10.11 Security and Protection Facilities Installation

Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project Site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

Temporary Erosion and Sedimentation Control: Comply with requirements specified in Section 12.3.7 "Soil Erosion and Sedimentation Control" in the Basis of Design.

Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

The Design-Builder must submit for approval a Rodent Control Plan to survey, monitor and Institute practices to minimize attraction and harboring of rodents, roaches, and other pests and perform extermination and control procedures at regular intervals such that the Project will be free of pests and their residues throughout construction to Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in accordance with NYC DOB requirements and in a manner that will prevent people and animals from easily entering site except by entrance gates.

a. Extent of Fence: As required to enclose entire project site or portion determined sufficient to accommodate construction operations.

Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

Covered Walkway: Where necessary to conduct operations, including delivery of materials erect protective, covered walkway for passage of individuals through or adjacent to project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.

a. Construct covered walkways using scaffold or shoring framing.

b. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.

c. Paint and maintain appearance of walkway for duration of the Work.

d. Include installation details on shop drawings.

Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

a. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by DDC and tenants from fumes and noise.

a. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.

b. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.

c. Insulate partitions to control noise transmission to occupied areas.

d. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.

e. Protect air-handling equipment.

f. Provide walk-off mats at each entrance through temporary partition.

Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241 and FDNY requirements; Prohibit smoking in construction areas.

a. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

b. Develop and supervise an overall fire-prevention and -protection program for personnel at project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

c. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

10.12 Project Site Security

For the purposes of safeguarding and protecting the Project Site, the Design-Builder must provide competent Security Guard Service on the site, beginning on the date on which the Design-Builder commences actual construction work, or on such earlier date on which there is activity at the site related to the Work, including without limitation, delivery of materials or construction set-up. The Design-Builder must continue to provide such Security Guard Service until the date on which it completes all required work at the site, including all punch list work or earlier if so authorized by the DDC. Throughout the specified time period, there shall be no less than one Security Guard on duty every day including Saturdays, Sundays and Holidays, 24 hours a day

Entrance to the Site by the Design-Builder's personnel, representatives of subcontractors, suppliers of material as well as DDC and its authorized personnel, will be managed by the Design-Builder. A Security Guard must be posted at each active entrance to the Project site. All personnel entering the Sie will be required to pass through a checkpoint where the Guard will verify that anyone attempting access to the Site is properly cleared and on the access roster.

a. A visitor access log will be maintained at the access control point. All visitors will sign in and out each time they enter or depart the site.

b. If any unauthorized individual is found on the Project site, a security incident must be initiated.

Every Security Guard will be required to hold a "Certificate of Fitness" issued by the FDNY. Every Security Guard must, during his/her tour of duty, perform the duties of Fire Guard in addition to his/her security obligations.

Each Security Guard must be instructed by the Design-Builder to include in his/her duties the entire construction site including all Field Offices, temporary structures, and equipment, materials, etc.

Should the Design-Builder consider the security requirements outlined above inadequate, then the Design-Builder must provide such additional security as it thinks necessary at its cost.

The Design-Builder and its subcontractors will be responsible for safeguarding and protecting their own work, materials, tools and equipment. Nothing contained in this Article will diminish in any way the responsibility of the Design-Builder and each subcontractor for its own work, materials, tools, equipment, nor for any of the other risks and obligations indicated hereinbefore in these Contract Documents.

10.13 Moisture and Mold Control

Design-Builder's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

a. Protect porous materials from water damage.

b. Protect stored and installed material from flowing or standing water.

c. Keep porous and organic materials from coming into prolonged contact with concrete.

d. Remove standing water from decks.

e. Keep deck openings covered or dammed.

Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

a. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.

b. Keep interior spaces reasonably clean and protected from water damage.

c. Periodically collect and remove waste containing cellulose or other organic matter.

d. Discard or replace water-damaged material.

e. Do not install material that is wet.

f. Discard, replace, or clean stored or installed material that begins to grow mold.

g. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows.

Control moisture and humidity inside building by maintaining effective dry-in conditions.

Use permanent HVAC system to control humidity.

Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.

Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to PMC.

Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

10.14 Operation, Termination and Removal

Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

Maintenance: Maintain facilities in good operating condition until removal.

a. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

Operate project-identification-sign lighting daily from dusk until 12:00 midnight.

Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until substantial completion.

Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

a. Materials and facilities that constitute temporary facilities are property of Design-Builder. DDC reserves right to take possession of Project identification signs.

b. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

c. At substantial completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified Article 15 "Closeout Procedures."

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Payment Procedures

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Article 11 Payment Procedures

11.1 Summary

This Section expands upon Article 24 "Payment Provisions" of Volume 1-Design-Build Agreement and includes cost breakdown and formatting requirements necessary to prepare and process Applications for Payment.

Related Requirements:

a. Article 6 - "Progress Documentation –CPM" for administrative requirements governing the preparation and submittal of the Design-Builder's Project Schedule.

b. Article 12 - "Sustainability Requirements" for administrative requirements governing submittal of cost breakdown information required for LEED documentation.

11.2 Schedule of Values – Detailed Payment Breakdown

In conformance with the Schedule of Values established under the Agreement, provide an expanded detailed breakdown of the Lump Sum Amount in sufficient detail to facilitate DDC evaluation of Applications for Payment. Provide multiple line items for principal Subcontract amounts in excess of five percent of the Lump Sum Amount.

a. Include separate line items under Design-Builder and principal Subcontracts for LEED documentation and other project closeout requirements in an amount totaling five percent of the Lump Sum Amount and subcontract amount.

b. Coordinate preparation of the payment breakdown with preparation of Design-Builder's CPM project schedule.

c. Round amounts to nearest whole dollar; total must equal the Lump Sum Amount.

d. Provide a separate line item in the payment breakdown for each part of the work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

e. Provide separate line items in the payment breakdown for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

f. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

g. Each item in both the payment breakdown and Applications for Payment must be a complete total cost including proportionate share of general overhead and profit for each item.

h. Temporary facilities and other major cost items that are not a direct cost of actual Work in place may be shown either as separate line items in the Payment Breakdown or distributed as general overhead expense, at Design-Builder's option.

i. Schedule Updating: Update and resubmit the Payment Breakdown before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Lump Sum Amount.

Coordinate line items in the payment breakdown with other required administrative forms and schedules, including the following:

a. Payment Request forms with continuation sheets.

b. Submittal schedule.

c. Construction schedule.

d. Items required to be indicated as separate activities in Design-Builder's Project Schedule.

Submit the Payment Breakdown for review and acceptance by the DDC at the earliest possible date, but no later than thirty days following NTP.

Format and Content: Use system mutually agreed to (either Uniformat of MasterFormat) for establishing line items for the Payment Breakdown. Provide at least one-line item for each Specification Section.

a. Identification: Include the following Project identification on the Payment Breakdown.

i. Project name and location.

ii. Name of PMC.

iii. PMC's Project number.

iv. Design-Builder's name and address.

v. Date of submittal.

b. Arrange the Payment Breakdown in tabular form with separate columns to indicate the following for each item listed:

i. Related Specification Section or Division.

ii. Description of the Work.

iii. Name of subcontractor.

iv. Name of manufacturer or fabricator.

v. Name of supplier.

vi. Change Orders (numbers) that affect value.

vii. Dollar value of the following, as a percentage of the Lump Sum Amount to nearest one-hundredth percent, adjusted to total 100 percent.

1) Labor.

2) Materials.

3) Equipment.

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Sustainability Requirements

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Article 12 Sustainability Requirements

12.1 Summary

This section includes administrative and procedural requirements for the following:

a. General requirements for project specific goals.

b. Construction records and material verification submittals.

c. Green Building Materials Certification Form.

12.2 General Requirements

The Design-Builder is required to implement practices and procedures to meet the Project's sustainable design performance goals, which meet the requirements of LEED Gold certification as described below. Specific project goals that may impact this area of Work include: use of recycled-content materials; use of low-emitting materials; and construction waste recycling. The Design-Builder must ensure that the requirements related to these goals as indicated in various sections of these Contract Documents are fully implemented, consistent with overall Project requirements.

The Project must be designed and constructed in accordance with all relevant Local Laws and sustainability regulations.

Substitutions, or other changes to the work proposed by the Design-Builder, will not be allowed if such changes compromise the stated Green Building Performance Criteria.

12.3 Definitions

Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by a Forest Stewardship Council FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Certificates must include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.

Endangered Wood: Any wood product made from a species listed under the Convention on International Trade of Wild Fauna and Flora (CITES) Appendix I, II or III, must have been obtained in compliance with the applicable CITES regulations. Wood species listed under these regulations include the following: Alerce, Brazilian rosewood, Afrormosia, Lignum vitae, Mahogany, African cherry Agarwood, Ayuque, Ajo, Gavilan, Himalayan Yew, Guatemalan fir, Oleander-leafed podocarps, Pilgerodendron, Parlatore's podocarp, Red sandalwood.

FSC Certified Content: Wood content that has been harvested in accordance with the "FSC Principles and Criteria" for well-managed forests developed by the Forest Stewardship Council (FSC).

Rapidly Renewable Materials: Materials made from plants that are typically harvested within a 10-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.

Recycled Content: The recycled content value of a material assembly will be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

a. "Post-consumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.

b. "Pre-consumer" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

c. Do not include mechanical and electrical components in the calculation of recycled content.

Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles (160 km) of the Project Site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) will contribute to the regional value.

Salvaged Content: Materials (from another building) that have been salvaged, refurbished, or reused.

12.4 Related Sections

Article 13 Environmental Requirements

Article 14 Construction Waste Management and Disposal.

Article 19 General Commissioning Requirements for Building Enclosure.

Article 20 General Commissioning Requirements for MEP Systems.

LEED and Sustainability Requirements specific to the Work as indicated in Volume 3 – Specific Project Requirements of the Contract Documents.

12.5 References

General: Comply with the applicable provisions of the referenced standards except as modified by governing codes. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion will be considered mandatory. In the event of conflict between referenced standards and this Contract Documents section or within themselves, the more stringent standard or requirement will govern.

a. American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE).

b. Carpet and Rug Institute (CRI)

c. Environmental Protection Agency (EPA).

d. Green Seal (GS)

e. Illuminating Engineering Society of North America (IESNA).

f. Sheet Metal and Air Conditional National Contractor Association (SMACNA).

g. South Coast Air Quality Management District (SQAMD)

12.6 Sustainable Design Requirements

In performing the Work, the Design-Builder is responsible for complying with Applicable Law and other Standards of Performance as stated in the Contract Documents. The following are applicable to the Project. Whenever the Project Requirements are inconsistent with the requirements provided below, the requirements provided below will prevail.

The Design-Builder must comply with Local Law 32-2016 and Local Law 31-2016, as codified in Chapter 9: Capital Projects and Budget, Section 224.1: Green Building Standards of the New York City Charter and Chapter 10: Green Building Standards of Title 43 of the Rules of the City of New York, which apply to all City projects.

The Design-Builder must also comply with direction on LL31 and LL32 of 2016 as provided by the Mayor's Office of Environmental Coordination (MOEC) in the letter dated June 30, 2020, which applies only to this Project and has been included with the Reference Documents.

a) **LL32-2016:** The Design-Builder is fully responsible for achieving LEED Gold Core + Shell Certification for the project under LL32-2016, as described in the MOEC letter. This certification is to be achieved by the Design-Builder independently from the LEED certification of the future Queens Detention Facility. See Item #3 below for clarification on further responsibilities of the Design-Builder in relation to the building's LEED certification.

b) **LL31-2016:** The Design-Builder is fully responsible for meeting the requirements of LL31-2016 for the entire building project. The Design-Builder must design and construct a low energy intensity building that meets, at least, the least stringent of the following three paths:

   i) The source energy use intensity (EUI) is 50% less than the EUI if designed and built according to the prescriptive and mandatory ASHRAE 90.1-2013 requirements, using Appendix G with Addenda. The Design-Builder is responsible for identifying the Target Source EUI using this path, as it is dependent on the building design.

   ii) The source EUI is 50% less than the median source EUI of similar buildings in NYC, according to benchmarking data obtained under article 309 of title 28 of the administrative code for CY2015. DDC has determined the Target Source EUI using this path is 17.8 kBtu/sf/year for parking structures.

   iii) The Target Source EUI is 38 kBtu/sf/year for all building typologies.

   iv) As part of Final Completion, the Design-Builder must certify that the project has been designed, constructed and configured to meet the LL31-2016 Low Energy Intensity Building requirements via confirmation document to be provided by the City.

LEED:

c) The LEED boundary is to include the entire scope of Work by the Design-Builder. However, in accordance with USGBC regulations, the LEED certification will exclude the parking garage in the total gross square footage.

d) LEED Gold certification may require additional measures to be included in the building and site design and construction beyond what is listed for individual trades in the RFP (e.g., mechanical, landscape). The Design-Builder is to determine which credits need to be pursued in order to achieve LEED Gold certification and must incorporate and implement all necessary measures into the project.

e) A 5-point buffer above the minimum points needed for Gold level certification must be maintained at all times.

f) Refer to the LEED Reference Guide, addenda and interpretations for relevant and updated LEED-specific requirements. If further technical guidance is needed, a Project Credit Interpretation Ruling (CIR) can be obtained.

g) Provide LEED Online access at manager level to: ddcsustainability@ddc.nyc.gov

   i) For confidentiality purposes, LEED Online access should be limited to email addresses belonging to a company/organization such as the above, wherever possible, in lieu of individuals within an organization.

h) Submit LEED via split design and construction reviews. Submit LEED preliminary design submission within 60 days of completion of the Final Design Documents for the Project and LEED preliminary construction review within 60 days of Substantial Completion.

Parksmart: Parksmart certification at any level will be considered an enhancement and is not required.

If the Design-Builder Proposal Commitments include Parksmart certification at any level: Submit Parksmart for GBCI review simultaneously with the LEED preliminary construction submission.

12.7 Sustainable Construction Submittals

This section contains the outline of submittal requirements. All portions of this section may not be applicable to this work.

Sustainable construction submittals are in addition to other submittals. If a submitted item is identical to that submitted to comply with other Contract requirements, then the Design-Builder must furnish a separate submittal to verify compliance with indicated sustainable construction submission requirements.

Detailed Submittal Requirements: Items below define the information and documents to be provided for each type of submittal as required by other specification sections.

a. Green Building Materials Certification Form (GBMCF): Information to be supplied for this form (blank copy provided at the end of this Article) must include some or all of the following items as appropriate in accordance with the final design and Volume 3 – Specific Project Requirements:

i. Product name and Vendor or Manufacturer:

ii. Cost breakdowns for the materials included in any of the Design-Builder's scope of Work. Cost reporting must include:

1) The total cost for the Design-Builder's Work.

2) Itemized material costs (excluding the Design-Builder's labor, equipment, overhead and profit).

iii. The percentages (by weight) of post-consumer and/or post-industrial recycled content in the supplied product(s).

iv. The percentages (by weight) of regional material content in the supplied product.

v. The percentage (by weight) of rapidly renewable content in the supplied products.

vi. The percentage of FSC certified content in the supplied products. Calculate percentage by weight, volume and cost. Use whichever provides the highest percentage of FSC content.

vii. The percentage (by weight) of salvaged content in the supplied products.

viii. Volatile Organic Compound (VOC) content of all field-applied adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon.

b. GBMCF BACK_UP DOCUMENTATION: These documents are used to validate the information provided on the GBMCF (except cost data). For each material listed on the GBMCF, provide documentation to certify the material's green building attributes, as applicable:

i. Recycled content: Provide published product literature or letter of certification on the manufacturer's letterhead certifying the amounts of post-consumer and/or post-industrial content.

ii. Regional manufacturing (within 100-mile radius): Provide published product literature or letter of certification on the manufacturer's letterhead indicating the city/state where the manufacturing plant is located and the direct distance in miles from the project site.

iii. Regional raw materials (within 100-mile radius):

1) Provide published product literature or letter of certification on the manufacturer's letterhead indicating the city/state from which each of the raw materials in the product were extracted, harvested or recovered, and the direct distance in miles from the project site.

2) If only some of the raw materials for a particular product or assembly originate within a 100-mile radius of the project site, provide the percentage (by weight) that these materials comprise in the complete product.

iv. FSC Certified Wood:

1) Provide vendor invoices for each FSC wood product or assembly. Invoices must include chain-of-custody certificate numbers and itemized costs for all certified products.

2) For assemblies, provide the percentage (by cost and by weight) of the assembly that is FSC-certified wood.

v. Rapidly renewable resources: Provide published product literature or letter of certification on the manufacturer's letterhead indicating the rapidly renewable content in the installed product.

vi. VOC content: Provide Material Safety Data Sheets (MSDS) certifying the Volatile Organic Compound content of the adhesive, sealant, paint, or coating products. VOC content is to be reported in grams/liter or lbs./gallon. If the MSDS does not show the product's VOC content, this information must be provided through other published product literature from the manufacturer or stated in a letter of certification from the product manufacturer on the manufacturer's letterhead.

c. PRODUCT CUT SHEETS: Provide product cut sheets with the Design-Builder's stamp, confirming that the submitted products are the products installed in the project.

d. CRI GREEN LABEL CERTIFICATION: For carpets and carpet cushions, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the "Green Label Plus" IAQ testing program of the Carpet and Rug Institute of Dalton, GA.

e. CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER RESINS: For all composite wood, engineered wood and agrifiber products, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that that the products do not contain added urea-formaldehyde or phenol-formaldehyde resins.

f. CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER LAMINATING ADHESIVES: For all laminating adhesives used with composite wood, engineered wood and agrifiber products (e.g., adhesives used to laminate wood veneers to an engineered wood substrate), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that that the adhesive products do not contain urea-formaldehyde.

g. CERTIFICATION OF "SFI-LABELED" WOOD PRODUCTS AND PRODUCERS: Provide documentation for wood products and/or wood product producers that are participants the Sustainable Forestry Initiative (SFI) Labeling Program of the American Forest and Paper Association of Washington, DC

h. GREEN SEAL COMPLIANCE: Provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the following product types comply with the VOC limits and chemical component restrictions developed by the Green Seal organization of Washington, DC:

i. Topcoat paints: refer to Green Seal standard GS-11.

ii. Anti-corrosive and Anti-rust paints: refer to Green Seal standard GC-03.

iii. Aerosol Adhesives: refer to Green Seal standard GS-36.

i. CARPET COMPONENT IDENTIFICATION: For all synthetic carpets, provide documentation from the manufacturer (on the manufacturer's letterhead) of the specific carpet component identification code that is printed on, or attached to, the carpet supplied for the project. The code must identify the carpet face fiber, and may identify its primary backing, secondary backing, adhesive, adhesive filler, and dyes.

j. ENERGY STAR LABEL CERTIFICATION: For applicable appliances, office equipment, electronics, and commercial food service equipment, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products are rated under the U.S. EPA/DOE EnergyStar program.

k. HIGH ALBEDO ROOFING MATERIALS: For exposed roofing membranes, pavers, and ballast products, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the following minimum (SRI) values:

   i. 78 for low-sloped roofing applications (slope ≤ 2:12)

   ii. 29 for steep-sloped roofing applications (slope ≥ 2:12)

   iii. SRI values will be calculated according to ASTM E 1980. Reflectance will be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance will be measured according to ASTM E 408 or ASTM C 1371.

   iv. Vegetated roof surfaces are exempt from the SRI criteria.

l. CONCRETE MIXES: For all poured concrete provide concrete mix designs and volumes to verify the percentage of recycled material included, by weight.

m. HIGH ALBEDO PAVING AND WALKWAY MATERIALS: For paving and walkway materials made from concrete or brick provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying a minimum Solar Reflectance Index (SRI) value of 29. SRI values will be calculated according to ASTM E 1980. Reflectance will be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance will be measured according to ASTM E 408 or ASTM C 1371.

n. LOW MERCURY LAMPS: For all lighting fixtures (all LED), installed in the Project, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying:

   i. The mercury content or content range per lamp in milligrams or picograms;

   ii. The design light output per lamp (light at 40 percent of a lamp's useful life) in lumens; and

   iii. The rated average life of the lamp in hours.

   iv. In addition, provide the total number of each lamp type installed in the Project.

Green Building Submittal Packages: The green building submittal information must be assembled into one (1) package per Specific Project Requirement as outlined in Volume 3 of the Contract Documents. Incomplete or

inaccurate green building submittals may be used as the basis for rejecting the submitted products or assemblies.

Project Materials Cost Data: Provide statements (at a minimum) quarterly indicating total cost for building materials used for project, excluding mechanical, electrical, and plumbing components, and excluding specialty items such as elevators and equipment.

o. Maintain spreadsheets for tabulation of Project information as indicated by the GBMC Form included with this Article.

ACTION PLANS: The Design-Builder must prepare, maintain and submit for regular review by the DDC documentation related to ongoing conformance with the sustainable design requirements, as follows:

a. Prior to commencement of Work, the Design-Builder must submit the following written plans in accordance with the scope of Work: These plans must be implemented throughout the duration of the Project construction.

i. Products with Environmental Product Declarations (EPDs).

ii. Products complying with requirements for multi-attribute optimization.

iii. Products complying with requirements for raw material and source extraction reporting.

iv. Products complying with requirements for leadership extraction practices.

v. Products complying with requirements for material ingredient reporting.

vi. Products complying with requirements for material ingredient optimization.

vii. Products complying with requirements for product manufacturer supply chain optimization.

viii. Waste management plan.

ix. Construction indoor-air quality (IAQ) management plan.

PROGRESS REPORTS: Each month throughout the work as pertinent for each plan. Report must include, but not be limited to, the following:

a. Ongoing conformance logs and documentation relating to Design-Builder activities.

b. Written narrative describing progress to date. If progress to date deviates from Plan, describe deviation and summarize proposed actions to be undertaken in order to satisfy the sustainable design requirements.

c. Spreadsheet tabulations as indicated in Attachment A to this section.

12.8 Quality Assurance

Design-Builder's Quality Control Responsibilities: Design-Builder is solely responsible for quality control of the Work.

Design-Builder's Green Representative: Designate a Representative who is LEED Accredited by the USGBC and has successfully submitted a minimum of two LEED Certified projects in the last five years. Design-Builder's Green Representative must oversee the environmental goals for the Project, must instruct workers concerning these goals, and must be present on site when the Work is in progress.

Green Certification Meetings: Schedule and conduct sustainability meetings monthly, in addition to meetings outlined in other sections of the Contract Documents. Meeting attendees must include at least the following: PMC, Design-Builder's Project Manager, Design-Builder's Green Representative, and Design-Builder representatives as appropriate to the stage of Work. Discuss green certification at job site meetings.

Green Training Program: Provide environmental training for workers performing work on the project site. Training must include the following:

a. Overview of environmental issues related to the building industry.

b. Green Building System: Requirements for this project.

Parksmart/LEED Progress Reports: Provide with each Application for Payment, comparing construction and purchasing with LEED action plans including LEED and Parksmart scorecards.

Regulatory Requirements: Comply with applicable requirements of laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from authorities having jurisdiction.

12.9 Products

Contractor selects materials to comply with the following:

a. Environmental Product Declarations (EPDs).

b. Multi-attribute optimization.

c. Raw material source and extraction reporting.

d. Material ingredient reporting.

e. Material ingredient optimization.

f. Manufacturer supply chain optimization.

g. Leadership extraction practices.

h. Extended producer responsibility program.

i. Recycled content.

j. Certified wood.

k. Low-Emitting Materials:

l. Interior paints and coatings.

m. Interior adhesives and sealants.

n. Flooring.

o. Composite wood.

p. Ceilings, walls, and thermal insulation.

12.10 Construction Indoor Air Quality (IAQ) Management (Not Applicable to This Project)

Credit IEQ 3.1: SMACNA's "IAQ Guideline for Occupied Buildings Under Construction."

Credit IEQ 3.2: Indoor air flush-out or air-quality testing.

LEED Checklist

PRODUCT DATA REPORTING FORM for LEED v4 Projects

THIS FORM IS REQUIRED TO BE SUBMITTED *WITH Product Data Submittals*

You must include backup documentation such as *SPECIFIC* Product Data Sheets, Cut Sheets, Product Specific Letter from Manufacturer, etc. DO NOT INCLUDE GENERIC MARKETING MATERIAL

LEED PROJECT NAME: _____
SUBCONTRACTOR: _____
Specification Section: _____ Submittal Number: _____

Project Product Data				*Materials and Resources LEED Credits*										*Low-Emitting Materials LEED Credits*			
									Declare.	hpd		ONLY if product has FSC or recycled content, then fill Regional Data		**Some Qualifying VOC Standards (More in Note 10):** CDPH Standard Method v1.1 FloorScore: Hard Surfaces & Adhesives Green Label Plus: Carpet, Adhesive, Cushion UL Greenguard Gold: When Meeting CDPH Std. v1.1			
	Product	Manufacturer	Product Costs[1] (only exclude install labor) ($)	Product Specific (PS) or Industry Wide (IW) Env. Product Declaration (EPD)[3,12]	FSC Certified[7] Wood Products? (%)	Post-Consumer Recycled Content[8] (%)	Pre-Consumer Recycled Content[9] (%)	Extended Producer Responsibility[5] Program Name?	Declare Label with ingredient disclosure greater than 1000 ppm?	Fully Declared HPD to 1000 ppm Declaration[4] included?	C2C version (2.1.1 or 3.0) Level of Certification		Extracted, Manufactured, & Purchased within[2] 100 miles?	CDPH Emissions[10] testing compliant?	VOC Content[11] (g/L)	Wet-Applied Products Volume Used (L)	Wood Products are ULEF or NAUF[12]
Ex.	ABC Product	ABC. Inc.	$ XX,XXX	PS / IW	%	%	%	Yes / No	Yes / No	Yes / No	Yes / No		Yes / No	Yes / No	##	##	Yes / No
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	

NOTES / DEFINITIONS:

1. Furnish Costs include all expenses to deliver the material to the project site, including taxes, transport, fabrication and profit. Do not include site labor or installation.

2. Within 100 miles distance is defined as travel by air to the project site, not travel distance by road. http://www.distancefromto.net/

3. Environmental Product Declarations which conform to ISO 14025, 14040, 14044, and EN 15804 or ISO 21930 and have at least a cradle to gate scope. http://productguide.ulenvironment.com/QuickSearch.aspx

4. The end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard. Smith Group JJR HPD Database

5. Extended producer responsibility. Products purchased from a manufacturer (producer) that participates in an extended producer responsibility program or is directly responsible for extended producer responsibility. (e.g. Closed Loop or Take Back Program)

7. Wood products must be certified by the Forest Stewardship Council (FSC) and must be provide proof of vendor FSC Chain-of-Custody with this Product Data Submittal. http://info.fsc.org/certificate.php

8. Post-Consumer Recycled Content: Sourced from recovered Consumer Waste and used as a raw material (e.g. plastic bottles, newspaper, etc).

9. Pre-Consumer Recycled Content: Recovered Industrial Materials diverted from municipal solid waste for use in a different mfg. process, prior to use by a consumer. Note: "home scrap" from the original mfg. process that are reused / reprocessed do not qualify.

10. TVOC Emissions for Building products must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1-2010 http://www.usgbc.org/resources/low-emitting-materials-third-party-certification-table

11. All paints and coatings wet-applied on site must meet applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011. All adhesives and sealants wet-applied on site must meet the applicable chemical content requirements of SCAQMD Rule 1168, July 1, 2005, Adhesive and Sealant Applications, as analyzed by the methods specified in Rule 1168.

12. Composite Wood Evaluation as defined by the California Air Resources Board (CARB), Airborne Toxic Measure to Reduce Formaldehyde Emissions from Composite Wood Products Regulation, must be documented to have low formaldehyde emissions that meet the CARB ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde (NAUF) resins.

I, _____ a duly authorized representative of _____ hereby certify that the material information submitted here is an accurate representation of the material to be provided under our contract.

EMAIL CONTACT FOR AUTHORIZED REPRESENTATIVE: _____ Direct Phone: _____

SIGNATURE OF AUTHORIZED REPRESENTATIVE: _____ DATE: _____

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Environmental Requirements

13

Article 13 Environmental Requirements

13.1 Summary

This Article includes administrative and procedural requirements for the following:

a. Limitations to the inclusion of Volatile Organic Compounds (VOCs).

b. Construction Dust Control

c. Construction Noise Mitigation

d. Vibration Monitoring

13.2 General Requirements

The City of New York is committed to implementing good environmental practices and procedures which include achieving certifications related to both LEED Gold Certification and Parksmart Gold Certification. Specific Project requirements related to these goals, which may impact this area of Work are included in the applicable paragraphs of this Article. The Design-Builder must ensure that the requirements as defined in this Article and in all other related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Design-Builder or its subcontractors, will not be allowed if such changes adversely impact achievement of the environmental goals.

.

13.3 Related Sections

Article 2 – Project Management and Coordination

Article 8 – Submittal Procedures

Article 12 – Sustainability Requirements

Article 14 – Construction Waste Management and Disposal

Article 15 – Closeout Procedures

Article 17 – Project Record Documents

13.4 Volatile Organic Compounds (VOCs)

General: All Work required by the Contract Documents, both temporary and permanent, involving adhesives, sealants or sealant primer applications, paints and coatings must follow all requirements of this Article, with regard to limits on Volatile Organic Compounds (VOCs). In the event of any conflict or inconsistency between this Article and the other Contract Documents regarding adhesives, sealant or sealant applications, paints and coatings, the requirements set forth in this Article will prevail

13.5 VOC References

Rule 1168 – "Adhesive and Sealant Applications:" South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov

Rule 1113 - "Architectural Coatings:" South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov

Green Seal Standard GS-11- "Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org

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13.6 VOC-Related Definitions

ADHESIVE: Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers.

e. Aerosol Adhesive: Any adhesive packaged as an aerosol with a spray mechanism permanently housed in a non-refillable can designed for hand-held application without the need for ancillary equipment.

CARCINOGEN: A chemical listed as a known, probable, reasonably anticipated, or possible human carcinogen by the International Agency for Research on Cancer (IARC) (Groups 1, 2A, and 2B), the National Toxicology Program (NTP) (Groups 1 and 2), the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS) (weight-of-evidence classifications A, B1, B2, and C, carcinogenic, likely to be carcinogenic, and suggestive evidence of carcinogenicity or carcinogen potential), or the Occupational Safety and Health Administration (OSHA).

CLEAR WOOD FINISH: Clear/semi-transparent coating applied to wood substrates to provide a transparent or translucent solid film.

a. Lacquer: Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film.

b. Sanding Sealer: A sanding sealer that also meets the definition of a lacquer.

c. Varnish: Clear/semi-transparent coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. May contain small amounts of pigment.

COATING: Liquid, liquefiable, or mastic composition that is converted to a solid adherent film after application to a substrate as a thin layer; and is used for decorating, protecting, identifying or to serve some functional purpose such as the filling or concealing of surface irregularities or the modification of light and heat radiation characteristics; and is intended for on-site application to interior or exterior surfaces of buildings. Does not include stains, clear finishes, recycled latex paint, specialty (industrial, marine or automotive) coatings or paint sold in aerosol cans.

FLOOR COATING: Opaque coating applied to flooring. Excludes industrial maintenance coatings.

HAZARDOUS AIR POLLUTANT: Any compound listed by the U.S. EPA in the Clean Air Act Section 112(b)(1) as a hazardous air pollutant.

MUTAGEN: A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarding as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).

OZONE-DEPLETING COMPOUNDS: A compound with an ozone-depletion potential greater than 0.1 (CFC 11=1) according to the U.S. EPA list of Class I and Class II Ozone-Depleting Substances.

PAINT: A pigmented coating. For the purposes of this specification, paint primers are considered to be paints.

d. Flat Coating or Paint: Has a gloss of less than 15 (using an 85-degree meter) or less than 5 (using a 60-degree meter).

e. Non-Flat Coating or Paint: Has a gloss of greater than or equal to 15 (using an 85-degree meter) or greater than or equal to 5 (using a 60-degree meter).

f. Non-Flat High-Gloss Coating or Paint: Has a gloss of greater than or equal to 70 (using a 60-degree meter).

g. Anti-Corrosive / Rust Preventative Paint: Coating formulated and recommended for use in preventing the corrosion of ferrous metal substrates.

PRIMER: Coating that is formulated and recommended for one or more of the following purposes: to provide a firm bond between the substrate and a subsequent coating; to prevent a subsequent coating from being absorbed into the substrate; to prevent harm to a subsequent coating from materials in the substrate; or to provide a smooth surface for application of a subsequent coating.

REPRODUCTIVE TOXIN: A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq.).

SANDING SEALER: Clear/semi-transparent coating formulated to seal bare wood. Can be abraded to create a smooth surface for subsequent coatings. Does not include sanding sealers that are lacquers (see Clear Wood Finish above).

SEALANT: Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or joints between surfaces. Includes sealant primers and caulks.

SHELLAC: Clear or pigmented coating formulated solely with the resinous secretions of the lac beetle, thinned with alcohol and formulated to dry by evaporation without chemical reaction. Excludes floor applications.

STAIN: Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.

VOLATILE AROMATIC COMPOUND: Any hydrocarbon compound containing one or more 6-carbone benzene rings and having an initial boiling point less than or equal to 280 degrees Celsius measured at standard conditions of temperature and pressure.

VOLATILE ORGANIC COMPOUND: Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S.

Code of Federal Regulations, at normal room temperatures. For the purposes of this Article, formaldehyde and acetaldehyde are considered to be VOCs.

WATERPROOFING SEALER: A coating that prevents the penetration of water into porous substrates.

13.7 VOC Requirements for Interior Adhesives, Sealants, Paints and Coatings

GENERAL: Unless otherwise specified herein, the VOC content of all interior adhesives, sealants, paints and coatings (herein referred to as "products") must not be in excess of 250 grams per liter.

No product must contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bio accumulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception will be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which must be less than or equal to 1 percent by weight of the product.

No product must contain the following:

a. methylene chloride
b. 1,1,1-trichloroethane
c. benzene
d. toluene
e. ethylbenzene
f. vinyl chloride
g. naphthalene
h. 1,2-dichlorobenzene
i. di (2-ethylhexyl) phthalate
j. butyl benzyl phthalate
k. di-n-butyl phthalate
l. di-n-octyl phthalate
m. diethyl phthalate
n. dimethyl phthalate
o. isophorone
p. antimony
q. cadmium
r. hexavalent chromium
s. lead

t. mercury

u. formaldehyde

v. methyl ethyl ketone

w. methyl isobutyl ketone

x. acrolein

y. acrylonitrile

No product will contain more than 1.0 percent by weight of sum total of volatile aromatic compounds.

13.8 VOC Requirements for Interior Adhesives

The VOC content of adhesives, adhesive bonding primers, or adhesive primers used in this project must not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.

The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.

For specified building construction related applications, the allowable VOC content is as follows:

a. Architectural Applications:
   i. Indoor carpet adhesive 50
   ii. Carpet pad adhesive 50
   iii. Wood flooring adhesive 100
   iv. Rubber floor adhesive 60
   v. Subfloor adhesive 50
   vi. Ceramic tile adhesive 65
   vii. VCT and asphalt tile adhesive 50
   viii. Drywall and panel adhesive 50
   ix. Cove base adhesive 50
   x. Multipurpose construction adhesive 70
   xi. Structural glazing adhesive 100

b. Specialty Applications:
   i. PVC welding 510
   ii. CPVC welding 490
   iii. ABS welding 325
   iv. Plastic cement welding 250
   v. Adhesive primer for plastic 550
   vi. Contact Adhesive 80

vii. Special Purpose Contact Adhesive 250

viii. Structural Wood Member Adhesive 140

ix. Sheet Applied Rubber Lining Operations 850

x. Top and Trim Adhesive 250

c. Substrate Specific Applications:

i. Metal to metal 30

ii. Plastic foams 50

iii. Porous material (except wood) 50

iv. Wood 30

v. Fiberglass 80

d. Aerosol Adhesives:

i. General purpose mist spray 65 percent VOC's by weight

ii. General purpose web spray 55 percent VOC's by weight

iii. Special purpose aerosol adhesives (all types) 70% VOC's by weight

13.9 VOC Requirements for Interior Sealants

The VOC content of sealants, or sealant primers used in this Project must not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the SCAQMD, of the State of California.

The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in (grams per liter) less water and less exempt compounds.

a. Sealants:
   i. Architectural 250
   ii. Non-membrane roof 300
   iii. Roadway 250
   iv. Single-ply roof membrane 450
   v. Other 420

b. Sealant Primer:
   i. Architectural – Nonporous 250
   ii. Architectural – Porous 775
   iii. Other 750

13.10 VOC Requirements for Interior Paints

Paints and Primers: Paints and primers used in non-specialized interior applications (i.e., for wallboard, plaster, wood, metal doors and frames, etc.) must meet the VOC limitations of the Green Seal Paint Standard GS-11, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:

a. Volatile Organic Compounds:

i. The VOC concentrations (in grams per liter) of the product must not exceed those listed below as determined by U. S. EPA Reference Test Method 24.

1) Interior Paints and Primers:

a) Non-flat: 150 g/l

b) Flat: 50 g/l

2) The calculation of VOC must exclude water and tinting color added at the point of sale.

Anti- Corrosive and Anti-Rust Paints: Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must meet the VOC limitations of the Green Seal Paint Standard GS-11, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:

a. Volatile Organic Compounds:

i. The VOC concentrations (in grams per liter) of the product must not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.

1) Anti-Corrosive and Anti-Rust Paints: 250

2) The calculation of VOC must exclude water and tinting color added at the point of sale.

13.11 VOC Requirements for Interior Coatings

Clear wood finishes, floor coatings, stains, sealers, and shellacs applied to the interior must meet the VOC limitations defined in Rule 1113, "Architectural Coatings" of SCAQMD, of the State of California. The VOC limits defined by SCAQMD, based on 7/9/04 amendments, are as follows. VOC limits are defined in (grams per liter) less water and less exempt compounds.

a. Clear Wood Finishes:
   i. Varnish 350
   ii. Sanding Sealers 350
   iii. Lacquer 550
b. Shellac:
   i. Clear 730
   ii. Pigmented 550
c. Stains 250
d. Floor Coatings 100
e. Waterproofing Sealers 250
f. Sanding Sealers 275
g. Other Sealers 200

The calculation of VOC must exclude water and tinting color added at the point of sale.

13.12 Submittals

Submit Material Safety Data Sheets, for all applicable products in accordance with Article 08, SUBMITTAL PROCEDURES. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets must indicate the VOC limits of products submitted. (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

Submit a Green Building Materials Certification Form (GBMCF) as referenced in Article 12, SUSTAINABLE REQUIREMENTS: For each field-applied adhesive, sealant, paint, and coating product, provide the VOC requirement, as provided in this Article, for the relevant material category indicated on the documentation noted above.

13.13 Dust Control

The Design-Builder must prepare, execute, and manage a Dust Control Plan for the prevention of the emission of dust from construction related activities in compliance with 15 RCNY 13-01 et. seq.

Also reference Section 15 – "Environmental" of the Basis of Design for dust control measures.

Design-Builder will be required to implement dust control measures for the Work tasks to comply with all applicable legal and contractual requirements including, but not limited to the following:

a. Work shall be performed without causing the concentrations of the particulate matters to meet or EXCEED the following levels:
    i. PM10 (inhale particulates less than 10um in diameter)
        1) 24-hour ambient PM:150ug/m3
b. Compliance with the particulate level requirements above the listed levels shall be monitored.
c. Additional particulate compliance and control requirements shall be developed in the Dust Control Plan (DCP).
d. Trucks transporting any and all materials removed or excavated from the Project Site must be covered with tarpaulins when loaded. The cover shall be secured to the truck so that no contents of the bed may be visible when viewed from above.
e. Exposed excavated surfaces shall be sprayed with water to suppress dust at a minimum.
f. The site limits and streets surrounding the work areas shall be cleaned as needed to prevent the accumulation of soil, dirt or debris from work-related traffic and activities and shall be washed with water to prevent the accumulation of particulates.
g. Drilling operations shall be equipped with sprays to suppress dust during drilling activities.
h. Additional measures needed to control objectionable dust caused by excavation or other construction operations or the moving of vehicles or equipment must be identified in the Design-Builder's Dust Control Plan. The use of chemicals for dust control, including calcium chloride, shall not be permitted.
i. Misting of materials and the site during excavation and other construction activities will be required prior to and during all operations.
j. Installation of dust barriers at work areas.

k. Design-Builder must take all precautions to mitigate the amount of dust infiltrating or ex-filtrating the work site.

l. Dust control shall be maintained where Design-Builders/Contractor's Work is occurring including misting and plasticizing as needed.

m. Dust control methods shall include laborers, with water hoses, equipped with fogging nozzles, soakers, to ensure that airborne particulates are kept to an absolute minimum.

File all Forms and Permits required for conformance.

13.14 Noise Mitigation (NOTE: Should consolidate with Section 15.3.2 Noise)

The Design-Builder must prepare, execute, manage and control a "Construction Noise Mitigation Plan" in compliance with RCNY Chapter 28: Citywide Construction Noise Mitigation et. seq. Also reference Section 15 – "Environmental" of the Basis of Design.

In addition to Section 15 – "Environmental" of the Basis of Design, noise level standards applicable at sensitive receptors shall apply seven days a week during periods of work activities to demonstrate compliance with the Building Code of the City of New York, Title 24, Chapter 2, Subchapter 4.

a. The noise level standards in terms of hourly equivalent noise Leq (1) cannot exceed:
   i. 7:00 AM to 5:00 PM: 65 dBA or an increase of 3 dBA above ambient (baseline), whichever is higher.
   ii. 5:00 PM to 7:00 AM: 55 dBA or an increase of 3 dBA above ambient (baseline), whichever is higher.
b. Provide sound attenuation measures to ensure compliance with all noise level standards.
c. The Design-Builder must install and operate sound level meters at noise sensitive receptors around the site to measure work-related noise. The location of these receptors shall be determined in accordance with NYC CEQR Technical Manual Chapter 19.
d. Noise measurement results will be sent to DDC for review and/or comments.
e. Equipment used to remove the debris and all construction equipment powered by an internal combustion engine must be equipped with a properly maintained exhaust muffler. Such equipment must include, but not be limited to:
   i. dump trucks,
   ii. concrete mixers,
   iii. excavation equipment,
   iv. generators,
   v. trucks removing soil, debris or material of any kind from the site, plus
   vi. delivery vehicles.
f. Air powered equipment must be fitted with pneumatic exhaust silencers.
g. The Construction Noise Mitigation Plan must include the control measures that will be employed to ensure compliance with all specified noise requirements and Project goals.

File all forms and permits required for conformance.

13.15 Vibration Monitoring

The Design-Builder must prepare, execute, manage, and control a "Vibration Monitoring Plan" for the monitoring and minimization of vibration from construction related activities in compliance with Section 3.4.13 - "Vibration Monitoring" of the Basis of Design.

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Construction Waste Management & Disposal

14

Article 14 Construction Waste Management & Disposal

14.1 Summary

This Section includes administrative and procedural requirements for the salvaging, recycling and disposing of nonhazardous demolition and construction waste.

14.2 Related Sections

Include without limitation the following:

a. Article 2 – Project Management and Coordination

b. Article 8 – Submittal Procedures

c. Article 12 – Sustainability Requirements

14.3 Definitions

Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

Diversion from Landfill: To remove, or have removed, from the site for recycling, reuse or salvage, material that might otherwise be sent to a landfill.

Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.

Recycle (recycling): To sort, separate, process, treat or reconstitute solid waste and other discarded materials for the purpose of redirecting such materials into the manufacture of useful products. Recycling does not include burning, incinerating, or thermally destroying waste.

Return: To give back reusable items or unused products to vendors.

Reuse: To reuse excess or discarded construction material in some manner on the project site.

Salvage: To remove a waste material from the project site for resale or reuse.

Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable and reusable material.

Waste Management Plan: A project-related plan for the collection, transportation and disposal of waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material becoming landfill.

Waste-to-Energy: The conversion of non-recyclable waste materials into usable heat, electricity or fuel through a variety of processes, including combustion, gasification, pyrolization, anaerobic digestion, and landfill gas recovery.

14.4 Performance Requirements

General: Develop a Waste Management Plan that results in end-of-project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work. Waste material must come from at least 4 different waste streams. The Design-Builder must generate the least amount of waste possible on this Project. The Design-Builder must employ processes that ensure the generation of as little waste as possible due to error, inaccurate planning, breakage, mishandling, contamination, or other factors.

Of the waste that is generated during demolition (where applicable), as many of the waste materials as economically feasible, and as stated here, must be reused, salvaged, or recycled. Waste disposal in landfills must be minimized.

14.5 LEED Certification

The City of New York will require the Design-Builder to seek Parksmart Gold certification for the new Parking Facility and, concurrently, must meet the requirements to contribute toward a LEED Gold level certification from the U.S. Green Building Council for the future Queens Detention Facility as indicated in the Specific Project Requirements, Volume 3 of the Contract Documents. The documentation required here will be used for this purpose.

LEED awards points for a variety of sustainable design measures on a project, including the reuse and recycling of project waste.

14.6 Waste Management Plan

General: Develop a Waste Management Plan consisting of waste identification, a waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume but use the same units of measure throughout the Waste Management Plan.

Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

a. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.

b. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.

c. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.

d. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.

e. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.

f. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site Project Site where materials separation will be located.

14.7 Waste Management Plan Implementation

General: Prior to start of demolition and construction activities the Design-Builder must implement the Waste Management Plan, train all workers, subcontractors, and suppliers on proper waste management procedures, coordinate the Plan with all affected trades, and designate one individual as the Construction Waste Management Representative.

The Construction Waste Management Representative will be responsible for communicating the progress of the Plan to the PMC on a regular basis, and for assembling the required LEED documentation.

The Design-Builder must be responsible for the provision of containers and the removal of all waste, nonreturned surplus materials and rubbish from the site in accordance with the approved Waste Management Plan. The Design-Builder must oversee and document the results of the plan. Monies received for salvaged materials must remain with the Design-Builder, except the monies for those items specifically identified elsewhere in the Contract Documents or otherwise indicated as belonging to others.

Responsibilities of subcontractors: Each subcontractor must be responsible for collecting its waste, nonreturned surplus materials and rubbish, in accordance with the Waste Management Plan.

Distribution: The Design-Builder must distribute copies of the Waste Management Plan to each subcontractor, and the DDC.

Instruction: The Design-Builder must provide on-site instruction of proper waste management procedures to be used by all Parties in appropriate stages of the Project.

Procedures: The Design-Builder must conduct waste management operations to ensure minimum interference with site vegetation, roads, streets, walks and other adjacent occupied and used facilities.

a. Collect commingled waste and/or separate all recyclable waste in accordance with the Plan.
b. Specific areas on the project site are to be designated, and appropriate containers and bins clearly marked with acceptable and unacceptable materials.
c. Inspect containers and bins for contamination and remove contaminated materials if found.
d. Comply with the Contract Documents for controlling dust and dirt, environmental protection and noise control.

14.8 Salvaging Demolition Waste

Salvaged items for Sale or Donation will not be permitted on the Project Site.

14.9 Recycling Demolition and Construction Waste, General

General: Recycle paper and beverage containers used by on-site workers.

Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

a. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from project site. Include list of acceptable and unacceptable materials at each container and bin.

   i. Inspect containers and bins for contamination and remove contaminated materials if found.

b. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

c. Stockpile materials away from construction area. Do not store within drip line of remaining trees.

d. Store components off the ground and protect from the weather.

e. Remove recyclable waste from the Project site and transport to recycling receiver or processor.

14.10 Recycling Construction Waste

Packaging:

a. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.

b. Polystyrene Packaging: Separate and bag materials.

c. Pallets: As much as possible, require deliveries using pallets to remove pallets from project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.

d. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

Site-Clearing Wastes: Chip brush, branches, and trees on-site.

Wood Materials:

e. Clean Cut-Offs of Lumber: Grind or chip into small pieces.

f. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

14.11 Disposal of Waste

General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

a. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.

b. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

Burning: Do not burn waste materials.

Disposal: Transport waste materials off the Project site and legally dispose of them.

14.12 Submittals

Waste Management Plan: Submit plan within 30 days following NTP.

Waste Reduction Progress Reports: Concurrent with each Application for Payment. Include separate reports for demolition and construction waste. Include the following information:

a. Material category.

b. Generation points of waste.

c. Total quantity of waste in tons.

d. Quantity of waste salvaged, both estimated and actual in tons.

e. Quantity of waste recycled, both estimated and actual in tons.

f. Total quantity of waste recovered (salvaged plus recycled) in tons.

g. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

Sustainability Submittal: Letter signed by Design-Builder tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.

Qualification Data: For Waste Management Coordinator and refrigerant recovery technician.

Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

14.13 Quality Assurance

General: This Article establish the minimum qualification levels required. Individual sections of the Contract Documents specify additional requirements.

Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

Waste Management Conference: Conduct a conference at the Project site to comply with requirements in Article 2 - "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

a. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
b. Review requirements for documenting quantities of each type of waste and its disposition.
c. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
d. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
e. Review waste management requirements for each trade.

Closeout Procedures

15

Article 15 Closeout Procedures

15.1 Summary

This Article includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

a. Substantial Completion.

b. Final Completion.

c. Warranties.

d. Final Cleaning.

e. Repair of the Work.

The requirements for both a Parksmart Project and a LEED Project are much greater than that for a normal project. Evidence must be submitted at Project Closeout that all required certifications by the Green Building Council have been achieved.

Comply with Commissioning requirements, as specified in Articles 19and 20 of the Standard Project Requirements.

Other Related Requirements:

a. Article 7 "Photographic Documentation" for submitting final completion construction photographic documentation.

b. Article 16 "Operation and Maintenance Data" for operation and maintenance manual requirements.

c. Article 17 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

d. Article 18 "Demonstration and Startup" for requirements for instructing DDC's personnel.

15.2 Substantial Completion Procedures

Preliminary Procedures: Before requesting inspection to determine the date of Substantial Completion, the Design-Builder must complete and supply all items required by Article 16.1, "Conditions to Substantial Completion" of the Design-Build Agreement The required items will include all contract requirements for Substantial Completion, including but not limited to items related to releases, regulatory approvals, warranties and guarantees, record documents, testing, demonstration and orientation, final clean up and repairs, and all specific checklist of items by the DDC.

The following list is a general sample of Substantial Completion requirements, including but not limited to:

a. Punch List: As part of the requirements of Article 16.1, the Design-Builder must prepare and submit a list to the PMC of incomplete items, the value of incomplete construction, reasons the Work is not complete and commitment dates for completion. DDC acceptance of this punch list is a prerequisite for achieving Substantial Completion.

b. Obtain and submit any necessary releases enabling the City unrestricted use of the Project and access to services and utilities.

c. Regulatory Approvals: Submit all required documentation from applicable governing authorities, including, but not limited to, Department of Buildings (DOB); Department of Corrections (DOC); Department of Transportation (DOT); Department of Environmental Protection (DEP); Fire Department (FDNY); etc. Documentation is to include, but not be limited to, the following:

   i. Building Permits, Applications, and Signoffs.

   ii. Permits and signoffs for construction fences, sidewalk bridges, scaffolds, cranes and derricks, utilities, etc.

   iii. Certificates of Inspections and signoffs.

   iv. Required Certificates and Use Permits.

   v. Certificate of Occupancy (C.O.), Temporary Certificate of Occupancy (T.C.O.) or Letter of Completion as applicable.

d. Submit specific warranties required by the Contract Documents, final certifications and similar documents.

e. Prepare and submit Record Documents as described in Article 17, PROJECT RECORD DOCUMENTS, including but not limited to: approved documentation from governing authorities; as-built record drawings and specifications; product data; operation and maintenance manuals; Final Completion construction photographs; damage or settlement surveys; final property surveys; and similar final record information.

i. DDC and the PMC will review the submission and provide appropriate comments. If comments are significant, then the initial submission will be returned to the Design-Builder for correction and re-submission incorporating the comments prior to the Final Inspection.

f. Record Waste Management Progress Report: Submit C&D Waste Management logs with legible copes of weight tickets and receipts required in accordance with Article 14, CONSRUCTION WASTE MANAGEMENT AND DISPOSAL.

g. If applicable, submit Parksmart and LEED Letter Templates in accordance with the requirements of Article 12, SUSTAINABILITY REQUIREMENTS.

h. Schedule applicable Demonstration and Startup required in other sections of the Contract Documents and as described in Article 18, DEMONSTRATION AND STARTUP.

i. Deliver tools, spare parts, extra materials and similar items to a location designated by the DDC. Label with manufacturer's name and model number where applicable.

j. Make final changeover of permanent locks and deliver keys to the DDC or PMC. Coordinate with the DDC for a changeover in security provisions.

k. Complete startup and testing of systems as applicable.

l. Submit approved test/adjust/balance records.

m. Terminate and remove temporary facilities from the Project site along with mockups, construction tools, and similar elements as directed by the PMC.

n. If applicable, complete Commissioning requirements as defined in Article 19, GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENLOSURE and Article 20, GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS.

o. Complete final cleaning requirements, including touchup painting.

p. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

Inspection: The Design-Builder must submit to the DDC a written request for inspection for Substantial Completion. Not later than thirty days from receipt of the request, the DDC will proceed with inspection and, if appropriate, will notify the Design-Builder of unfulfilled requirements The Design-Builder and the DDC will continue to confer and review unfulfilled requirements until the DDC is prepared to issue a Certificate of Substantial Completion.

a. In connection with the DDC's issuance of the Certificate of Substantial Completion, the DDC may add or remove items to or from the Punch List.

b. The results of the completed inspection will form the basis of requirements for Final Completion. The Design-Builder's List of Incomplete Items (Design-Builder's punch list) must indicate the value of each item on the list and reasons why the Work is incomplete.

15.3 Final Completion

Preliminary Procedures: Before requesting final inspection for Final Acceptance of the Work, the Design-Builder must complete all items required by Article 17.1, "Final Completion Process" of the Design-Build Agreement, including but not limited to the following. (Note that the following are to be completed, submitted as appropriate, and approved by the DDC, as applicable, prior to the final inspection and are not to be submitted for approval or otherwise at the final inspection unless specifically indicated). List exceptions in the request.

a. Verify that all required submittals have been provided to the DDC including but not limited to the following:

   i. Record Drawings (construction drawings, specifications, and product data) as described in Article 17 CONTRACT RECORD DOCUMENTS, incorporating any changes required by the DDC as a result of the review of the submission prior to the pre-final inspection.

   ii. Operation and Maintenance Manuals, including Preventive Maintenance, Manufacturer's Cleaning Instructions, Special Tools, Repair Requirements, Parts List, Spare Parts List, and Operating Instructions.

   iii. Completion of required demonstration and orientation, as applicable, of designated personnel in operation and maintenance of systems, sub-systems and equipment.

   iv. Applicable Park Smart Certification submittals as described in Article 12 SUSTAINABILITY REQUIREMENTS and Article 11, "LEED and Sustainability" of the Volume 3 Basis of Design.

   v. Construction progress photographs as described in Article 7 PHOTOGRAPHIC DOCUMENTATION of these standard project requirements.

b. Submit a certified copy of the final punch list of items to be completed or corrected. The certified copy of the punch list must state that each item has been completed or otherwise resolved for acceptance and must be endorsed and dated by the Design-Builder.

c. Submit pest-control final inspection report and survey as required in Section Article 10 TEMPORARY FACILITIES AND CONTROLS.

d. Submit record documents and similar final record information.

e. Deliver tools, spare parts, extra stock and similar items.

f. Complete final clean-up requirements including touch-up painting of marred surfaces.

g. Submit final meter readings for utilities, as applicable, a measured record of stored fuel, and similar data as of the date when the City took possession of and assumed responsibility for corresponding elements of the work.

Final Acceptance: The Work will be accepted as final and complete as of the date of the DDC's inspection if, upon such inspection, the DDC finds that all items on the Punch List are complete and no further Work remains to be done. The DDC will then issue a written determination of final acceptance in accordance with Section 17.2 and Section 18 of the Design-Build Agreement.

15.4 Warranties

Warranties must be furnished in accordance with Articles 29 and 30 of Volume 1, the Design-Build Agreement of the Contract. For the items of materials and/or equipment for which manufacturer warranties are required, the Design-Builder must obtain a written warranty from the manufacturer.

Submittal Time: Unless indicated otherwise, warranties are to take effect on the date of Substantial Completion. Submit written warranties on request of the DDC for designated portions of the Work where the commencement of warranties other than date of Substantial Completion is indicated.

Partial Occupancy (Where Applicable): Submit properly executed warranties to the DDC within 15 days of completion of designated portions of the work that are completed and occupied or used by the City.

Organize the warranty documents into an orderly sequence based on the project specification divisions and section numbers.

a. Provide a typed description of each product or installation being warranted, including the name of the product, and the name, address, and telephone number of the Installer.

When warranted materials and/or equipment require operation and maintenance manuals, provide additional copies of each required Warranty in each required manual. Refer to Article 17 PROJECT RECORD DOCUMENTS for requirements of Operation and Maintenance Manuals.

15.5 Final Cleaning

Provide a final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

a. Complete the following cleaning operations, as applicable, before requesting inspection for Final Acceptance of the Work for entire Project or for a portion of project:

i. Clean project site, yard, and grounds, in areas disturbed by construction work, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

ii. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

iii. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

iv. Remove tools, construction equipment, machinery, and surplus material from Project Site.

v. Remove snow and ice to provide safe access to building.

vi. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

vii. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

viii. Sweep concrete floors broom clean in unoccupied spaces.

ix. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

x. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

xi. Remove labels that are not permanent.

xii. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

xiii. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

xiv. Replace parts subject to unusual operating conditions during construction that may impede operation or reduce longevity.

xv. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

xvi. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

xvii. Clean ducts, blowers, and coils.

xviii. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

xix. Leave project clean and ready for occupancy.

xx. Construction Waste Disposal: Comply with waste disposal requirements in Article 14 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid project of rodents, insects, and other pests, as required in Article 10, TEMPORARY FACILITIES, SERVICES AND CONTROLS. Prepare and submit a Pest Control report to the Commissioner.

Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on City's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project Site and dispose of lawfully.

Operation and Maintenance Documents

16

Article 16 Operation and Maintenance Documents

16.1 Summary: Please provide both electronic (PDF) as well and hard copy of OMD.

This Article includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

a. Operation and maintenance documentation directory.

b. Emergency manuals.

c. Operation manuals for systems, subsystems, and equipment.

d. Product maintenance manuals.

e. Systems and equipment maintenance manuals.

Related Sections:

a. Specific operation and maintenance manual requirements for related elements of Work identified in Volume 3, Specific Project Requirements of the Contract Documents and as defined by the final design documents.

16.2 Definitions

System: An organized collection of parts, equipment, or subsystems united by regular interaction.

Subsystem: A portion of a system with characteristics similar to a system.

16.3 O&M Closeout Submittals

Provide Operation and Maintenance Manuals where appropriate and as indicated in respective sections of Volume 3, "Specific Project Requirements" Submit manual content formatted and organized as required by this Article.

a. Where applicable, clarify and update reviewed manual content to correspond to modifications and field conditions.

Format: Submit operations and maintenance manuals in the following format:

a. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit for review and approval via the Project Management Information System (PMIS).

   i. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.

   ii. Enable inserted reviewer comments on draft submittals.

b. Include a complete operation and maintenance directory.

Initial Manual Submittal: Submit a draft of each manual at least 30 days before commencing demonstration and startup. The DDC and the PMC will comment on whether the scope and content of the manual are complete and acceptable.

Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and startup. The DDC and the PMC will return copy with comments.

a. Correct or modify each manual to comply with the DDC's and the PMC's comments. Submit copies of each corrected manual within 15 days of receipt of comments and prior to commencing demonstration and startup.

16.4 O&M Documentation Directory

Organization: Include a section in the Directory for each of the following:

a. List of documents.

b. List of systems.

c. List of equipment.

d. Table of contents.

List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of a system, list alphabetically in a separate list.

Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

Identification: In the Documentation Directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

16.5 Requirements for Emergency, Operation, and Maintenance Manuals

Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual must contain the following materials in the order listed:

a. Title page.

b. Table of contents.

c. Manual contents.

Title Page: Include the following information:

d. Subject matter included in manual.

e. Name and address of Project.

f. Name and address of DDC.

g. Date of submittal.

h. Name and contact information for Contractor and Subcontractors that provided the system and its various components.

i. Name and contact information for the PMC.

j. Name and contact information for the Designer.

k. Name and contact information for the Commissioning Agent.

l. Names and contact information for major consultants to the Design-Builder that designed the systems contained in the manuals.

m. Cross-reference to related systems in other operation and maintenance manuals.

Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in the final design documents.

a. If operation or maintenance documentation requires more than one volume to accommodate all of the data, include a comprehensive table of contents for all volumes in each volume of the set.

Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

a. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.

b. File Names and Bookmarks: Enable bookmarking of individual documents based upon file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create a composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel upon opening file.

Manuals, Paper Copy: Submit two manuals for use by the Owner(s) in the form of hard copy, bound and labeled volumes.

a. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

   i. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary, to provide essential information for proper operation or maintenance of equipment or system.

   ii. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents, and indicate specification section number on bottom of spine. Indicate volume number for multiple-volume sets.

b. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to specification section number and title of project manual.

c. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.

d. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.

e. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

   i. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.

   ii. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

16.6 Emergency Manuals

Content: Organize manual into a separate section for each of the following:

a. Type of emergency.

b. Emergency instructions.

c. Emergency procedures.

Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

a. Fire.

b. Flood.

c. Gas leak.

d. Water leak.

e. Power failure.

f. Water outage.

g. System, subsystem, or equipment failure.

h. Chemical release or spill.

Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

Emergency Procedures: Include the following, as applicable:

a. Instructions on stopping.

b. Shutdown instructions for each type of emergency.

c. Operating instructions for conditions outside normal operating limits.

d. Required sequences for electric or electronic systems.

e. Special operating instructions and procedures.

16.7 Operation Manuals

Content: In addition to requirements in this Article, include operation data required in other individual sections of the Specific Project Requirements, the final design documents, and the following information:

a. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.

b. Performance and design criteria.

c. Operating standards.

d. Operating procedures.

e. Operating logs.

f. Wiring diagrams.

g. Control diagrams.

h. Piped system diagrams.

i. Precautions against improper use.

j. License requirements including inspection and renewal dates.

Descriptions: Include the following:

a. Product name and model number. Use designations for products indicated on contract documents.

b. Manufacturer's name.

c. Equipment identification with serial number of each component.

d. Equipment function.

e. Operating characteristics.

f. Limiting conditions.

g. Performance curves.

h. Engineering data and tests.

i. Complete nomenclature and number of replacement parts.

Operating Procedures: Include the following, as applicable:

j. Startup procedures.

k. Equipment or system break-in procedures.

l. Routine and normal operating instructions.

m. Regulation and control procedures.

n. Instructions on stopping.

o. Normal shutdown instructions.

p. Seasonal and weekend operating instructions.

q. Required sequences for electric or electronic systems.

r. Special operating instructions and procedures.

Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

Piped Systems: Diagram piping as installed and identify color-coding where required for identification.

16.8 Product Maintenance Manuals

Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of installer or supplier and maintenance service agent, and cross-reference specification section number and title in project manual and drawing or schedule designation or identifier where applicable.

Product Information: Include the following, as applicable:

a. Product name and model number.

b. Manufacturer's name.

c. Color, pattern, and texture.

d. Material and chemical composition.

e. Reordering information for specially manufactured products.

Maintenance Procedures: Include manufacturer's written recommendations and the following:

a. Inspection procedures.

b. Types of cleaning agents to be used and methods of cleaning.

c. List of cleaning agents and methods of cleaning detrimental to product.

d. Schedule for routine cleaning and maintenance.

e. Repair instructions.

Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

a. Include procedures to follow and required notifications for warranty claims.

16.9 Systems and Equipment Maintenance Manuals

Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference specification section number and title in project manual and drawing or schedule designation or identifier where applicable.

Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

a. Standard maintenance instructions and bulletins.

b. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.

c. Identification and nomenclature of parts and components.

d. List of items recommended to be stocked as spare parts.

Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

a. Test and inspection instructions.

b. Troubleshooting guide.

c. Precautions against improper maintenance.

d. Disassembly; component removal, repair, and replacement; and reassembly instructions.

e. Aligning, adjusting, and checking instructions.

f. Demonstration and training video recording, if available.

Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

a. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

b. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

a. Include procedures to follow and required notifications for warranty claims.

16.10 Manual Preparation

Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by DDC operating personnel for types of emergencies indicated.

Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the work.

Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

a. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

b. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the contract documents. Identify data applicable to the work and delete references to information not applicable.

a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record drawings to ensure correct illustration of completed installation.

a. Do not use original project record documents as part of operation and maintenance manuals.

b. Comply with requirements of newly prepared record drawings in accordance with Article 17, "Project Record Documents."

Comply with Article 15 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

Project Record Documents

17

Article 17 Project Record Documents

17.1 Summary

Section includes administrative and procedural requirements for project record documents, including the following:

a. Record Drawings.

b. Record Specifications.

c. Record Product Data.

d. Miscellaneous Record Submittals.

Related Sections:

a. Article 15, "Closeout Procedures" for general closeout procedures.

b. Article 16. “Operation and Maintenance Documents”

17.2 Closeout Submittals

Record Drawings: Comply with the following:

a. Initial Submittal: Submit PDF electronic files of marked-up record prints. The DDC will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal: Submit one complete set of PDF electronic files of marked-up record design drawings. Include each and every design drawing, whether or not changes and additional information were recorded.:

Record Specifications: Submit one annotated PDF electronic file of project's specifications, including addenda and contract modifications.

Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

a. Where record product data are required as part of operation and maintenance manuals, submit duplicate marked-up product data as a component of manual.

Miscellaneous Record Submittals: Refer to other sections of the Contract Documents for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

Reports: Submit written report weekly indicating items incorporated into the Project Record Documents concurrent with the progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.

17.3 Record Drawings

Record Drawings: Continuously update and maintain an electronic set of the design drawings and shop drawings.

a. Preparation: Mark up ad annotate as appropriate record prints to show the actual installation where installation varies from that originally shown. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record drawings.

   i. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

   ii. Accurately record information in an acceptable drawing technique.

   iii. Record data as soon as possible after obtaining it.

   iv. Record and check the markup before enclosing concealed installations.

   v. Cross-reference record drawings and documents to corresponding archive photographic documentation.

b. Content: Types of items requiring marking include, but are not limited to, the following:

   i. Dimensional changes to drawings.

   ii. Revisions to details shown on drawings.

   iii. Depths of foundations below first floor.

   iv. Locations and depths of underground utilities.

   v. Revisions to routing of piping and conduits.

   vi. Revisions to electrical circuitry.

   vii. Actual equipment locations.

   viii. Duct size and routing.

   ix. Locations of concealed internal utilities.

   x. Changes made by change order or change directive.

   xi. Changes made following Design-Builder's or DDC's written orders.

   xii. Details not on the original design drawings.

   xiii. Field records for variable and concealed conditions.

xiv. Record information on the work that is shown only schematically.

c. Mark the design drawings and shop drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record drawings.

d. Mark changes on record sets in red. Use other colors to distinguish between changes for different categories of the work at same location.

e. Mark important additional information that was either shown schematically or omitted from original design drawings.

f. Note construction change directive numbers, alternate numbers, change order numbers, and similar identification, where applicable.

g. Format:

h. Same digital data software program, version, and operating system as the original contract drawings.

i. DXF, operating in Microsoft Windows operating system.

j. Annotated PDF electronic file with comment function enabled.

k. Design-Builder will provide data file layer information. Record markups in separate layers.

Final Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record drawings with the DDC and the PMC. When authorized, prepare a full set of corrected digital data files of the contract drawings, as follows:

a. Incorporate changes and additional information as a result of the review previously not included in the record documents. Delete, redraw, and add details and notations where applicable.

b. Refer instances of uncertainty to PMC for resolution ad proper implementation on the record documents.

Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record drawings where Design-Builder determines that neither the original contract drawings nor shop drawings are suitable to show actual installation.

a. New drawings may be required when a change order is issued as a result of accepting an alternate, substitution, or other modification.

b. Consult Design-Builder for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record drawings into record drawing sets; comply with procedures for formatting, organizing, and submitting.

Format: Identify and date each record drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

a. Record Prints: Organize marked-up original record drawings and newly prepared record drawings into manageable sets. Include identification on cover sheets.

b. Format: Annotated PDF electronic file with comment function enabled.

c. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the contract drawings. Name each file with the sheet identification. Include identification in each digital data file.

d. Identification: As follows:

   i. Project name.

   ii. Date.

   iii. Designation "PROJECT RECORD DRAWINGS."

   iv. Name of Design-Builder.

   v. Name of owner, DDC.

17.4 Record Design Specifications

Preparation: Mark design specifications to indicate the actual product installation where installation varies from that indicated in the original design specifications, addenda, and contract modifications.

a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

b. Annotate specifications with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

c. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.

d. For each principal product, indicate whether the record product data has also been submitted in operation and maintenance manuals. as well as submitted as record product data.

e. Note related change orders and record drawings where applicable.

Format: Submit record specifications as annotated PDF electronic file through the PMIS.

17.5 Record Product Data

Preparation: Mark product data to indicate the actual product installation where installation varies substantially from that indicated in product data submittal.

a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

b. Include significant changes in the product delivered to project site and changes in manufacturer's written instructions for installation.

c. Note related change orders, record specifications, and record drawings where applicable.

Format: Submit record product data as annotated PDF electronic file through the PMIS.

d. Include record product data directory organized by specification section number and title, electronically linked to each item of record product data.

17.6 Miscellaneous Record Submittals

Assemble miscellaneous records required by other sections of the Contract Documents for miscellaneous submittals and record keeping in connection with actual performance of the Work. File miscellaneous records and identify each, ready for continued use and reference.

Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked up miscellaneous record submittals through the PMIS.

a. Include miscellaneous record submittals directory organized by specification section number and title, electronically linked to each item of miscellaneous record submittals.

17.7 Recording and Maintenance

Recording: Maintain each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project. Submit progress of record documents at 25%, 50% 75% and 100% construction completion.

Demonstration and Startup

18

Article 18 Demonstration and Startup

18.1 Summary

This Article addresses administrative and procedural requirements for instructing facility personnel in the startup and proper operation and maintenance of specific new building elements, these requirements include but are not limited to the following:

a. Demonstration of startup and operation of systems, subsystems, and equipment.

b. DDC's Pre-Acceptance orientation in operation and maintenance of systems, subsystems, and equipment.

c. Video recordings of demonstrations and orientations.

The Design-Builder must provide the services of equipment manufacturers' orientation specialists experienced in the type of equipment to be demonstrated.

Separate orientation sessions must be conducted for mechanical operations and maintenance (O&M) personnel and for electronic and electric O&M personnel.

Commissioning: Refer to Volume 3 "Scoping Documents" of the contract to identify whether elements of this project are to be commissioned. For commissioned projects the Design-Builder must provide demonstration and startup as described in this Article and cooperate with the Commissioning Authority/Agent (CxA) to implement commissioning requirements as described in Article 20, GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS.

18.2 Related Sections

Include without limitation the following:

a. Article 8 SUBMITTAL PROCEDURES

b. Article 15 CLOSEOUT PROCEDURES

c. Article 17 PROJECT RECORD DOCUMENTS

d. Article 20 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS

e. Specific requirements for demonstration and orientation indicated in Volume 3 - Specific Project Requirements.

18.3 Definitions

Refer to Article 1.1 of Volume 1 of the Design-Build Agreement, for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

18.4 Informational Submittals

Instruction Program: Submit to the DDC an outline of an instructional program for demonstration and orientation, including a list of demonstration and orientation modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each module. Submit to the DDC for review and approval no less than thirty days prior to the date that a proposed demonstration is scheduled to take place. Include learning objectives and an outline for each instruction module.

a. Indicate those proposed modules that will use manufacturer-produced demonstration and instructional video recordings for systems, equipment, and products in lieu of video recording of a live instructional module.

Qualification data: For facilitator, instructor, and videographer.

Attendance record: For each demonstration orientation module, submit list of participants and length of instruction time.

Evaluations: For each participant and for each orientation module, submit results and documentation of performance-based test.

18.5 Closeout Submittals

Demonstration and Startup video recordings:

a. The Design-Builder must submit to the DDC a demonstration and Startup video recording within seven days of the completion of each module.

b. Identification: With each video recording, provide the following information:

i. Project contract I.D. number.

ii. Project contract name.

iii. Name of Design-Builder.

iv. Name of subcontractor as applicable.

v. Name and address of videographer.

vi. Name of owner, DDC.

vii. Date of video recording.

viii. Table of Contents including list of equipment/systems covered.

c. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.

d. At the completion of the demonstration module, submit a complete training manual(s) for Owner/Design-Builder in PDF electronic file format through the PMIS.

e. Quality Assurance

Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in an orientation program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

Instructor Qualifications: A factory-authorized service representative, complying with requirements in Article 9, QUALITY REQUIREMENTS, experienced in operation and maintenance procedures and training.

Videographer Qualifications: A professional videographer who is experienced with demonstration and orientation events similar to those required.

Pre-instruction Conference: Schedule with the DDC a conference at the Project site. Review methods and procedures related to demonstration and orientation including, but not limited to, the following:

a. Inspect and discuss locations and facilities required for instruction.

b. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.

c. Review required content of instruction.

d. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

18.6 Coordination

Coordinate instruction schedule with both the DDC and the Design-Builder's operations. Adjust schedule as required to minimize disrupting Owner/Design-Builder's operations and to ensure availability of Owner/Design-Builder's personnel.

Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

Coordinate content of orientation modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by the DDC.

18.7 Products – Instruction Program

Program Structure: Develop an instruction program that includes individual orientation modules for each system and for equipment not part of a system, as required by individual sections of both the final design and the Contract Documents.

Orientation Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participants are expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

a. Basis of System Design, Operational Requirements, and Criteria: Include the following:
   i. System, subsystem, and equipment descriptions.
   ii. Performance and design criteria.
   iii. Operating standards.
   iv. Regulatory requirements.
   v. Equipment function.
   vi. Operating characteristics.
   vii. Limiting conditions.
   viii. Performance curves.

b. Documentation: Review the following items in detail:
   i. Emergency manuals.
   ii. Operations manuals.
   iii. Maintenance manuals.
   iv. Project record documents.
   v. Identification systems.
   vi. Warranties.
   vii. Maintenance and service agreements and similar continuing commitments.

c. Emergencies: Include the following, as applicable:
   i. Instructions on meaning of warnings, trouble indications, and error messages.
   ii. Instructions on stopping.

iii. Shutdown instructions for each type of emergency.

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iv. Operating instructions for conditions outside of normal operating limits.

v. Sequences for electric or electronic systems.

vi. Special operating instructions and procedures.

d. Operations: Include the following, as applicable:

i. Startup procedures.

ii. Equipment or system break-in procedures.

iii. Routine and normal operating instructions.

iv. Regulation and control procedures.

v. Control sequences.

vi. Safety procedures.

vii. Instructions on stopping.

viii. Normal shutdown instructions.

ix. Operating procedures for emergencies.

x. Operating procedures for system, subsystem, or equipment failure.

xi. Seasonal and weekend operating instructions.

xii. Required sequences for electric or electronic systems.

xiii. Special operating instructions and procedures.

e. Adjustments: Include the following:

i. Alignments.

ii. Checking adjustments.

iii. Noise and vibration adjustments.

iv. Economy and efficiency adjustments.

f. Troubleshooting: Include the following:

i. Diagnostic instructions.

ii. Test and inspection procedures.

g. Maintenance: Include the following:

i. Inspection procedures.

ii. Types of cleaning agents to be used and methods of cleaning.

iii. List of cleaning agents and methods of cleaning detrimental to product.

iv. Procedures for routine cleaning

v. Procedures for preventive maintenance.

vi. Procedures for routine maintenance.

vii. Instruction on use of special tools.

viii. Housekeeping practices.

h. Repairs: Include the following:

i. Diagnosis instructions.

ii. Repair instructions.

iii. Disassembly; component removal, repair, and replacement; and reassembly instructions.

iv. Instructions for identifying parts and components.

v. Review of spare parts needed for operation and maintenance.

vi. Assemble educational material as necessary for instruction, including documentation and orientation module. Assemble the modules into a Manual organized in coordination with the requirements in Article 16, OPERATION AND MAINTENANCE DOCUMENTS.

18.8 Instruction

Facilitator: Engage a qualified facilitator to prepare an instruction program and orientation modules, to coordinate instructors, and to coordinate between the Design-Builder, subcontractors the Owner and the DDC for number of participants, instruction times, and location.

The Design-Builder must engage qualified instructors to instruct facility personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

Scheduling: Provide instruction with the DDC at mutually agreed upon times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.

a. Schedule orientation with the DDC, with at least (14) days' advance notice.

Evaluation: At conclusion of each orientation module, assess and document each participant's mastery of module by use of an oral or written test or a demonstration performance-based test.

Cleanup: Collect and remove used and leftover educational materials from project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial orientation use.

18.9 Demonstration and Orientation Video Recordings

The Design-Builder must engage a qualified commercial videographer to video record demonstration and orientation sessions. Record each orientation module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

At the beginning of each orientation module, record each chart containing the learning objective and lesson outline.

All recordings must be closed captioned.

Recording Format: Provide high-quality video recording in a format file type acceptable to the Owner/DDC. on USB drive or other electronic media requested by the Commissioner.

Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and orientation. Display continuous running time.

Narration: Describe scenes on video recording by audio narration by microphone while dubbing audio narration off-site after. Include description of items being viewed. Describe vantage point, indicating direction, location (by compass point), and elevation or story of construction.

Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

Preproduced Video Recordings: Provide video recordings used as a component of orientation modules in the same format as the recordings of the live orientation.

a. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.

b. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in the final design documents and the Contract Documents.

c. Subcontractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each sub-contractor involved on the Project, arranged according to Project table of contents:

   i. Name of subcontractor/Installer.

   ii. Business address.

   iii. Business phone number.

   iv. Point of contact.

   v. E-mail address.

Commissioned projects:

a. The Design-Builder's Commissioning Agent (CxA) will assess and comment on the adequacy of the orientation instruction sessions by reviewing the orientation and Instruction program and agenda provided by the Design-Builder The provider of the orientation program will video record the sessions and provide a copy to the CxA for final review and comments. If necessary, Design-Builder must edit the recoding per CxA comments.

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General Commissioning Requirements for Building Enclosure

19

Article 19 General Commissioning Requirements for Building Enclosure

19.1 Summary

This section includes general requirements that apply to the implementation of commissioning for building enclosure systems. The commissioning requirements for the building enclosure systems given in this section are entirely separate from, and in addition to, the Article 20 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS for this Project.

19.2 Related Sections

Include following:

i. Article 2 PROJECT MANAGEMENT AND COORDINATION

ii. Article 8 SUBMITTALS

iii. Article 12 SUSTAINABILITY REQUIREMENTS

iv. Article 17 PROJECT RECORD DOCUMENTS

v. Article 18 DEMONSTRATION AND START-UP

vi. Article 20 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS

vii. System-Specific Commissioning requirements indicated in the Specific Project Requirements

This project will be commissioned by the Design-Builder's Commissioning Agent (CxA). Commissioning must be in accordance with ASHRAE and USGBC LEED procedures, and specific commissioning requirements of the final design and the Contract Documents project specifications, whichever is more stringent. The Design-Builder's Commissioning Agent will be responsible for the management and implementation of all commissioning activities in coordination with the DDC and its Commissioning Consultant.

19.3 Definitions and Abbreviations

Approval: Acceptance that a material or system has been properly installed and is functioning in tested modes according to the contract documents.

Building Enclosure Commissioning (BEC): is a systematic process of ensuring all building enclosure systems responsible for environmental separation perform in accordance with the Specific Project Requirements. It is intended to verify and document proper installation and performance of building enclosure materials and systems in accordance with the Contract Documents.

Building Enclosure Commissioning Agent (BECxA): An employee of the Design-Builder or an independent consultant under separate contract with Design-Builder to provide BEC Services for this Project. The BECA will direct and coordinate day-to-day BEC commissioning activities.

Building Enclosure Testing Agency (BETA): BETA is an independent agency retained by the Design-Builder and approved by the DDC, fully accredited by the appropriate governing body for each of the materials, components or systems to be tested or evaluated for compliance with requirements of the Contract Documents and as directed by the BECxA. Documentation of such certification must be submitted to and approved by the DDC prior to the start of any work by the BETA.

Commissioning: Commissioning is a systematic process of ensuring and documenting that the building systems, including the building enclosure, have been installed in the prescribed manner, are functionally checked and capable of being operated and maintained to perform with the design intent and have documentation to support proper installation and operation. The process does not eliminate or reduce the responsibility of the installing Design-Builders to provide a finished product.

Commissioning Agent (CxA): Refer to Article 20 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS for Definition.

Commissioning Plan: Refer to Article 20 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS for Definition.

Deficiency: Condition of a building enclosure material or system that is not in compliance with the Contract Documents (that is, does not perform properly or is not complying with design intent).

Functional Performance Test (FPT): Test of performance of building enclosure materials and systems. Systems are tested under various simulated environmental conditions, such as air leakage under pressure differential and water leakage under pressure differential with water spray.

Simulated Condition: Condition created for testing component or system (e.g., applying pressure differential across the building enclosure concurrent with water spray to simulate a wind driven rain).

Mock-up: The activities where systems or materials are initially constructed and tested.

19.4 Description

This section will in no way diminish the responsibility of the Design-Builder in performing all aspects of work and testing as outlined in the Contract Documents. Any requirements outlined in this Article are in addition to requirements outlined in the Contract Documents.

The Design-Builder and its Building Enclosure Commissioning Agent, suppliers, subcontractors, vendors, etc., will prepare, perform and participate in the commissioning processes as outlined in the Contract Document.

Commissioning does not take away from, or reduce, the Design-Builder's responsibility to provide a finished and fully functioning product and installation.

19.5 Related Work

Specific Building Enclosure Commissioning (BEC) requirements are given in this Section. The following Specific Project Requirements are related to the commissioning work specified in this Article:

a. Basic Concrete Requirements. Refer to Volume 3 – Specific Project Requirements.

b. Basic Metal Requirements. Refer to Volume 3 – Specific Project Requirements.

c. Basic waterproofing, roofing, air barrier and insulation requirements. Refer to Volume 3 – Specific Project Requirements.

d. Basic fenestration requirements. Refer to Volume 3 – Specific Project Requirements.

e. Basic finishing requirements. Refer to Volume 3 – Specific Project Requirements.

19.6 Coordination

Members of the Building Enclosure Commissioning Team must consist of:

g. Design-Builder

h. CxA (Design-Builder Commissioning Agent)

i. BECxA (DB Building Enclosure Commissioning Agent)

j. BETA (Building Enclosure Testing Agency)

k. All Design-Builder building enclosure subcontractors

l. DDC and DDC Commissioning Consultant

Management: The BECxA will direct and coordinate commissioning activities for the Design-Builder. All members of the Building Enclosure Commissioning Team must cooperate to fulfill contracted responsibilities and objectives of the Contract Documents.

Scheduling: BECxA must Work with Building Enclosure Commissioning Team to establish required commissioning activities to incorporate into the preliminary commissioning schedule. The Design-Builder must integrate commissioning activities into the master Project Schedule, in accordance with Article 6 Progress Documentation-CPM and Article 17 PROJECT RECORD DOCUMENTS. Necessary notifications are to be made in a timely manner in order to expedite commissioning.

19.7 Submittals

The Design-Builder and the BECxA must develop and provide documentation required for the Building Enclosure Commissioning work in accordance with Article 8 SUBMITTALS.

At minimum, documentation must include but not be limited to:

m. Submittal of shop drawings, product data, samples, etc., relevant to Building Enclosure Commissioning (BEC). Such submittals must be in compliance with Article 17 PROJECT RECORD DOCUMENTS.

n. As-Built Record Drawings and Operation and Maintenance information relevant to Building Enclosure Commissioning (BEC). Such submittals must be in compliance with Article 17 PROJECT RECORD DOCUMENTS.

o. All demonstration and orientation submittals relevant to Building Enclosure Commissioning (BEC). Such submittals must be in compliance with Article 15 CLOSE OUT.

p. Performance data, any performance test procedures, and installation and checkout materials.

19.8 Execution – Systems to be Commissioned

Building enclosure systems to be commissioned may include, but are not limited to:

a. Below grade waterproofing systems,

b. Opaque Wall/Cladding Systems,

c. Fenestration systems,

d. LEED and Sustainability

e. Electronic Security.

City's responsibilities:

f. Assign operation and maintenance personnel to participate in Commissioning Team activities.

g. Provide full details and results of any DDC Contracted tests relevant to the current Project.

19.9 Responsibilities of Commissioning Team Members during Construction Phase

Responsibilities of the Design-Builder include without limitation the following:

h. Review BECxA comments on construction document and shop drawings.

i. Assist in dispute resolution regarding building enclosure items.

j. Review BECxA reports.

k. Incorporate BECxA submittal review comments into response on submittals.

Responsibilities of the CxA include the following without limitation, as needed per the contract documents:

l. Provide commissioning service consultation to the Design-Builder.

m. Provide the following plans related to commissioning, including but not limited to: commissioning plan; systems manual; operation and maintenance orientation plan; testing plans and checklists.

n. Prepare, perform and execute the commissioning plan.

o. Coordinate commissioning activities with the Design-Builder, Sub-contractors, and DDC.

Responsibilities of the BECxA include the following without limitation, as needed per the contract documents:

p. Review and comment on mock-up construction and testing plan as provided by Design-Builder.

q. Development of BEC plan.

r. Review of building enclosure shop drawings and submittals, including “approved equal” requests, through the DDC in accordance with Article 8 SUBMITTALS.

s. Attend combined pre-construction and BEC kick-off meeting.

t. Develop construction checklists for the building enclosure for the Design-Builder’s use.

u. Observe the construction of a building enclosure mock-up.

v. Witness the testing of a building enclosure mock-up.

w. Project meetings / conference calls / coordination.

x. Field monitor installation of exterior enclosure components.

y. Update field report log.

z. Update BEC plan.

aa. Advise on RFI.

bb. Assist with the preparation of LEED paperwork.

cc. Prepare systems manual, with required inputs and documentation from the Design-Builder in accordance with Article 17 PROJECT RECORD DOCUMENTS.

dd. Complete maintenance plan, with required inputs and documentation from the Design-Builder in accordance with Article 17 PROJECT RECORD DOCUMENTS.

ee. Prepare training manual, with required inputs and documentation from the Design-Builder in accordance with Article 17 PROJECT RECORD DOCUMENTS.

ff. Prepare final BEC record and enclosure commissioning close-out documents.

gg. Develop on-going BEC plan.

Responsibilities of the Design-Builder and building enclosure subcontractors include without limitation the following:

hh. Review BEC plan and Functional and Performance Testing (FPT) specification.

ii. Attend commissioning kick-off meeting and other building enclosure commissioning team meetings.

jj. Incorporate commissioning activities into the project schedule.

kk. Periodically update commissioning activities in the project schedule.

ll. Notify DDC and BECxA of work completion.

mm. Verify building enclosure materials and assemblies are ready for functional testing.

nn. Retain the services of an approved independent BETA; submit qualifications of independent BETA to DDC for approval; coordinate all activities and deliverables of this BETA; ensure all BETA deliverables are provided to the building enclosure commissioning team.

oo. Attend all required material and systems testing.

pp. Execute all periodic maintenance or repairs required on started systems from initial mock-up of equipment to final acceptance by DDC to prevent material warranties from being voided.

qq. Submit maintenance logs of all interim maintenance or repair tasks performed by Design-Builder.

rr. Ensure installation work is complete, is in compliance with contract documents, and is ready for FPT. FPT test results must be documented by BECxA.

ss. Ensure resolution of non-compliance and deficiencies in construction or test results. Obtain written documentation of completion from the appropriate Design-Builders.

tt. Provide letters of compatibility for adjacent building enclosure materials and assemblies.

uu. Facilitate all repairs and retesting of failed condition at no additional cost to the DDC.

vv. Provide all warrantee information to BECxA.

Responsibilities of the BETA include without limitation the following:

ww. Attend commissioning kick-off meeting and other building enclosure commissioning team meetings.

xx. Provide on-site technician and equipment to complete mock-up and field FPT.

yy. Prepare and submit reports to the DDC at the conclusion of all testing.

zz. Perform retesting and prepare corresponding reports.

19.10 Building Enclosure Commissioning team (BECx) Meetings

BEC meetings must be held periodically as determined by the DDC and recommended by BECxA.

Discussions held in BEC meetings must include, but not be limited to, system/materials, mock-up/field, progress, scheduling, testing, documentation, deficiencies, and problem resolution.

The Design-Builder must attend BEC meetings, and must ensure the attendance of required subcontractors, as requested.

19.11 Reporting

BECxA must provide status reports to the DDC. The DDC will provide such status reports to the contactor, CxA, Design Consultant, and other entities as needed.

BECxA must submit non-compliance and deficiency reports to DDC. The DDC will provide such reports to the Design-Builder, CxA, Design Consultant, and other entities as needed.

BECxA must provide a final summary report to DDC and CxA.

19.12 Mock-Up and Final Construction

Design-Builder must verify completion of all assemblies compliant with contract documents and deficiency log items prior to Functional Performance Testing or concealment of functional performance layers within the building enclosure.

19.13 Functional Performance Testing

Objectives and Scope

a. The objective of Functional Performance Testing is to demonstrate that the building enclosure is performing according to documented design intent and contract documents. Functional Performance Testing facilitates bringing the building enclosure systems from a state of substantial completion to fully operational. In addition, during Functional Performance Testing, areas of deficient performance are identified and corrected, improving building enclosure system performance.

Development of Test Procedures

a. The purpose of a specific test is to verify and document compliance of the installed enclosure systems. Building Enclosure FPT Protocols must be performed.

Coordination and Scheduling

a. Design-Builder must provide sufficient notice to BECxA, regarding completion schedule for materials and systems. Testing to be performed in conjunction with site visits. Design-Builder must schedule Functional Performance Tests with Commissioning Team. BECxA must witness and document functional testing of equipment and systems. BETA, as retained by the Design-Builder, must execute tests under direction of BECxA.

b. Successful completion of mock-up functional performance testing must occur prior to full production installation of building enclosure materials and systems.

19.14 Documentation, Non-Conformance, and Approval of Tests

Documentation

a. BECxA must witness and document results of FPT.

Non-Conformance

a. BECA must record results of functional testing. Deficiency or non-conformance issues must be noted and reported to the DDC.

b. Corrections of minor deficiencies identified may be made during tests at discretion of the DDC and recommended by the BECA. In such cases, deficiency and resolution must be documented.

c. Every effort must be made to expedite testing and minimize unnecessary delays, while not compromising integrity of tests.

d. Deficiencies are handled in the following manner:

e. BECxA documents deficiencies and notes Design-Builders response and intentions. Finding a deficiency must not end the testing process.

f. BECxA submits deficiency report to the DDC.

g. Design-Builder corrects deficiency and certifies that material or assembly is ready to be retested.

h. Design-Builder informs DDC of retesting schedule, and Design-Builder coordinates with the BECxA.

i. Design-Builder reschedules test with the DDC and BETA at no additional cost to DDC.

Testing

a. Costs for all testing and retesting required for the project must be the responsibility of the Design-Builder. The Design-Builder is to provide access to the test specimens to the DDC.

19.15 Commissioning Documentation

Final Report Details

a. Final BEC report must include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope, and general description of testing and verification methods. Report must contain evaluation regarding:

   i. Conformance to the contract documents and design intent

   ii. Material/system installation

   iii. Functional performance

All outstanding non-compliance items must be specifically listed.

Recommendations for improvement to system or operations, future actions, etc. must also be listed.

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General Commissioning Requirements for MEP Systems

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Article 20 General Commissioning Requirements for MEP Systems

20.1 Summary

This Section includes general requirements that apply to implementation of Commissioning with regard to systems, subsystems, and equipment being commissioned. General Requirements for Building Enclosure Commissioning are addressed in Article 19 of these Standard Project Requirements.

20.2 Related Sections

Include without limitation the following:

a. The Design-Builder is responsible for the commissioning for all Mechanical, Electrical and Plumbing (MEP) systems identified under Volume 3. Specific Project Requirements of this Contract as well as any additional systems that are identified during the development of its design documents necessary to meet the intent of the original Contract Documents. Commissioning must be in accordance with ASHRAE and USGBC LEED procedures, and any specific commissioning requirements identified within the specific project requirements, whichever is more stringent. The Design-Builder must cooperate with DDC's Commissioning Consultant and provide whatever assistance and information is required.

b. Related Sections include without limitation the following:

i. Article 2 PROJECT MANAGEMENT AND COORDINATION

ii. Article 5 PROGRESS DOCUMENTATION

iii. Article 17 PROJECT RECORD DOCUMENTS

iv. Article 18 DEMONSTRATION AND START-UP

v. Article 12 SUSTAINABILITY REQUIREMENTS

vi. Article 19 GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE

20.3 Definitions

Refer to Article 1.1 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

Checklists: Forms that outline the step by step process that must be executed to fulfill the test requirements and to verify that materials, equipment, assemblies, and systems are installed in accordance with the Contract Documents. The CxA must develop the checklists; the Design-Builder must complete them.

Commissioning: Commissioning is a systematic process of ensuring and documenting that the building systems, including the mechanical and electrical systems, have been installed in the prescribed manner, are functionally checked and capable of being operated and maintained to perform with the design intent and have documentation to support proper installation and operation. The process does not eliminate or reduce the responsibility of the installing Design-Builders to provide a finished product.

Commissioning Agent (AKA Commissioning Authority) (CxA): An employee of the Design-Builder or an independent consultant under separate contract with the Design-Builder to provide commissioning services for this project.

DDC Commissioning Consultant: A employee of the DDC or the PMC, or an independent consultant under contract with the DDC or the PMC, to coordinate with and conduct oversight of the overall Commissioning process being managed by the Design-Builder and its Commissioning Agent.

Commissioning Plan: A document developed by the CxA that offers a complete description of the commissioning process including all activities that will be performed, provides a schedule of commissioning activities, outlines the commissioning organization, defines roles and responsibilities, allocation of resources, and documentation requirements of the commissioning process.

Deferred Performance Tests: Performance tests that are performed, at the discretion of the CxA, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design, or other site conditions that disallow the test from being performed.

Factory Testing: Testing of equipment on-site or at the factory, by factory personnel, with or without an owner's representative.

Functional Performance Test (FPT): FPT includes the dynamic functions and operations of equipment and systems using manual or monitoring methods under various levels of operation. Systems are tested under various modes, such as during low cooling loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarms, power failure, etc. The systems are run through all the control system's sequences of operation and components are verified to respond as the sequences state. Such tests must be performed as per the protocol written by the CxA, and accepted by the DDC defining the methods, personnel, and expectations.

Issue (or Deficiency): A condition in the installation or function of a component, piece of equipment, or system that is not in compliance with the contract documents.

Issues Log: A formal and ongoing record of problems, deficiencies or concerns that have been raised by members of the Commissioning Team during the course of commissioning. The issues log is the primary tracking tool to address all commissioning issues by concerned parties. All issues must be addressed and resolved by the

concerned Parties before the closeout of the Project. This log tracks the resolution performed and date of closure of each issue.

Master Equipment List (MEL): A complete listing of all commissioned building equipment, including details such as make, model, location, ID Tag number, etc. that is taken from submittals and is the basis from which checklists will be generated. The MEL is a spreadsheet which is also used as a tracking tool for all milestones of the commissioning process, such as the creation and performance of checklists, startup of equipment, Testing Adjusting and Balancing (TAB) work, etc.

Monitoring: The recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or the trending capabilities of control systems.

DDC (City of New York) contracted tests: Tests paid for by the City of New York outside of the Design-Builder's contract and for which the CxA does not provide oversight. These tests will not be repeated during functional testing if properly documented.

DDC's (Owner) Project Requirements (OPR): A document, prepared by the DDC that details the functional requirements of a Project and the expectations of how it will be used and operated. These include project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.

Pre-functional (Installation) Checklists: A list of items to inspect and elementary component tests to conduct to verify proper installation of equipment, developed and provided by the CxA to the Design-Builder. Installation checklists are primarily static inspections and procedures to prepare equipment or systems for initial operation. Pre-functional (Installation) checklists augment, and are combined with, the manufacturer's startup checklist. The checklists are filled out by the Design-Builder and verified by the CxA.

Sampling: Functional testing for a percentage of the total number of identical or near-identical pieces of equipment.

Seasonal performance tests: Functional tests that are deferred until, or performed again when, the system(s) will experience climate conditions close to their design conditions.

Startup: The initial starting or activating of equipment, including executing construction checklists.

Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they will mean "as-built" systems, subsystems, equipment, and components.

Systems Manual: A system-focused composite document that includes the operation and maintenance manual, and additional information of use to the operator during the occupancy and operations phase.

Testing, Adjusting, and Balancing (TAB): Testing, adjusting, and balancing of the Heating Hot Water (HHW), Chilled Water (CHW) and heating, cooling, and ventilation airflow distribution system flows and pressures as specified in the Contract Documents by a subcontractor certified to perform such work.

Test requirements: Requirements specifying what modes and functions, etc. must be tested on any given piece of equipment or any given system (integrated or standalone). The test requirements are not the detailed test procedures. The test requirements for each system are indicated in the respective Contract Documents.

Trending: Monitoring using the building controls system, and analysis of the data gathered over a period of time.

20.4 Commissioning Team

A group of Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions.

Members appointed by the Design-Builder and its subcontractors:

a. Design-Build Commissioning Agent (CxA): The designated person, company, or entity that plans, schedules, and coordinates the Commissioning Team to implement the commissioning process

b. Representatives of the Design-Builder, including but not limited to project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.

Members Appointed by the City:

a. DDC Commissioning Consultant: The designated person, company, or entity under separate Contract with the City that plans, schedules, and coordinates the commissioning team to implement the commissioning process.

b. Representatives of the facility user and operation and maintenance personnel.

20.5 City's Responsibilities

Assign operation and maintenance personnel to participate in Commissioning Team activities.

Provide full details and results of any DDC contracted tests relevant to the current project.

Review CxA Commissioning Plans

20.6 Design-Builder Responsibilities

Provide utility services required for the commissioning process.

Assign representatives with expertise and authority to act on behalf of the Design-Builder and its subcontractor(s) and schedule them to participate in and perform Commissioning Team activities including, but not limited to, the following:

a. Participate in scheduled construction-phase coordination and Commissioning Team meetings.

b. Integrate and coordinate commissioning process activities with the Project Schedule.

c. Provide any and all factory acceptance test reports to the DDC

d. Respond to any additional specific information requests from the DDC's Commissioning Consultant. The Commissioning Consultant may require additional documentation necessary for approval of the CxA's commissioning process. Requests by DDC may precede, be concurrent with, or follow normal submittals.

e. Ensure the cooperation and participation of all subcontractors and manufacturers of equipment to be commissioned.

f. Design-Builder and its subcontractors are to verify that components, equipment, and system are functioning as per design prior to CxA witnessing testing.

g. Perform testing required in the commissioning schedule as per the commissioning process test procedures provided by the CxA. Provide no less than 48 hours' notice to the DDC.

h. Complete installation checklists as work is completed and furnish to the DDC or its Commissioning Consultant.

i. Provide written responses to the DDC's Commissioning Consultant for resolution of issues or concerns within five (5) business days.

j. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend and implement corrective action.

k. Submit as-built documents, operation and maintenance manuals for systems and subsystems, and equipment in accordance with Article 17 PROJECT RECORD DOCUMENTS. Such documents must be submitted prior to functional testing.

l. Provide orientation sessions for operation and maintenance personnel (sessions to be organized by the CxA and witnessed by the DDC's Commissioning Consultant) in accordance with Article 18 DEMONSTRATION AND STARTUP. Provide no less than 48 hours' notice to the DDC. Video record and edit orientation sessions and provide DVD to the DDC and its Commissioning Consultant no later than two weeks after the orientation session occurs. Edit as required by the DDC.

20.7 Design-Builder's Commissioning Agent's (CxA) Responsibilities

Organize and lead the Commissioning Team.

Develop the Commissioning Plan; systems manual; operation and maintenance orientation plan; testing plans and checklists for review and acceptance by the DDC.

n. Collaborate with the Design-Builder and its subcontractors to develop test and inspection procedures.

o. Include design changes and coordinate commissioning activities with the overall project schedule.

p. Identify Commissioning Team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.

q. Update the Commissioning Plan during construction as required.

Review and comment, on technical submittals from the Design-Builder for compliance with the Design-Builder's final design, the Specific Project Requirements of the Contract Documents, and the accepted Commissioning Plan. Review and comment on performance expectations of systems and equipment and interface between systems relating to the same requirements.

Coordinate with the DDC and DDC's Commissioning Consultant, to convene Commissioning Team meetings for the purpose of coordination, communication, conflict resolution; and to discuss progress of the commissioning processes.

At the beginning of the construction phase, coordinate with the DDC's kick-off meeting schedule to conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance Submittals, operation and maintenance orientation sessions, TAB Work, testing, and Project completion.

Perform site visits to observe and inspect construction as described in the Commissioning Plan. Report progress and deficiencies to the DDC and its Commissioning Consultant. In addition to compliance with the final design and Contract Documents, inspect systems and equipment installation for adequate accessibility required for component maintenance replacement and repair.

Prepare and distribute project-specific test and inspection procedures and checklists and maintain a master equipment list.

Verify air and water systems balancing by sampling, by reviewing completed reports, and by site observation. Coordinate balance report submittal reviews with the DDC so that the comments are combined into a single review and submitted to the Design-Builder.

Coordinate with the DDC and Design-Builder to witness and document tests, inspections, and systems startup, as per the Commissioning Plan.

Maintain an issue log and a record of functional testing. Report all issues as they occur to both the Design-Builder and the DDC.

Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.

Certify date of acceptance and startup for each item of equipment for start of warranty periods, subject to the acceptance of the DDC.

Coordinate with the Design-Builder in the development of operation and maintenance documentation and systems manual outline in compliance with the Design-Builder's final design and the Specific Project Requirements. Operation and maintenance documentation requirements are specified in other sections of the project specifications and described in Article 17 PROJECT RECORD DOCUMENTS.

Develop agendas for orientation sessions; schedule, witness and confirm that the Design-Builder orientation sessions conform with related agenda and Contract Documents; manage and review recording of demonstration and orientation sessions conducted by the Design-Builder. Submit recordings to the DDC on USB drive or other electronic media for review, comment and editing as necessary.

In coordination with the DDC, return to the site 10 months into the 12-month guaranty period, to review with facility staff the current building operation and the condition of outstanding issues related to the original and seasonal commissioning. Interview facility staff and identify problems or concerns they have with operating the building as originally intended.

Prepare Commissioning Reports.

Assemble the final commissioning documentation, including the Commissioning Report and Systems Manual Report. Perform all CxA tasks as defined by LEED and Parksmart; Prepare related LEED submittal documents and if applicable- Parksmart certification. Submit to the DDC Commissioning Consultant.

20.8 Commissioning Documentation

The Design-Builder and the CxA will develop and compile of the following Commissioning Documentation:

r. Index of Commissioning documents: The CxA will prepare an index including the storage location of each document.

s. Commissioning Plan: A document prepared by the CxA that outlines the schedule, allocation of resources, roles and responsibilities, and documentation requirements of the commissioning process.

t. Test Checklists: The CxA will develop test checklists for each system, subsystem, or equipment including interfaces and interlocks, and include a separate entry, with space for comments, for each item to be tested. The CxA will prepare separate checklists for each mode of operation and provide space to indicate whether the mode under test responded as required. Space will be provided for testing personnel to sign off on each checklist. Specific checklist content must include without limitation:

i. Identification of tested item

ii. Date of test

iii. Indication of whether the record is for a first test or retest following correction of a problem or issue

iv. Dated signatures of the person performing the test and of the witness if applicable

v. Deficiencies and issues, if any, generated as a result of the test

u. Inspection Checklists will be signed by the Design-Builder, subcontractor(s), installer(s), and CxA certifying that systems, subsystems, equipment, and associated controls are ready for testing.

v. Test and inspection reports: The CxA will record test data, observations, and measurements on test checklists. Photographs, forms, and other means appropriate for the application will be included with data. CxA must compile test and inspection reports and test and inspection certificates and include them in a systems manual and commissioning report.

w. Corrective action documents: The CxA will document corrective action taken for systems and equipment that fail tests and include required modifications to systems and equipment and revisions to test procedures, if any. The Design-Builder must retest systems and equipment requiring corrective action. The CxA will document retest results.

x. Issues Log: The CxA will prepare and maintain an issues log that describes design, installation, and performance issues that are at variance with the final DB design and the Contract Documents. The log will identify and track issues as they are encountered, documenting the status of unresolved and resolved issues. The Issues Log will identify, at a minimum:

i. The party responsible for correcting the issue,

ii. The person documenting the issue resolution,

iii. The exact location of the issue (floor and room),

iv. The applicable system component,

v. The detailed description of the issue,

vi. The issue status, and

vii. The date the issue was discovered and the date the issue was resolved.

y. Commissioning Report: The CxA will document results of the commissioning process including unresolved issues and performance of systems, subsystems, and equipment. The Commissioning Report will indicate whether systems, subsystems, and equipment have been completed and are performing according to the OPR, BOD, and contract documents. The Commissioning Report must include:

z. An executive summary, including participants and their roles, a brief building description, an overview of the commissioning and testing scope, and a general description of testing and verification methods.

i. Installation/ Pre-Functional Checklists.

ii. Start-up Reports.

iii. Functional Test documentation.

iv. Trend Log Analysis.

v. The final Issues Log. with all issues identified through the commissioning process, identifying which, if any, issues remain unresolved.

vi. The Commissioning Plan.

vii. Commissioning progress and field reports.

viii. Commissioning review documents.

ix. Record of DDC's Orientation.

aa. Systems Manual: The CxA will gather required information and compile a Systems Manual as specified in this Article, and in Article 17 PROJECT RECORD DOCUMENTS.

20.9 Submittals

In addition to the standard technical submittal procedures outlined in Article 8 – Submittal Procedures, the Submittal of shop drawings, product data, samples, etc., relevant to commissioning must be specifically identified by the CxA for review by the DDC's Commissioning Consultant.

As-Built Contract Record Drawings and Operating and Maintenance Manuals relevant to commissioning must also be identified by the CxA and to the DDC Commissioning Consultant for review. Such submittals must be in compliance with Article 17 PROJECT RECORD DOCUMENTS.

All demonstration and orientation submittals relevant to commissioning must be identified and provided by the Design-Builder to the DDC Commissioning Consultant for review and acceptance. Such submittals must be in compliance with Article 18 – Demonstration and Startup.

Completed Pre-functional (Installation) Check sheets must be provided to the DDC Commissioning Consultant for review and acceptance.

20.10 Coordination

Coordination of commissioning is the responsibility of the CxA and the Design-Builder.

Coordinating meetings: The CxA will coordinate with the Design-Builder's regularly scheduled construction progress meetings to conduct coordination meetings of the Commissioning Team, to review progress on the Commissioning Plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities. The CxA and Design-Builder must ensure that all required Commissioning Team members attend.

Construction Documents: The Design-Builder, will furnish copies of all construction documents, addenda, change orders and appropriate Submittals and shop drawings to the CxA.

Pre-testing Meetings: The CxA will conduct pretest meetings of the Commissioning Team to review startup reports, pretest inspection results, testing procedures, testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested. The Design-Builder must ensure that all required Commissioning Team members attend.

Testing Coordination: Design-Builder must coordinate schedule times with the Commissioning Team, for tests, inspections, obtaining samples, and similar activities. The CxA will advise the Commissioning Team as to the sequence of testing activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

Manufacturers' Field Services: The Design-Builder must coordinate manufacturers' field services, as per the Commissioning Plan.

The CxA will regularly apprise the DDC and the DDC Commissioning Consultant of progress, pending problems and/or disputes, as well as provide regular status reports on progress with each system.

20.11 Products – Test Equipment

All industry standard test equipment required for performing the specific tests must be provided by the Design-Builder or Design-Build subcontractor responsible for the testing. The Design-Builder must ensure that any proprietary vendor-specific test equipment is provided by that vendor or manufacturer.

Special equipment, tools, instruments, software, and equipment communication network access hardware and software (only available from vendor, specific to the piece of equipment) required for testing equipment according to the Contract Documents will be included at no extra cost to the City and must be turned over to the City at project close-out, except for stand-alone data logging equipment that may be used by the CxA.

Any portable or handheld setup and/or calibration devices required to initialize the control system must be made available by the control vendor for use by the CxA at no additional cost to the City.

The instrumentation used in the commissioning process must comply with the following:

bb. Be of sufficient quality and accuracy to test and/or measure system performance within the tolerances required

cc. Be calibrated at the manufacturer's recommended intervals with calibration tags permanently affixed to the instrument

dd. Be maintained in good repair and operating condition throughout use duration on this Project

ee. Be immediately recalibrated or repaired if dropped and/or damaged in any way during this Project.

20.12 Commissioning Process

The following provides an overview of the Commissioning tasks during Project construction and the general order in which they occur.

a. Construction-phase commissioning begins with a commissioning kickoff meeting, conducted by the CxA and Design-Builder, where the commissioning process is reviewed with all the Commissioning Team members.

b. Additional meetings may be required throughout construction, scheduled by the CxA and Design-Builder in accordance with Article 2 PROJECT MANAGEMENT AND COORDINATION with necessary parties attending, to plan, scope, coordinate and schedule future activities and resolve open issues.

c. The DDC and its Commissioning Consultant will review the CxA/Design-Builder Submittals and provide comments for inclusion. The reviewed submittals will include all commissioned equipment information, including detailed startup procedures, and coordination drawings that include commissioned equipment and systems, control drawings and sequences, and interfaces and interlocks between systems.

d. The CxA and Design-Builder will develop Pre-functional and Functional Test documentation formats.

e. Periodically throughout the construction process, the CxA will perform site visits to observe component and system installations.

f. The checkout and performance verification generally proceed from component level to equipment to systems and intersystem levels. Pre-functional (Installation) Checklists are to be completed before Functional Performance Checklists.

g. The Design-Builder and CxA must, execute and document the Pre-Functional (Installation) Checklists and perform startup and initial checkout of equipment and systems. The CxA verifies and documents that the checklists and startup are completed according to the final design and Contract Documents. This will include the CxA witnessing selected assembly markups, portions of the startup of selected equipment, and spot checking the Pre-Functional (Installation) Checklists.

h. The CxA will develop specific equipment and system Functional Checklists in cooperation with the Controls Design-Builder,

i. Functional checklists will be executed by the Design-Builder, which are witnessed and documented by the CxA.

j. Items of non-compliance in material, installation startup, and operation are corrected and the equipment or system is rechecked. The CxA will maintain an issue log to track issues and issue resolution.

k. The Design-Builder and the CxA will develop Operation and Maintenance documentation, which will be reviewed by the DDC and its Commissioning Consultant for completeness.

l. Commissioning, excluding the Warranty walkthrough, must be completed prior to Substantial Completion.

m. The Design-Builder and the CxA will develop orientation documentation, which will be reviewed by the DDC and its Commissioning Consultant for completeness. The orientation schedules and agenda will be provided by the CxA in coordination with the respective Design-Build subcontractors. The CxA will coordinate and verify that orientation is completed, attended by the appropriate City of New York personnel, is thorough and provides all necessary information required to operate and service the equipment or system.

n. Deferred testing/ checkouts are conducted, as specified or required in the Contract Documents.

20.13 Commissioning Plan and Schedule

Commissioning Plan: The Commissioning Plan provides guidance in the execution of the commissioning process. After the initial construction phase commissioning kickoff meeting, the CxA will update the plan. This plan is a living document that will evolve and expand as the Project progresses. The Commissioning Plan must include the following:

a. Description of the facility and Project.

b. Description of the commissioning process and associated deliverable documents.

c. Description of equipment and systems to be commissioned.

d. Description of schedules for testing procedures along with identification of Parties involved in performing and verifying tests.

e. Sample rates for equipment to be tested.

f. Identification of task items that must be completed before the next operation can proceed.

g. Description of responsibilities of Commissioning Team members.

h. Description of observations to be made and reported on during testing and witnessing of testing by all parties involved in the Project.

Commissioning Schedule: As part of the Design-Builder's Project Schedule, the CxA will include a schedule identifying in detail the commissioning process and incorporating commissioning scheduling information.

20.14 Testing Procedures

The Design-Builder's CxA will determine and document the acceptance procedures for each system within disciplines for review and concurrence by the DDC's Commissioning Consultant. The acceptance procedures must incorporate the commissioning standards and successful testing results as referred to throughout the Contract Documents and the final design.

The CxA will provide performance checklists and performance checkout data sheets for each system based on actual system configuration. Special emphasis must be placed on checkout procedures that must conclusively determine actual system performance and compliance with both the final design and the Contract Documents.

The Design-Builder and appropriate vendor(s) must be informed by the CxA of what tests are to be performed and the expected results. The Commissioning Plan must address the test requirements and be distributed to all Parties involved with that system.

Prior to Functional Testing, the Design-Builder must provide the following:

a. Design-Builder must certify in writing that commissioned systems, subsystems, and equipment have been installed, calibrated and started, and are operating according to the Contract Documents.

b. Design-Builder must certify in writing that all relevant instrumentation and control systems have been completed and calibrated; are operating according to the Contract Documents; and that pretest set points have been recorded.

c. The Design-Builder and he CxA must certify in writing that TAB (Testing and Balancing) procedures have been completed, and that the TAB report has been submitted, discrepancies corrected, and corrective work approved.

d. Design-Builder must perform tests for system and intersystem performance only after the DDC has approved the completed testing checklists for systems, subsystems, and equipment.

The Functional Performance tests must be performed by the Design-Builder and vendor(s) with oversight by the CxA. The CxA must witness, verify, and document these tests.

a. Functional Performance Tests must include operating the systems and components through each of the written sequences of operation, other significant modes of miscellaneous alarms, power failure, and security alarm when impacted by and interlocked with commissioned equipment, as detailed in the Commissioning Plan.

b. Checklists must be completed comprehensively and to the extent necessary to enable the CxA to assure the DDC that the systems perform as per the final design and the Contract Documents.

c. If a test fails for any reason and retesting is required, the Design-Builder must provide retesting at no additional cost to the City.

d. After testing, Design-Builder must return settings to normal operating conditions.

20.15 Operation and Maintenance Manuals

The CxA must review the Operation and Maintenance manuals provided by the Design-Builder for completeness of the documents. The review process must verify that Operation and Maintenance instructions meet specifications and are included for all commissioned equipment furnished by the Design-Builder.

Published literature must be specifically oriented to the provided equipment, indicating required operation and maintenance procedures, parts lists, assembly / disassembly diagrams and related information.

The Design-Builder must incorporate the standard technical literature into system specific formats for this facility as designed and as actually installed. The resulting Operation and Maintenance information must be system specific, concise, to the point and tailored specifically to this facility. The DC Commissioning Consultant will review these documents as necessary for final corrections by the Design-Builder.

Design-Builder must submit Operations & Maintenance Manuals for each piece of equipment for review no later than 45 days after submittal approval.

The Operation and Maintenance Manual review and coordination efforts must be completed prior to DDC orientation sessions, as these documents are to be utilized in the orientation sessions.

System Operations Manual

a. The Design-Builder and the CxA must prepare and deliver these documents to the DDC for review and acceptance. The required documents must be described in the Commissioning Plan and contract documents. Typically, the manual will include the following:

   i. System, subsystem, and equipment descriptions

   ii. Commissioned systems single line diagrams (to be provided by Mechanical, Electrical, Plumbing, and Building Management System (BMS) subcontractors).

   iii. As built sequences of operations, control drawings and original set points (to be provided by the Design-Builder and the BMS subcontractor).

   iv. Operating instructions for integrated building systems (to be provided by mechanical and BMS subcontractors).

   v. Recommended schedule of maintenance requirements and frequency (to be provided by Design-Build subcontractors).

   vi. Recommended schedule for calibrating sensors and actuators (to be provided by BMS subcontractor).

20.16 Demonstration and Instruction

The Design-Builder and the CxA must schedule and coordinate instruction sessions for the facility's staff for each commissioned system. Demonstrations must be held per final design and the Contract Documents, along with the appropriate schematics, handouts and visual / audio orientation aids onsite with equipment.

The equipment vendors must provide instruction on the specifics of each major equipment item including philosophy, troubleshooting and repair techniques.

The Design-Builder and CxA must record and edit demonstration and orientation sessions and provide these records to the DDC.

For additional direction pertinent to instruction, refer to other specific divisions for demonstration and instruction requirements.

20.17 Warranty Review/Seasonal Testing

The CxA will return upon the start of the new season (cooling or heating) after Project completion to conduct performance tests that could not be performed due to ambient conditions. The seasonal testing will only be performed if suitable loads / conditions were unavailable during the performance testing stages (in other words; the requirement for testing is warranted).

The CxA will return to the site approximately 10 months into the 12-month guaranty period and interview the occupants and maintenance staff, review the operation of the building, provide recommendations for installation and operational problems and document warranty and operational issues in the issues database.

20.18 Record Drawings

The CxA must review the Design-Builder as built documents to verify incorporation of both design changes and as built construction details. Discrepancies noted must be corrected by the Design-Builder and the appropriate subcontractor.

Public Design Commission Procedures

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Article 21 Public Design Commission Procedures

21.1 BACKGROUND

The Public Design Commission (PDC) is the City's design review agency and is charged with reviewing and approving designs for permanent structures, landscape architecture and art on City-owned property.[1] The PDC comprises eleven commissioners serving pro bono and a staff headed by an executive director.

In partnership, the PDC and DDC have collaborated to modify existing PDC processes slightly for the Borough-Based Jails Program (BBJ) to accommodate design-build methodology, such as fast-tracking.

Applicability of PDC Review

Each BBJ project is subject to review and approval by the PDC in accordance with Chapter 37 of the City Charter. Structures intended for temporary use in a fixed location for a period of more than one year, such as swing space erected for use during construction (e.g., temporary sally ports), are also subject to review. The PDC does not review interior work except for artwork installations; however, it may request interior drawings for context and so that exterior work can be appropriately reviewed.

Design Review Applicant and Role of DDC

The PDC does not accept applications for review directly from vendors on behalf of City agencies, including DDC. DDC and DOC will be co-applicants and all submissions will be made by DDC in coordination with the Design-Builder. All submissions to the PDC and communications with the PDC must go through the DDC liaisons. Do not contact the PDC directly.

Role of the Design-Builder

The Design-Builder is responsible for the timely preparation of materials for submission to the PDC, including any revised submissions required by DDC, and for fully coordinating submission materials with DDC prior to submission to the PDC.

21.2 REVIEW REQUIREMENTS

Overview

The PDC reviews and approves projects during design, construction, and project closeout. The PDC meets once per month to publicly review projects submitted by all City agencies.

The Design-Builder must consult with DDC early and often in the design process to identify project scope(s) requiring the PDC approval and to create submission schedules. As soon as practicable following the Agreement Date, the Design-Builder must coordinate with DDC to review the Design-Builder's preliminary review submission materials for the project, the schedule of design packages, and any submission materials for any design packages that Design-Builder proposes to be submitted for simultaneous preliminary and final approval.

[1] Chapter 37 of the New York City Charter and additional information about the PDC can be found at https://www1.nyc.gov/site/designcommission/about/chapter-37.page.

Agency Review and Approval

PDC submission materials are Mandatory DDC Approval Submittals and require DDC approval prior to submission to the PDC.

For each PDC review, all submission materials noted below must be submitted to DDC no later than 14 days prior to the submission deadline noted on PDC's monthly meeting calendar, which includes submission deadlines. The PDC's monthly meeting requirement can be found at https://www1.nyc.gov/site/designcommission/review/meetings.page.

Community Board Review

Presentation of the proposed design to the appropriate Community Board is a pre-requisite to preliminary review of the project by the PDC. The Design-Builder must provide materials to and coordinate with DDC and the Community Board to schedule a presentation as soon as practicable after the Agreement Date. The Community Board's review is not an "approval" process and comments from the Community Board are advisory unless otherwise directed by DDC. After such comments are received, the Design-Builder must coordinate with DDC to determine how they should be addressed.

If the Community Board has not provided comments (in the form of a letter or resolution or otherwise) within fourteen days after the presentation, the Design-Builder may proceed with the PDC review process.

21.3 PDC Reviews

Conceptual Review

There is no conceptual review required for BBJ projects.

Preliminary Review

Preliminary approval of each BBJ project is required. For preliminary review, the Design-Builder must submit all applicable documents set forth on the PDC "Structures: Preliminary Review Checklist" document, available at: https://www1.nyc.gov/assets/designcommission/downloads/pdf/structures-preliminary-3.pdf.

In addition, the Design-Builder must submit a copy of any written comments received during the procurement process (i.e., comments from the PDC staff or commissioners relating to interim design submissions), and a narrative explaining how the comments have been addressed in the project design to date.

If the design for the project changes substantially after the PDC has provided preliminary approval, the changes must be submitted for interim review as described below.

Final Review

Final approval for each BBJ project is required. Final review and approval by the PDC is required by the New York City Department of Buildings (DOB) to obtain building permits for exterior elements. For final review, the Design-Builder must submit all applicable documents set forth on the PDC "Structures: Final Review Checklist" document, available at: https://www1.nyc.gov/assets/designcommission/downloads/pdf/structures-final-5.pdf.

To accommodate early construction packages (i.e., fast-tracking), the Design-Builder may seek final approval on those individual design packages requiring PDC approval in addition to seeking final approval for the total project design. Multiple design packages may be submitted for final review in any application period. Each application for final review must be accompanied by a separate checklist.

Simultaneous Final Review for Individual Design Packages that are Subject to PDC Review

The Design-Builder may seek final review of individual design packages simultaneously with preliminary review for the project. The Design-Builder must first consult with DDC before advancing the design beyond the preliminary review level to identify any design packages that may be eligible for final review simultaneously with the preliminary review for the project. For packages identified as potentially eligible, DDC will consult with PDC to confirm before the submission is prepared.

For those design packages for which the Design-Builder seeks simultaneous preliminary and final review, the Design-Builder must submit applicable documents set forth on the PDC "Structures: Preliminary and Final Review Checklist" document, available at: https://www1.nyc.gov/assets/designcommission/downloads/pdf/structures-preliminary-and-final-5.pdf.

Interim Review

Interim review, where required by PDC's preliminary approval, occurs between preliminary review and final review. Interim review is also required when revisions are made to the design of the exterior of the project after preliminary approval.

Amended Final Review/Construction Change

Amended final submissions must be made to the PDC when design changes are made after the project has received final approval, or when design for any design package changes substantially after the design package has received final approval. When such post-approval changes occur during construction, the amended final review is also known as a change-in-construction review. Approval on amended final and change-in-construction submissions is required before proceeding with the Construction Work, except for the protection of persons and property. To expedite the approval process, construction change submissions have an abbreviated set of requirements and may be submitted outside the typical review in coordination with DDC.

Final Signoff – Project Completion

The completed project is subject to final signoff by the PDC to ensure that the project was built as approved. The PDC's final signoff for the project is also a condition for issuance of a Certificate of Occupancy by DOB.

21.4 PDC PROPOSED MODIFICATIONS

During the course of its review process, the PDC may request additional information or propose modifications to the project design. Such requests are subject to Article 7.2(c) of the Agreement. After comments are received, the Design-Builder must coordinate with DDC to determine how comments should be addressed.

21.5 SUBMISSION AND REVIEW PROCESS

PDC Submissions

The PDC requires submission of hard copies, samples and models, and digital files as described below. With the exception of the application form, all items are the responsibility of the Design-Builder. DDC will complete the required application form, obtain the requisite agency signature(s), and submit digital copies of the application and submission materials to the PDC. The Design-Builder is responsible for delivering hard copies, samples and models to the PDC.

PDC Meetings

Three business days prior to its monthly meeting, the PDC distributes a meeting agenda via DDC. The agenda includes three sections: committee, consent, and public hearing. Projects on the committee agenda will be presented to the PDC by the Design-Builder, with representatives of DDC and the sponsor entity in attendance. Projects listed on the "consent" agenda are recommended for approval at the meeting and do not require attendance by the Design-Builder. Projects may be scheduled for a public hearing if a member of the public wishes to testify, in which case the Design-Builder will be required to present.

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 in coordination with DDC and are not included on the meeting agenda. PDC meetings are video recorded and made publicly available on the PDC's website.

Meeting Attendance

Meetings are typically held in the PDC's offices on the third floor of City Hall, and teams presenting a project on the committee or public hearing 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.

The PDC will have the Design-Builder's submitted presentation displayed on a screen, and samples and models will be laid out on a table. The Design-Builder may not present any new material at the meeting.

Approval and Documentation

Following its monthly meeting, the PDC distributes formal communication documenting the results of its review. PDC typically communicates results within 7 days. All communication from the PDC is distributed via DDC.

Additional Project Requirements

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Article 22 Additional Project Requirements

22.1 Noise Control Provisions

In accordance with the provisions of Section 24-216(b) of the Administrative Code of the City ("Administrative Code"), Noise Abatement Contract Compliance, devices and activities which will be operated, conducted, constructed or manufactured pursuant to the Agreement and which are subject to the provisions of the City Noise Control Code will be operated, conducted, constructed, or manufactured without causing a violation of the Administrative Code. Such devices and activities will incorporate advances in the art of noise control development for the kind and level of noise emitted or produced by such devices and activities, in accordance with regulations issued by the Commissioner of the City Department of Environmental Protection.

The Design-Builder agrees to comply with Section 24-219 of the Administrative Code and implementing rules codified at 15 Rules of the City of New York ("RCNY") Section 28-100 *et seq*. In accordance with such provisions, the Design-Builder, if the Design-Builder is the responsible party under such regulations, will prepare and post a Construction Noise Mitigation Plan at each Project Site, in which the Design-Builder will certify that all construction tools and equipment have been maintained so that they operate at normal manufacturers operating specifications. If the Design-Builder cannot make this certification, it must have in place an Alternative Noise Mitigation Plan approved by the City Department of Environmental Protection. In addition, the Design-Builder's certified Construction Noise Mitigation Plan is subject inspection by the City Department of Environmental Protection in accordance with Section 28-101 of Title 15 of RCNY. No Contract Work may take place at a Project Site unless there is a Construction Noise Mitigation Plan or approved Alternative Noise Mitigation Plan in place. In addition, the Design-Builder will create and implement a noise mitigation training program. Failure to comply with these requirements may result in fines and other penalties pursuant to the applicable provisions of the Administrative Code and RCNY.

22.2 Ultra-Low Sulfur Diesel Fuel

In accordance with the provisions of Section 24-163.3 of the Administrative Code, the Design-Builder specifically agrees as follows:

Definitions.

For purposes of this 22.2, the following definitions apply:

"Design-Builder" means any person or entity that enters into a Public Works Contract with a City Agency, or any person or entity that enters into an agreement with such person or entity, to perform work or provide labor or services related to such Public Works Contract.

"Motor Vehicle" means any self-propelled vehicle designed for transporting persons or property on a street or highway.

"Non-road Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of Title 42 of the United States Code, except that this term will apply to internal

combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

"Non-road Vehicle" means a vehicle that is powered by a Non-road Engine, fifty (50) horsepower and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which will include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except that this term will not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Non-road Engine of sixty-five (65) horsepower or less and that are not used in any construction program or project.

"Public Works Contract" means a contract with a City Agency for a construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; a contract with a City Agency for the preparation for any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; or a contract with a City Agency for any final work involved in the completion of any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge

"Ultra-Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).

Ultra-Low Sulfur Diesel Fuel

All Design-Builders will use Ultra Low Sulfur Diesel Fuel in diesel-powered vehicles in the performance of the Agreement.

Notwithstanding the requirements of 0, Design-Builders may use diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) to fulfill the requirements of this 0, where the Commissioner of the City Department of Environmental Protection ("**DEP Commissioner**") has issued a determination that a sufficient quantity of Ultra Low Sulfur Diesel Fuel is not available to meet the needs of Agencies and Design-Builders. Any such determination will expire after six (6) months unless renewed.

Design-Builders will not be required to comply with this 0 where the City Agency letting the Agreement makes a written finding, which is approved, in writing, by the DEP Commissioner, that a sufficient quantity of Ultra Low Sulfur Diesel Fuel, or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is not available to meet the requirements of Section 24-163.3 of the Administrative Code,[2] provided that such Design-Builder in its fulfillment of the requirements of the Agreement, to the extent practicable, will use whatever quantity of Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is available. Any finding made pursuant to this 0 will expire after sixty (60) Days, at

which time the requirements of this 0 will be in full force and effect unless the City Agency renews the finding in writing and such renewal is approved by the DEP Commissioner.

Design-Builders may check on determinations and approvals issued by the DEP Commissioner pursuant to Section 24-163.3 of the Administrative Code, if any, at www.dep.nyc.gov or by contacting the City Agency letting the Agreement.

Best Available Technology

All Design-Builders will utilize the best available technology for reducing the emission of pollutants for diesel-powered Nonroad Vehicles in the performance of the Agreement. For determinations of best available technology for each type of diesel-powered Nonroad Vehicle, Design-Builders will comply with the regulations of the City Department of Environmental Protection, as and when adopted, Chapter 14 of Title 15 of the Rules of the City of New York (RCNY). The Design-Builder will fully document all steps in the best available technology selection process and will furnish such documentation to the City Agency or the DEP Commissioner upon request. The Design-Builder will retain all documentation generated in the best available technology selection process for as long as the selected best available technology is in use.

No Design-Builder will be required to replace best available technology for reducing the emission of pollutants or other authorized technology utilized for a diesel-powered Nonroad Vehicle in accordance with the provisions of this Article within three (3) years of having first utilized such technology for such vehicle.

This 0 will not apply to any vehicle used to satisfy the requirements of a specific Public Works Contract for fewer than twenty (20) Days.

The Design-Builder will not be required to comply with this 0 with respect to a diesel-powered Nonroad Vehicle under the following circumstances:

- Where the City Agency makes a written finding, which is approved, in writing, by the DEP Commissioner, that the best available technology for reducing the emission of pollutants as required by this 0 is unavailable for such vehicle, the Design-Builder will use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle.
- Where the DEP Commissioner has issued a written waiver based upon the Design-Builder having demonstrated to the DEP Commissioner that the use of the best available technology for reducing the emission of pollutants might endanger the operator of such vehicle or those working near such vehicle, due to engine malfunction, the Design-Builder will use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle, which would not endanger the operator of such vehicle or those working near such vehicle.

- In determining which technology to use for the purposes of and above, the Design-Builder will primarily consider the reduction in emissions of particulate matter and secondarily consider the reduction in emissions of nitrogen oxides associated with the use of such technology, which will in no event result in an increase in the emissions of either such pollutant.
- The Design-Builder will submit requests for a finding or a waiver pursuant to this 0 in writing to the DEP Commissioner, with a copy to the ACCO of the City Agency letting the Agreement. Any finding or waiver made or issued pursuant to and above will expire after one hundred eighty (180) Days, at which time the requirements of 0 will be in full force and effect unless the City Agency renews the finding, in writing, and the DEP Commissioner approves such finding, in writing, or the DEP Commissioner renews the waiver, in writing.

Section 24-163 of the Administrative Code

The Design-Builder will comply with Section 24-163 of the Administrative Code related to the idling of the engines of motor vehicles while parking.

Compliance

The Design-Builder's compliance with 22.2 may be independently monitored.[3] If it is determined that the Design-Builder has failed to comply with any provision of 22.2, any costs associated with any independent monitoring incurred by the City will be reimbursed by the Design-Builder.

Any Design-Builder who violates any provision of 22.2, except as provided in 0 below, will be liable for a civil penalty between the amounts of one thousand ($1,000) and ten thousand ($10,000) dollars, in addition to twice the amount of money saved by such Design-Builder for failure to comply with 22.2.

No Design-Builder will make a false claim with respect to the provisions of 22.2 to a City Agency. Where a Design-Builder has been found to have done so, such Design-Builder will be liable for a civil penalty of twenty thousand ($20,000) dollars, in addition to twice the amount of money saved by such Design-Builder in association with having made such false claim.

Reporting

For all Public Works Contracts covered by this 22.2, the Design-Builder will report to the City Agency the following information:

The total number of diesel-powered Nonroad Vehicles used to fulfill the requirements of this Public Works Contract;

The number of such Nonroad Vehicles that were powered by Ultra Low Sulfur Diesel Fuel;

The number of such Nonroad Vehicles that utilized the best available technology for reducing the emission of pollutants, including a breakdown by vehicle model and the type of technology;

The number of such Nonroad Vehicles that utilized such other authorized technology in accordance with 0, including a breakdown by vehicle model and the type of technology used for each such vehicle;

The locations where such Nonroad Vehicles were used; and

Where a determination is in effect pursuant to 00 or 0, detailed information concerning the Design-Builder's efforts to obtain Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm).

The Design-Builder will submit the information required by 0 at the completion of Work under the Public Works Contract and on a yearly basis no later than August 1 throughout the term of the Public Works Contract. The yearly report will cover Work performed during the preceding fiscal year (July 1 – June 30).

22.3 Ultra-Low Sulfur Diesel Fuel

In accordance with the Coordinated Construction Act for Lower Manhattan, as amended:

Definitions

For purposes of this Section, the following definitions apply:

"Lower Manhattan" means the area to the south of and within the following lines: a line beginning at a point where the United States pierhead line in the Hudson River as it exists now or may be extended would intersect with the southerly line of West Houston Street in the Borough of Manhattan extended, thence easterly along the southerly side of West Houston Street to the southerly side of Houston Street, thence easterly along the southerly side of Houston Street to the southerly side of East Houston Street, thence northeasterly along the southerly side of East Houston Street to the point where it would intersect with the United States pierhead line in the East River as it exists now or may be extended, including tax lots within or immediately adjacent thereto.

"Lower Manhattan Redevelopment Project" means any project in Lower Manhattan that is funded in whole or in part with federal or State funding, or any project intended to improve transportation between Lower Manhattan and the two air terminals in the City known as LaGuardia Airport and John F. Kennedy International Airport, or between Lower Manhattan and the air terminal in Newark known as Newark Liberty International Airport, and that is funded in whole or in part with federal funding.

"Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of Title 42 of the United States Code, except that this term will apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

"Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty horsepower (HP) and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which will include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except that this terms will not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five HP or less and that are not used in any construction program or project.

"Ultra-Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million.

Requirements

The Design-Builder and its Subcontractors are required to use only Ultra Low Sulfur Diesel Fuel to power the diesel-powered Nonroad Vehicles with engine HP rating of fifty HP and above used on a Lower Manhattan Redevelopment Project and, where practicable, to reduce the emission of pollutants by retrofitting such Nonroad Vehicles with oxidation catalysts, particulate filters, or technology that achieves lowest particulate matter emissions.

Dust Hazards

Should a harmful dust hazard be created in performing the Work of this Agreement, for the elimination of which appliances or methods have been approved by the Board of Standards and Appeals of the City of New York, such appliances and methods will be installed, maintained, and effectively operated during the continuance of such harmful dust hazard. Failure to comply with this provision after notice will make this Agreement voidable at the sole discretion of the City.

22.4 Pesticides

In accordance with Section 17-1209 of the Administrative Code, to the extent that the Design-Builder or its Subcontractors applies pesticides to any property owned or leased by the City, the Design-Builder, and any such Subcontractor must comply with Chapter 12 of the Administrative Code.

22.5 Waste Treatment, Storage, and Disposal Facilities and Transporters

In connection with the Work, the Design-Builder and its Subcontractor must use only those waste treatment, storage, and disposal facilities and waste transporters that possess the requisite license, permit or other governmental approval necessary to treat, store, dispose, or transport the waste, materials or hazardous substances.

22.6 Prohibition of Tropical Hardwoods

Tropical hardwoods, as defined in Section 165 of the New York State Finance Law (Finance Law), will not be utilized in the performance of the Agreement except as expressly permitted by Section 165 of the Finance Law.