau of Wastewater Treatment (BWT)

Construction activities such as excavations and well drilling that will discharge more than 10,000 gallons per day of ground water into the public sewers must obtain a Dewatering Permit from BWT. Projects involving well point de-watering in Brooklyn and Queens must also contact the NYS Department of Environmental Conservation (see below).

f. NYC Water Board

The Board manages DEP's Comprehensive Water Reuse Program, which offers a rate reduction for buildings that capture and use stormwater.

6) NYC DEPARTMENT OF PARKS AND RECREATION (NYC PARKS)

NYC Parks approves projects within parks or designated parkland, as well as removal or planting of street trees. Street tree plantings may be required for new construction or significant renovation projects as required by DCP regulations. Street tree planting approval is required prior to DOB or DOT approval. Street tree plantings must be inspected and accepted by NYC Parks Forestry division to obtain DOB final sign-off or Certificate of Occupancy.

7) NYC DEPARTMENT OF HEALTH AND MENTAL HYGIENE (DOHMH)

The DOHMH approves the operations of food service establishments and swimming pool facilities. DOHMH regulations also pertain to other types of facilities including day care centers and animal care facilities.

8) NYC DEPARTMENT OF SANITATION (DSNY)

The DSNY approves refuse disposal methods, including disposal of special refuse.

9) ENVIRONMENTAL CONTROL BOARD (ECB)

The ECB is the division of the Office of Administrative Trials and Hearings (OATH) that hears cases on violations of City laws that protect the public's health, safety, and environment issued by agencies including, but not limited to, the DOB, DOT, FDNY, DEP, and NYC Parks.

10) UTILITY COMPANIES AND NYS ENERGY RESEARCH AND DEVELOPMENT AUTHORITY (NYSERDA)

Utility companies review and approve applications for electric, gas, and steam connections. Consultants are also expected to be aware of and help Sponsor Agencies apply for energy conservation incentive programs by NYSERDA and individual utility companies.

11) COMMUNITY BOARDS

Community Boards review and make recommendations pertaining to projects located within their boundaries. All projects that must undertake a PDC or LPC review must begin with a presentation reviewed by the community board and/or particular committee and/or the Full Board themselves. Consultants may need to present new buildings, major additions, and landscape projects to at least one group the community board designates and on occasion more than one. The Consultant should be in direct contact with DDC/Office of Community Outreach & Notification (OCON) to begin this process. The Consultant is also responsible for all services in support of Community Board notification and review, if required or if requested by DDC/OCON.

12) MAYOR'S OFFICE OF ENVIRONMENTAL COORDINATION (MOEC)

This office coordinates the City Environmental Quality Review (CEQR) process. DDC projects that have potential for significant effects on the environment, including historic resources, are subject to CEQR. During the process these potential effects are identified and disclosed, and options for avoiding or mitigating the effects are proposed. See the CEQR Technical Manual (<https://www1.nyc.gov/site/oec/environmental-quality-review/technical-manual.page>). CEQR requirements and procedures are equivalent to those for the New York State Environmental Quality Review (SEQR) (see section 13, below). OER has an electronic filing process for applications at the following website: <https://a002-epic.nyc.gov/app/search/advanced>

13) NEW YORK STATE AGENCIES

a. Department of Environmental Conservation (DEC)

DEC administers and enforces the State's Environmental Conservation Law (ECL). Consultants for DDC projects will work primarily with DEC's office for Region 2, which covers New York City, and with the Division of Environmental Permits, which conducts environmental assessments and reviews projects that require DEC permits. Permit applications are processed according to the ECL's Uniform Procedures Act. The most common DEC reviews, permits, and authorizations required for DDC projects include:

i. State Environmental Quality Review (SEQR)

DDC projects that receive State funding, require a DEC permit, or require discretionary action such as a variance by a State agency, must proceed through SEQR. Under SEQR, an Environmental Assessment Statement (EAS) must be prepared to identify potential environmental impacts; if such impacts are anticipated, an environmental impact statement (EIS) must be prepared to describe how they will be mitigated.

Under SEQR, projects may be designated as follows:

1. Type I Action: Projects that meet or exceed statewide or agency thresholds, typically – but not always – requiring the preparation of an EIS.
2. Type II Action: Projects that do not require further SEQR review.
3. Unlisted Action: Projects that do not meet Type I thresholds but may still require an EIS.

ii. State Pollutant Discharge Elimination System (SPDES)

This permit is required for construction activities involving soil disturbance of at least one (1) acre, or less than 1 acre where DEC finds a potential threat to water quality. Construction activities involving soil disturbance of more than 5 acres at a time must comply with additional requirements. To obtain approval, projects must prepare a Stormwater Pollution Prevention Plan (SWPPP) that conforms to the NYS Stormwater Management Design Manual. Because the SWPPP for a project in New York City must be approved by DEP (see above), such projects must also conform to the DEP Guidelines for the Design and Construction of Stormwater Management Systems.

iii. Coastal Erosion Hazard Area

This permit is required for construction activities on land along coastal waters including the Hudson, Harlem, and East Rivers; the Kill van Kull and Arthur Kill; Long Island Sound; the Atlantic Ocean; and all connecting water bodies, bays, harbors, shallows, and wetlands. To obtain approval, projects must have public benefit, must not cause an increase in erosion or have adverse effects on protective features or natural resources, and must be safe from flood and erosion damage. DEC maintains maps of the State's Coastal Erosion Hazard Areas.

iv. Tidal Wetlands and Freshwater Wetlands

This permit is required for construction activities that could impact wetland functions. To obtain approval, projects must not degrade or destroy any wetlands. DEC maintains the State's Fisheries (freshwater wetlands) Maps and Tidal Wetland Inventory. In general, the City's wetlands are concentrated around the south shores of Brooklyn and Queens (see Critical Environmental Areas below), the north shore of Queens, the southeast shore of the Bronx, and the north and west shores of Staten Island, with small tidal and freshwater wetland areas scattered throughout the five boroughs, especially Staten Island and the major parklands of northern Queens.

v. Critical Environmental Areas (CEA)

The shoreline of Jamaica Bay, which includes parts of Brooklyn and Queens, is the only designated CEA in New York City. Projects subject to SEQRA that are in or substantially contiguous to this area must specifically evaluate potential impacts to the unique characteristics of the CEA, which may include its benefit or threat to human health; valuable natural, agricultural, cultural, historic, recreational, or educational qualities; or an inherent environmental sensitivity to change.

vi. Environmental Remediation

DEC maintains the State's Registry of Inactive Hazardous Waste Disposal Sites and, together with the New York City Mayor's Office of Environmental Remediation (OER), oversees the remediation of State Superfund Sites and brownfields in the City.

b. Office of Parks, Recreation and Historic Preservation (OPRHP)

In addition to administering the seven (7) New York State parks within the City, as well as Hudson River Park, jointly administered with the City through the Hudson River Park Trust, OPRHP administers the State's Open Space Conservation Plan, which identifies conservation and historic preservation priorities on public and private property in the City and throughout the State.

c. State Historic Preservation Office (SHPO):

This office of OPRHP maintains the National and New York State Registers of Historic Places (see Landmarks Preservation Commission above) and maps of known areas of archeological sensitivity. SHPO acts as the primary reviewer of projects receiving state or federal funding that are found through SEQR (see DEC above) to have potential impacts on Register-listed properties or archeological resources. Projects receiving only City funding are reviewed by LPC.

d. Department of State

Projects located in Coastal Erosion Hazard Areas (see above) must obtain a Coastal Consistency Certification from the Department's Coastal Management Program. The certification will be incorporated into the permit decision of the U.S. Army Corps of Engineers if federal approval is required, or of DEC if no federal approval is required.

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