Attachment 1 -

Division 1- Specifications

SECTION 01120

SUMMARY OF THE WORK

PART 1—GENERAL

1.1 DESCRIPTION OF WORK

A. This Section summarizes construction operations required by the Contract Documents, defines aspects of the single Prime Contractor's relationship with City and lists special City requirements.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 PROJECT DESCRIPTION

A. The summary of work covers McPherson Square Library Renovations and Park Improvements, located at 601 E Indiana Avenue, in the Kensington neighborhood of Philadelphia. The project includes a range of ADA accessibility updates, interior and exterior renovation, and energy efficient upgrades. Accessibility updates include new handicapped accessible entry ramp, interior elevator, and ADA-compliant restrooms. Additionally, the project includes modifications to interior layouts, customized for McPherson Branch Library collections and daily programming including new furniture, appliances, and finishes. Supporting the requirement to achieve LEED Gold designation, upgrades include new thermal-efficient windows and doors and LED lighting throughout in addition to building performance upgrades to mechanical, electrical, plumbing, fire alarm, and security systems.

Improvements at the exterior include restoration of the stucco exterior and façade details, repointing masonry elements within the park, the addition of a secondary egress stair from the lower level, new fence protection around the parking lot and existing basement stair, and improvements to existing stormwater management. Improvements to areas of the property that are used by the community include enhanced safety of park spaces, improved landscape, and new equipment for the playground.

This project is part of the City's Rebuilding Community Infrastructure Program ("Rebuild").

1.4 CONTRACTS

A. Construct Work under a single Prime Contract.

A. Construction Work: Provide all the Work of the Contract, no matter where the information is located in the contract documents.

1. Selective demolition and new construction as required for new Architectural, Structural, Mechanical, Plumbing and Electrical Work. Cutting and patching required by the Work and not specifically indicated on the drawings are the responsibility of the Prime Contractor.

a. Remove conduit runs with wiring, boxes and devices built into existing walls, floors or roof slabs which are to be removed.

2. Install access doors and panels, anchors, embedments, bolts, plates, sleeves, boxes, etc. as required to complete the Work of the Contract.

3. Provide blocking, backing, box-outs, openings, recesses, etc. required for the Work of the Contract.

4. Provide a dumpster for the use of all contractor personnel and sub-contractors.

5. Provide periodic and final cleaning of building and site.

6. Provide temporary site perimeter fence and sidewalk cover if required to secure and protect the site and as indicated on Drawings.

7. Provide temporary toilet facilities for use of all contractor personnel and sub-contractors.

8. Provide painting of all surfaces and equipment exposed to view in the finished Work, regardless of which contractor or sub-contractor provided the surface or equipment.

1.5 CONTRACTOR'S USE OF PREMISES

A. Prime Contractor shall have complete and exclusive use of the area of work as required for execution of Work of this Contract only.

B. Coordinate use of premises with Project Coordinator.

C. Protect all products stored on-site from damage and vandalism.

D. Store products to avoid interference with operations of City agencies.

E. Secure and pay for additional storage and work areas if required by Contractor.

F. Do not overload existing structure with stored materials.

END OF SECTION

SECTION 012100

ALLOWANCES

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section specifies each Prime Contractor's administrative and procedural requirements governing handling and processing allowances

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Each section of the specifications including an allowance.

1.3 COORDINATION

A. Designate required selection and delivery dates for products under each allowance in the Contractor's Construction Schedule.

B. Designate each allowance with extensions based on estimated quantities for unit price allowances on Contractor's Schedule of Values.

1.4 DEFINITIONS

A. Refer to Section 007200.

1.5 ALLOWANCES

A. Include in Total Base Bid Amount, an amount equal to Two Percent (2%) of the base bid amount for payment of permit fees. This is a direct cost; no mark-ups will be permitted.

C. Amount of each allowance (excluding 1.5.A above) shall include:

1. Net cost of product.
2. Delivery to site.
3. Applicable taxes.
4. Preparing submittals.

D. In addition to amounts of allowances (excluding 1.5.A above), include in the base bid amount, the Contractor's cost for:

1. Assisting in selection and obtaining proposals from suppliers and subcontractors.
2. Processing submittals.
3. Handling at site, including unloading, uncrating and storage.
4. Protection from elements and from damage.
5. Labor, installation and finishing.
6. Other expenses required to complete installation.
7. Overhead and profit.

1.6 SELECTION OF PRODUCTS

A. Design Professional shall issue by Change Order (ASI/RFI) a full specification for the final selected product.

B. Contractor's Duties

1. Notify Design Professional of deadlines for specification of final products, allowing for Contractor’s required submissions as required to meet Date of Completion.

2. Provide cost proposals for products being considered when requested by Design Professional.

3. Notify Design Professional of any effect anticipated by selection of product or supplier under consideration as it relates to:

a. Construction Schedule.

b. Contract Sum.

c. On notification of selection, enter into purchase agreement with designated supplier.

1.7 INSTALLATION

A. Comply with requirements of applicable specification section, including warranties/guarantees.

1.8 ADJUSTMENT OF COSTS

A. Should actual purchase cost be more or less than specified amount of allowance, Contract Sum shall be adjusted by Change Order equal to amount of difference. A percentage to cover Contractor's overhead and profit, as stated in Standard Contract Requirements, will be applied to difference in cost.

B. For products specified under unit cost allowance unit cost applies to quantity required to complete the Work as determined by the Contractor.

1. Submit invoices or other data to substantiate quantity actually used.

C. Submit request for other costs, claimed for additional work caused by increase over amount of allowance, prior to required submission for product.

1.9 SCHEDULE OF ALLOWANCES

A. ALLOWANCE No. 1: Bidders are to include the amount equal to Two Percent (2%) of their base bid amount for payment of Permit and License fees to all regulatory agencies.

B. ALLOWANCE No. 2: Bidders are to include $350,000 for the procurement and installation of Furniture, Fixtures, and Equipment. This includes FFE vendor storage costs and related post-installation FFE tasks.

C. ALLOWANCE No. 3: Bidders are to include $70,000 for moving and storage of Owner equipment and materials present at start of construction, storage for construction duration, and moving / re-installation upon Construction Substantial Completion. Moving Coordinator must:

a. Coordinate with Owner for move planning and inventory of equipment and materials to be moved or disposed of.

b. Inventory and tag all equipment and materials for disposal, move-out and move-in, including un-shelving and re-shelving books and library materials.

c. Dispose of equipment and materials tagged for disposal.

d. Be qualified to handle and catalog library materials including books, audio-visual, and other materials.

e. Coordinate mover and storage facility. Provide off-site storage facilities with conditioned space which are fully insured.

f. If required, relocate items to a location defined by the Owner, within the City of Philadelphia.

g. Coordinate with Owner for move-in planning, final inventory of equipment and materials, and re-shelving of books and library materials in new floor plan.

D. ALLOWANCE No. 4: Bidders are to include $50,000 for replacement-in-kind or procurement and installation of new lintel in addition to documented scope of work.

F. ALLOWANCE No. 5: Bidders are to include $75,000 for exterior stucco and/or terracotta restoration in addition to documented scope of work.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

- END -

SECTION 012300
ALTERNATES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section identifies each Alternate by number and describes the basic changes to be incorporated into the Work, if that Alternate is made part of the Contract.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 ADMINISTRATIVE PROCEDURES

A. Referenced Sections of Specifications stipulate pertinent requirements for products and methods to achieve the Work stipulated under each Alternate.

B. Coordinate pertinent related Work and modify surrounding Work as required to properly integrate the Work under each Alternate, and to provide the complete construction required by the Contract Documents.

C. Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date.

D. A “Schedule of Alternates” is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each Alternate. Include as part of each Alternate, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

1.4 DEFINITIONS

A. Refer to Section 007200 Standard Contract Requirements.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternates:
1. Replacement of existing site benches outside of project limit lines.
2. Replacement of existing site trash receptacles outside of project limit lines.
3. Removal and pruning of existing site trees outside of project limit lines.

4. (not used)
5. Playground shade structure.
6. Replacement of hardscape at midway path to Kensington, full length of path to the corner of Clearfield and F Street, portions of circular path, and tree disconnects (see L100).

- END -

SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. All substitution requests shall be submitted seven (7) calendar days prior to bid due date. This section specifics each Prime Contractor bidder's administrative and procedural requirements for handling requests for substitutions made prior to the time of bid. Procedural requirements governing the Contractor's selection of products and product options are included under Section 016001 "Products and Materials".

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions - Requests for changes in products, materials, equipment, and construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions". No substitutions will be considered after the bid phase. The following shall not be considered substitutions:

1. Substitutions requested by Bidders during the bidding period, and accepted in Addenda prior to award of Contract.
2. Revisions to Contract Documents requested by the City or Design Professional.
3. Specified options of products and construction methods included in Contract Documents.
4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

C. "Or equal", "or equivalent", "approved equal", "approved equivalent", "equivalent substitution" and all other similar terms shall be interpreted as "substitution" as defined above.

1.4 SUBMITTALS

A. Submit electronic copy via Project Management software platform. Submit requests in accordance with procedures required for Change Order proposals. Attach all other data and certification.

B. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate.

C. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.

D. Samples, where applicable or requested.

E. A detailed comparison of salient features and qualities of the proposed substitution with those of the Work specified. Salient features and qualities may include elements such as size, weight, durability, performance and visual effect as determined by the Design Professional. Submit documentation of salient features and qualities from independent testing agencies performing industry recognized tests. The manufacturer's claims of performance may or may not be used in evaluation of substitutions at the discretion of the Design Professional.

F. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the City and separate Contractors, that will become necessary to accommodate the proposed substitution.

G. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

H. Cost information, including a proposal of the net change, if any in the Contract Sum. The Contractor shall certify that the cost data presented is complete and includes all related costs under this Contract, but excludes the Design Professional's redesign costs.

I. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

J. Certification that the Contractor will reimburse the City for all costs for additional services by the Design Professional relating to any substitution that necessitates a design change and related documentation.

K. Design Professional's Recommendation - The Design Professional will recommend acceptance or rejection of the proposed substitution to the Project Manager.

J. Project Manager's Action - The Project Manager will notify the Contractor of acceptance or rejection of the proposed substitution. The Project Manager will be the sole judge of the acceptability of the proposed substitution. Acceptance will be in the form of a Change Order. The Change Order will include a deduction from the Contract Sum for additional costs incurred by the City because of the substitution including, but not limited to, Design Professional's fees.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions - The Contractor's substitution request will be received and considered by the Design Professional when one or more of the following

conditions are satisfied, as determined by the Design Professional; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or approved substitution" clause or similar language in the Contract Documents.
5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. A substantial advantage is offered the City, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the City may be required to bear. Additional responsibilities for the City may include additional compensation to the Design Professional for redesign and evaluation services, increased cost of other construction by the City or separate Contractors, and similar considerations.

B. The specified product or construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

C. The specified product or construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

D. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

E. Where a proposed substitution involves more than one Prime Contractor, each Contractor shall cooperate with the other Contractors involved to coordinate the Work, provide uniformity and consistency, and to assure compatibility of products.

F. The Contractor's submittal and Design Professional acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 EXECUTION Not Applicable

Attachment - Substitution Request Form (4 pages)

- END -

CITY OF PHILADELPHIA SUBSTITUTION REQUEST FORM

INSTRUCTIONS:

A. This request must be submitted and signed by the Prime Contractor.

B. A request for each substitution must be exactly in this form, including all items. (One (1) item of substitution per form).

C. Attach complete information on changes to Drawings and Specifications that proposed substitution will require for its proper installation.

D. Submit with request, all necessary samples and substantiating data to prove quality and performance is equal to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance

CONTRACT AWARD DATE: _____DATE OF REQUEST:_____

CONTRACTOR: _____

PROJECT: _____

We hereby submit for your consideration the following substitution in lieu of the specified item for the above project:

SPEC. SECTION NO.:_____PARAGRAPH:_____SPECIFIED ITEM:_____

PROPOSED SUBSTITUTION: _____

REASON FOR REQUEST: _____

_____

_____

ITEMIZED COMPARISON OF SPECIFIED ITEM WITH THE PROPOSED SUBSTITUTION:

PERFORMANCE: _____

_____

APPEARANCE: _____

_____

REFERENCED STANDARDS: _____

DEDUCT CHANGE ORDER OFFERED FOR PROPOSED SUBSTITUTION: _____

MANUFACTURER'S WARRANTIES OF THE PROPOSED AND SPECIFIED ITEMS:

LENGTH OF WARRANTY: AS SPECIFIED [ ] PROPOSED [ ]

MATERIALS COVERED: AS SPECIFIED [ ] PROPOSED [ ]

LABOR COVERED: AS SPECIFIED [ ] PROPOSED [ ]

OTHER TERMS: AS SPECIFIED:_____

PROPOSED SUBSTITUTION:_____

DESIGNATION OF MAINTENANCE SERVICES AND SOURCES:_____

_____

_____

DOES SUBSTITUTION AFFECT DIMENSIONS OR CLEARANCES SHOWN ON THE DRAWINGS? YES [ ] NO [ ].

IF YES, CLEARLY INDICATE CHANGES: _____

_____

_____

WILL THE UNDERSIGNED PAY FOR CHANGES TO THE BUILDING DESIGN, INCLUDING ENGINEERING AND DETAILING COSTS CAUSED BY THE REQUESTED SUBSTITUTION? YES [ ] NO [ ].

IF NO, FULLY EXPLAIN: _____ _____

_____

_____

WHAT EFFECT DOES SUBSTITUTION HAVE ON OTHER CONTRACTS OR TRADES?

_____

_____

WHAT EFFECT DOES SUBSTITUTION HAVE ON CONSTRUCTION SCHEDULE?

_____

_____

CONTRACTORS CERTIFICATION OF EQUAL PERFORMANCE

The undersigned certifies that:

He/she has investigated the proposed substitution and has determined that it is equal to or better than the product specified.

He/she will guarantee the substitution in the same manner as the product specified.

He/she will coordinate and make other changes as required in the Work as a result of the substitution.

He/she waives all claims for additional costs as a result of the substitution, with the exception of those identified above under “cost data”.

He/she will reimburse the City for all costs for design change resulting from the substitution.

Submitted by:

Signature _____

Name: _____ Title: _____

Firm: _____Date:_____

Street: _____

City: _____State: _____ Zip Code: _____

Telephone: _____

Signature shall be by person having authority to legally bind his firm to the above terms. Failure to provide legally binding signature will result in rejection without further review by Design Professional.

Design Professional’s Recommendation:

Reviewed	[ ]
Reviewed as Noted	[ ]
Not Accepted	[ ]
Received too Late	[ ]

Signature: _____

-END-]

SECTION 012600

CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.1 CHANGE ORDER PROCEDURE

A. If a change in the design of any portion of the work or the requirements of the Project Manual is deemed necessary by the City/PRA, they may order an alteration to, or a change in, the work covered by the Contract Documents, and the contractor shall comply with such orders. If such changes increase the cost of the work to the Contractor, the City/PRA will allow additional compensation. If such changes diminish the cost of the work to the Contractor the City/PRA may deduct the amount of the diminution. No consequential loss or profit due to reduction in the scope of work will be allowed the Contractor, but the Contractor may be entitled to an extension of time in these instances. No changes shall be made except upon a standard Change Order Form, signed and executed by the Contractor and the City/PRA authorizing the change and fixing the method of compensation or deduction. This Section specifies administrative and procedural requirements for handling and processing Change Orders.

B. The execution of a change order (increase or decrease) will require a proposal from the Contractor on company letterhead. Such proposal will include a complete description of the change and schedule impact and a complete cost breakdown including such items as Labor, Materials, Equipment, Crew Composition, Sub-Contractor costs, and associated Insurance and Bonding costs (if applicable). The contractor is entitled to percentage mark-ups on some of these items as stated in the Standard Contract Requirements. The proposal is to be submitted to the City/PRA. Upon review and approval by the City/PRA Project Team, a signed standard Change Order Form will be forwarded to the Contractor for final execution.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements and other Division 1 sections of the Standard Contract Requirements (007200).

1.3 CONTRACTOR'S RESPONSIBILITY TO INFORM

A. Communication, either verbal or written, between the City/PRA or Design Professional and the Contractor, Subcontractors, or other parties involved, during the normal course of administration of the Contract, does not in any way constitute acceptance of a Change Order or direction to modify the Contract unless said communication is in the form of a written Change Order or Construction Change Directive as specified herein.

B. Communication from the City/PRA or Design Professional including, but not limited to the following, does not constitute approval of a Change Order:

1. Submittal review including submittals returned with notations and corrections;
2. Site observation, conversation and reports;
3. Participation in pre-construction, pre-installation, progress or other meetings;
4. Clarification sketches or drawings.

C. It is the responsibility of the Contractor to inform the City/PRA that any communication has, in the Contractor's opinion, caused reason to modify the Contract. The Contractor shall not undertake work which, in his opinion, requires a Change Order without completing procedures outlined herein.

D. Work done without completing Change Order procedures is entirely at the Contractor's own risk, even if the Contractor believes that communications from the City/PRA or Design Professional contain instructions to do work outside of the Contract scope.

E. The City/PRA and Design Professional will not willfully instruct work to be done that differs from the contract except through the Change Order procedures contained herein.

1.4 MINOR CHANGES IN THE WORK

A. Supplemental instructions, not involving an adjustment to the Contract Sum or Contract Time, may be issued in writing by the PRA.

1.5 CHANGE ORDER PROPOSALS

A. City/PRA-Initiated Change Order Proposal - Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the City/PRA, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.

1. Change Order Proposal requests issued by the City/PRA are for information only. Do not consider them as instruction either to stop work in progress, accelerate the work or to execute the proposed change.

2. Unless otherwise indicated in the Change Order Proposal request, within 20 days of receipt of the Change Order Proposal request, submit to the City/PRA for review, an estimate of cost necessary to execute the proposed change.

a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Separate labor and material charges. Where requested, furnish survey data to substantiate quantities.

b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time or any special efforts of the Contractor that will be employed to reduce the delay.

d. Indicate that the Change Order Proposal is in response to a City/PRA request and submit it to the City/PRA as stated in 1.1 (B) of this section.

B. Contractor-Initiated Change Order Proposal – When Contractor claims latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a Change Order Proposal.

1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.

2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Comply with requirements in Section 012500 “Substitution Procedures” if the proposed change in the Work requires the substitution of one product or system for a product or system specified.
5. Submit the proposal to the City/PRA as stated in 1.1 (B) of this section.

1.6 ALLOWABLE MARKUPS

A. For change orders, overhead and profit shall be the aggregate total amount allowed to the Contractor and shall include the costs of the Project Manager, office personnel, small tools, among other things. The markup for overhead and profit shall be calculated as follows:

i. Cost between $0.00 and $25,000.00 - **12%**
ii. Cost between $25,001.00 and $50,000.00 - **10%**
iii. Cost over $50,000.00 - **8%**
iv. Contractor markup for Subcontractor, and lower tier contractors shall not exceed **8%**

B. Under no circumstances shall the total combined markup for overhead and profit by the Contractor exceed the percentages for markup for overhead and profit indicated in Subparagraphs (1), (2), (3) and (4) above. The Rebuild Office shall make the final determination as to net cost of labor and materials. All Change Orders relating to price and/or time are subject to prior acceptance or approval by the Rebuild Office, or express ratification of Change Order work already for the Rebuild Office.

1.7 ALLOWANCES

A. Refer to Section 012100, Allowances.

1.8 CONSTRUCTION CHANGE DIRECTIVE (Force Account)

A. When the City/PRA and Contractor are not in total agreement on the terms of a Change Order Proposal, the City/PRA may issue a Construction Change Directive instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

B. The Construction Change Directive will contain a complete description of the change in the Work.

C. Documentation - Maintain detailed records on a time and material basis of work required by the Construction Change Directive. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1. Contractor’s documentation will not, by itself, establish the final cost.
2. The City/PRA reserves the right to determine the value of the change in Work per the requirements of this Section.

1.9 DETERMINATION OF COST

A. City/PRA reserves the right to use established estimating methods (including but not limited to industry standards and unit prices listed in this manual) to determine a fair and reasonable cost for changes in the Work.

PART 2 PRODUCTS Not used.

PART 3 EXECUTION

3.1 Sample Change Order Form, contact Project Coordinator for actual document.

-END-

SECTION 012900

PAYMENT PROCEDURES

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section specifies administrative and procedural requirements governing each Prime Contractor's submission of invoices for Payment. These may also be referred to as "Current Estimates" in the Standard Contract Requirements (007200).

B. Coordinate the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule with the Standard Cost Breakdown.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements and other Division 1 of the Standard Contract Requirements (007200).

1.3 GENERAL REQUIREMENTS

A. Each invoice for payment shall be consistent with previous applications and payments.

B. The initial submission of the Standard Cost Breakdown at time of Substantial Completion, and the final Standard Cost Breakdown involve additional requirements.

C. Withholding Payment - Any payment may be withheld in accordance with the Contract Documents

1. Any payment may be withheld if the procedural requirements including submittal of current administrative items listed including Certificates of Insurance are incomplete or outdated.

2. Portions of payment requested for Work installed without approved submittals may be withheld.

D. Standard Cost Breakdown Preparation - Complete every entry on the Standard Cost Breakdown:

1. Contractor (name and address)

2. Contract number (from Notice to Proceed);

3. Requisition No. (sequential number);

4. Date Prepared;

5. Project (title of project);

6. STANDARD COST BREAKDOWN

a. No. (sequentially numbering);

b. Item (phases of scope of work);

c. Unit (each, sq. ft., etc.);

d. Material;

e. Labor;

f. Unit Cost;

g. Total (total of Material and Labor).

7. PAYMENT APPLICATION

a. Previous Billing (as billed previous application);

b. Percent Complete (completed to date);

c. Total Completed (Total column under COST BREAKDOWN multiplied by Percent Complete column under PAYMENT APPLICATION.)

Incomplete Standard Cost Breakdowns will be returned without action.

E. Entries shall match data on the Contractor's Construction Schedule. Use updated schedules if revisions have been made.

F. Include amounts of Change Orders issued prior to the last day of the construction period covered by the Standard Cost Breakdown.

G. Submit original plus 2 copies of each Standard Cost Breakdown to the Robert LaBrum, Director, Design & Construction, PRA, 1234 Market Street, 16th Floor, Philadelphia, PA 19107

1.4 INITIAL STANDARD COST BREAKDOWN

A. Actions and submittals that shall precede or coincide with submittal of the first Standard Cost Breakdown include the following:

1. List of subcontractors.

2. List of principal suppliers and fabricators.

3. Schedule of Values.

4. Contractor's Construction Schedule (preliminary if not final).

5. Schedule of unit prices.

6. Submittal Schedule (preliminary if not final).

7. List of Contractor's staff assignments.

8. List of Contractor's principal consultants.

9. Copies of building permits.

10. Copies of authorizations and licenses from governing authorities for performance of the Work.

11. Report of pre-construction meeting.

12. Certificates of insurance.

13. Performance and payment bonds.

14. Complete Submittals for each product or system included in the Application.

15. Initial settlement survey and damage report.

16. Reference Point Survey.

17. Current Daily and Monthly Reports.

18. Initial Construction Photographs and/or videos.

1.5 STANDARD COST BREAKDOWN AT SUBSTANTIAL COMPLETION

A. This Standard Cost Breakdown shall reflect any Certificates of Partial Substantial Completion issued previously for City occupancy of designated portions of the Work.

B. Actions and submittals which shall proceed or coincide with this Standard Cost Breakdown include:

1. Occupancy permits and similar approvals.
2. Warranties (guarantees) and maintenance agreements.
3. Test/adjust/balance records.
4. Maintenance instructions.
5. Utility meter readings.
6. Start-up performance reports.
7. Certified improvement survey.
8. Change-over information related to City's occupancy, use, operation and maintenance.
9. Final cleaning.
10. Final progress photographs.
11. List of incomplete Work (punch list), recognized as exceptions to Certificate of Substantial Completion.
12. Record Documents.

1.6 FINAL STANDARD COST BREAKDOWN

A. Actions and submittals which shall precede or coincide with submittal of the final Standard Cost Breakdown include the following:

1. Project Closeout Form fully executed (signed).
2. Completion of items specified for completion after Substantial Completion (punch list).
3. Assurance that unsettled claims will be settled.
4. Assurance that Work not complete and accepted will be completed without undue delay.
5. Transmittal of required Project construction records to City/PRA.
6. Proof that taxes, fees and similar obligations have been paid.
7. Removal of temporary facilities and services.
8. Removal of surplus materials, rubbish and similar elements.
9. Change of door locks to City's access.

- END -

SECTION 012973
SCHEDULE OF VALUES (CURRENT ESTIMATE)

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes administrative requirements for each Prime Contractor's Schedule of Values, referred to as "Current Estimate" in the Standard Contract requirements.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 COORDINATION

A. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:

1. Contractor's Construction Schedule.
2. Standard Cost Breakdown
3. List of subcontractors.
4. Schedule of allowances.
5. Schedule of alternates.
6. Schedule of submittals.

B. Submit the Schedule of Values to the City no later than ten (10) days after receipt of the Notice to Proceed. Submit six (6) copies.

1.4 FORMAT AND CONTENT

A. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:

1. Generic name.
2. Related Specification Section.
3. Name of subcontractor.
4. Name of manufacturer or fabricator.
5. Name of supplier.
6. Change Orders (numbers) that have affected value.
7. Dollar value.
8. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.
9. Margins of Cost - Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Standard Cost Breakdown. Each item in the Schedule of Values and Standard Cost Breakdown shall be complete including its total cost and

proportionate share of general overhead and profit margin unless otherwise indicated.

10. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.

11. Itemize separate line item cost for the following items under Division 1:

    a. Field Engineering.

    b. Construction Photographs.

    c. Mock-up.

12. Itemize separate line item cost for each of the construction cost items under all applicable specification sections.

13. Itemize separate line item cost for each service contract.

14. Breakdown costs into:

    a. Delivered cost of material, with taxes paid, with overhead and profit.

    b. Installation cost, with overhead and profit.

    c. If requested, break down high value line items to list major materials or operations.

    d. Round off figures to nearest ten dollars.

    e. Make sum total costs of all items listed in Schedule equal to Contract Limit.

1.5 UPDATING

A. After review by the City, revise and resubmit schedules as required.

B. Update and resubmit the Schedule of Values when change orders or construction change directions result in a change in the Contract Limit.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

- END -

SECTION 013113

PROJECT COORDINATION

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractor's responsibilities to coordinate the work and related administrative procedures.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 SUBMITTALS

A. Submit the following prior to or coincidental with the initial application for payment.

1. List of contractor's staff assigned to the project and responsibilities including personnel on and off-site. Include mailing address, delivery address, phone, fax, mobile phone, etc. For at least three (3) staff, list phones where personnel can be reached during non-work hours for emergencies.

2. List of contractor's consultants and sub-contractors with similar requirements as above.

3. List of principal suppliers and fabricators with similar requirements as above. No emergency phone number required.

1.4 OBSERVATION OF WORK BY OTHERS

A. Observation of the Work by the City/PRA, Design Professional, Inspection and Testing Agencies or any other party shall not be interpreted as relieving the Contractor from responsibility for coordination of all Work, superintendence of the Work, and scheduling and direction of the Work or any other requirement of the Contract.

1.5 GENERAL CONTRACTOR'S RESPONSIBILITIES

A. Coordinate the Work and Schedules of each separate Prime Contractor.

B. Coordinate construction activities included under each Prime Contractor to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Contracts that are dependent upon each other for proper installation, connection, and operation.

C. Where installation of one part of the Work is dependent on installation of other components by other Prime Contractors, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.

D. Where availability of space is limited, coordinate installation by each Prime Contractor of different components to assure maximum accessibility for required maintenance, service and repair.

E. Make adequate provisions to accommodate items scheduled for later installation.

F. Where necessary, prepare memoranda for distribution to each Prime Contractor outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings. Copy memoranda to City/PRA and Design Professional.

G. Coordinate compatibility of products furnished by each Contractor. Refer to Section 016001 Products and Materials, Division 1.

H. Administrative Procedures - Coordinate scheduling and timing of each Prime Contractor's required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractors Construction Schedules and Schedules of submittals.

2. Installation and removal of temporary facilities.

3. Delivery and processing of submittals.

4. Progress meetings.

5. Project Closeout activities.

1.6 EACH PRIME CONTRACTOR'S RESPONSIBILITIES (including the General Contractor)

A. Cooperate with the General Contractor's coordination efforts for orderly progress of the Work without delay or covering work which needs to be accessible to other Primes.

B. Coordinate the Work of associated sub-contractors.

C. Establish a Contractor's Construction Schedule and coordinate with General Contractor.

D. Maintain on the job-site at all times during the performance of the Work, a competent, English speaking superintendent.

E. Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

F. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

G. Make adequate provisions to accommodate items scheduled for later installation.

H. When necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings. Copy memoranda to City/PRA and Design Professional.

I. Coordinate compatibility of products. Refer to Products and Materials, Division 1.

J. Administrative Procedures - Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project Closeout activities.

1.7 LACK OF COOPERATION BETWEEN CONTRACTORS

A. Delays attributable to lack of cooperation between the separate Prime Contractors and their sub-contractors shall not be recognized as a claim for delay. Claims by a contractor for costs due to such delays shall not be paid by the City/PRA.

B. Delays, including delays caused by lack of cooperation, shall result in penalties by the City/PRA as stipulated under paragraph 25e of the Standard Contract Requirements.

1.8 SUBCONTRACTOR'S RESPONSIBILITIES

A. Comply with the direction of each Prime Contractor in coordination efforts listed above.

1.9 OWNER'S CONSTRUCTION PROJECT MANAGEMENT PLATFORM SOFTWARE

A. General Contractors are required to use the Capital Program Office's Construction Project Management Platform software. The Platform (Procore) is used to manage design document packages, construction documents (change orders, ASIs, RFIs, RFPs, field orders, field reports/observations, consultant reports/observations, etc), project financials, invoice management, quality/safety reports, close-out documents and other project-related documents for retention purposes.

B. CPO has procured and will issue licenses to active representative(s) of each of the organizations listed below as "Users". Note that subcontractors to the General Contractor or subconsultants to the Lead Designer may be administered licenses to the system as needed on a case-by-case basis. Subcontractor/subconsultant management systems and processes are left to the discretion of the General Contractor and Lead Designers.

1. Users:
   a. CPO Project Manager
   b. PRA Manager (as applicable)
   c. Lead Designer
   d. General Contractor (or equivalent)
   e. Invoice Contact for GC
   f. Construction Inspector
2. Core functions include but are not limited to:
   a. Storage of project contacts
   b. Submission and review of payment applications
   c. Submission and review of project schedules in Platform compatible formats
   d. Submission of Potential Change Order (PCO) requests

e. Log risks and issues
f. Submission and review of meeting agendas, minutes, and bi-weekly updates
g. Storage of permits
h. Storage of Architect/Engineer Daily Observations
i. Transmission of Architect's Supplemental Instructions
j. Storage of Drawings & Specifications
k. Submission and review of Submittals and Requests for Information
l. Storage of inspector reports
m. Facilitation of closeout processes, including punchlist

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

- END -

SECTION 013119

PROJECT MEETINGS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section specifies each Prime Contractor's administrative and procedural requirements for project meetings. Requirements contained herein in no way limit each Prime Contractor's responsibility to effectively communicate with parties involved in order to meet the requirements of the Contract.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Project Coordination: Division 1.

C. Construction Scheduling: Division 1.

1.3 ADMINISTRATION

A. The Philadelphia Redevelopment Authority ("PRA") will schedule and administer the pre-construction meetings, periodic project meetings, pre-installation, coordination and other specially called meetings throughout the progress of the work. They will also:

1. Prepare agenda for meetings.

2. Distribute written notice of each meeting four (4) days in advance of meeting date.

3. Make physical arrangements for meetings.

4. Preside at meetings.

B. During the course of the pre-construction meetings, periodic project meetings, pre-installation, coordination and other specially called meetings throughout the progress of the work, the Design Professional will:

1. Record the minutes, including all significant proceedings and decisions.

2. Reproduce and distribute copies of minutes within three (3) days after each meeting to: all participants in the meeting; and all parties affected by decisions made at the meeting.

C. Representatives of Contractors, subcontractors and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.4 PRE-CONSTRUCTION MEETING

A. Attendance

1. Project Coordinator.

2. Design Professional's Representative.

3. Prime Contractor's Representatives.

4. Major subcontractors.

B. Suggested Agenda

1. Discussion of coordination of Prime Contracts.
2. Discussion on major subcontracts and suppliers and projected construction schedules.
3. Critical work sequencing.
4. Major equipment deliveries and priorities.
5. Project Coordination and designation of responsible personnel.
6. Procedures and processing of field decisions, proposal requests, submittals, change orders and applications for payment.
7. Procedures for maintaining Record Documents.
8. Use of premises, office, work and storage areas, and City's requirements.
9. Construction facilities.
10. Temporary utilities.
11. Housekeeping procedures.
12. Dispute resolution.

1.5 PROGRESS, PRE-INSTALLATION AND COORDINATION MEETINGS

A. Schedule regular and special meetings, as required by progress of the Work.

B. Location of the Meetings - The Project field office of the Contractor [or as otherwise directed].

C. Attendance

1. Project Coordinator.
2. Design Professional's Representative.
3. Contractor's Representatives.
4. Subcontractors as appropriate to the agenda.
5. Suppliers as appropriate to the agenda.
6. Others as appropriate.

D. Suggested Agenda

1. Review and approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, and conflicts.
4. Problems which impede Construction Schedule.
5. Coordination issues between Prime Contractors.
6. Review of off-site fabrication, delivery schedules.
7. Corrective measures and procedures to regain projected schedule.
8. Revisions to Construction Schedule.
9. Plan progress, schedule, during succeeding work period.
10. Coordination of schedules.

11. Review submittal schedules; expedite as required.
12. Maintenance of quality standards.
13. Review proposed changes for:
    a. Effect on Construction Schedule and on completion date.
    b. Effect on other contracts of the Project.
14. Review record drawings.
15. Other business.

PART 2 PRODUCTS Not Used

PART 3 - EXECUTION Not Used

- END -

SECTION 013216

CONSTRUCTION SCHEDULING

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section specifies administrative and procedural requirements for schedules prepared by each Prime Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 CONSTRUCTION SCHEDULE

A. Each Prime Contractor shall prepare a Contractor's Construction Schedule including all phases of work as follows:

1. Initial Construction Schedule - Within 10 (ten) calendar days after Notice to Proceed, submit an initial construction schedule. Break down at least by 16 Division Specification format for General Construction and into at least 12 operations for Electrical, Plumbing, or Mechanical Construction. This schedule must be in agreement with the time frame stated in the Bid Proposal. Coordinate schedule with the following:

a. Prepurchase products.

b. Allowances.

c. Application for Payments.

d. Mock-ups.

e. Schedule of Submittals.

f. Schedule of Values.

2. Final (baseline) Construction Schedule - Within 20 (twenty) calendar days after Notice to Proceed, submit a complete detailed construction schedule showing each activity having impact upon the timely completion of the Project. Activities shall be broken down generally similar to the individual specification sections but not less than 20 separate operations. The schedule shall include, but not be limited to the following:

a. Schedule each activity with a time limit per activity not to exceed ten (10) working days.

b. Time frames for testing of materials.

c. Time frames for shop fabrication and delivery of all parts of the work. Identify by specification section number and title. Coordinate with Schedule of Submittals. Allow time for reviews, resubmissions and approval.

d. Decision dates for selection of finishes and colors.

e. Decision dates for selection of products specified by allowances.

f. Deadlines for submissions of substitutions.

g. Identification for work of mock-ups, separate phases or other logically grouped activities.

h. Separate network for each trade or operation.

1.4 FORMAT

A. Initial Construction Schedule - Horizontal bar chart form divided vertically by weeks.

C. Final (baseline) Construction Schedule - Critical Path Method (CPM).

1.5 SCHEDULE OF SUBMITTALS

A. Submit a preliminary Schedule of Submittals within 30 days after the Notice to Proceed. Submit the final schedule with the final Contractor's Construction Schedule.

B. Coordinate submittal schedule with the list of subcontracts, schedule of values, submittal register and the Contractor's construction schedule.

C. Coordinate scheduling of interrelated submissions to allow for review of required data and to avoid delays in reviewing submittals caused by lack of coordinated submission.

D. Coordinate scheduling of submission to allow for approval of products prior to construction of mock-up.

E. Contractor shall estimate number of resubmissions required for each submittal based on complexity. However, the submittal schedule in no way binds the City to approve a submittal to meet the submittal schedule or construction schedule. It is the contractor's sole responsibility to prepare acceptable submissions in a timely fashion in order to maintain schedule.

F. Allow for City's and Design Professional's review of each submission and resubmission.

G. Prepare the schedule in chronological order. Provide the following information:

1. Related Section number.

2. Submittal category.

3. Name of subcontractor.

4. Description of the part of the Work covered.

5. Scheduled date for the first submittal.

6. Scheduled date for resubmittal or resubmittals.

7. Scheduled date the City's final release or approval.

H. Distribution - Following response to initial submittal, print and distribute copies to the City, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

I. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

1.6 COORDINATION

A. All Prime Contractors shall submit their schedules to the General Contractor.

B. The General Contractor shall prepare an overall schedule including all trades and contracts.

C. The City will resolve conflicts among schedules of various Prime Contractors.

D. The General Contractor shall distribute copies of the approved final Construction Schedule to other Prime Contractors involved.

1.7 UPDATING

A. Updating of the final Construction Schedule and Schedule of Submittals shall be required on a monthly basis.

B. Show all changes occurring since previous submission of updated schedules.

C. Indicate progress of each activity, show completion dates.

D. Include major changes in scope, activities modified since previous updating, revised projections due to changes and other identifiable changes.

1.8 DISTRIBUTION

A. Distribute copies of revised schedules to:

1. Project Coordinator.
2. Design Professional.
3. Other Prime Contractors.
4. Subcontractors.
5. Other Concerned Parties (surety, insurance, etc.).
6. Instruct recipients to report any inability to comply, and provide detailed explanation, with suggested remedies.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

- END -

SECTION 013226

PROGRESS REPORTS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section specifies administrative and procedural requirements for progress reports prepared by each Prime Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 DAILY REPORT

A. Each Prime Contractor shall prepare a Daily Report including:

1. Name of project.
2. City Project number.
3. Date of report.
4. Weather conditions.
5. Manpower status on each type of work being performed, by building/floor and site area.
6. Overtime worked, and planned.
7. Work progress.
8. Environmental problems and corrections.
9. Other information, such as special events or occurrences, accidents, recommendations, suggestions, visitors, major equipment or materials received, tests, inspections, equipment start-up and check out, occupancy.

B. Submit copies of reports weekly to Project Coordinator and Design Professional.

1.4 MONTHLY REPORT

A. Each Prime Contractor shall prepare a synopsis of the previous month's activities, including:

1. Name of project.
2. City Project number.
3. Date of report.
4. Weather conditions for the month compared to normal.
5. Work progress from previous month.
6. Copies of all previous month’s schedules.
7. Updated schedules with explanations of deviation from previous.
8. Milestone schedule events for the upcoming month.

9. Corrective measures and procedures to regain projected construction schedule.

10. Review of status of submittals.

11. Review of status of Change Orders and/or requested Change Orders.

12. Other information of importance from previous month or forecasted for upcoming month.

13. Bind in submission of Construction Photographs.

14. Bind in submission of monthly settlement survey.

B. Submit copies of reports monthly to Project Coordinator and Design Professional.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

- END -

SECTION 013233
CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes photographic services provided by the General Contractor required to record the progress of the work of all Prime Contractors.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 SUBMITTALS

A. Digital images – color images of each view, containing accurate camera-generated date/time stamp embedded in image, and sufficient background image to orient view to overall site if possible. For close-up images, include an additional photograph showing the relationship of close-up area to overall site. Forward electronic copies to City and Design Professional and retain copy for Contractor's files. Each individual photograph's electronic file to be named using the following naming convention using the date image was taken:

YYYY-MM-DD[space]Projectname[space](specific or general description as needed)

For example: 2018-10-28 Torresdale wall footing

B. Submit digital images via Project Management software every two weeks 48 hours prior to bi-weekly construction meetings. Submit hard copy images within text, or attached to end of, monthly progress reports.

PART 2 PRODUCTS

2.1 DIGITAL IMAGES (HARDCOPY INCLUDED IN MONTHLY REPORTS)

A. Color

B. 2 images maximum per 8.5" x 11" sheet.

C. Minimum image size shall be 3 inches by 5 inches.

D. Identify each image listing:

1. Name of project.

2. Orientation of view.

3. Date and time stamp automatically recorded by camera within image.

3. Name and address of photographer.

PART 3 EXECUTION

3.1 DIGITAL IMAGES (ELECTRONIC FILES)

A. Photographs shall be taken prior to start of construction, minimum of 100 photographs pre-construction to be uploaded to Project Management software prior to work starting.

B. Take photographs of all scope performed to be submitted every two weeks 48 hours prior to bi-weekly construction meetings 30 initial photographs and 30 photographs (minimum) once monthly from points designated by the Project

Coordinator, for the length of the Contract. Include additional images as needed to memorialize key stages in construction process.

B. Take photographs of installed subsurface features — especially underground utility locations — prior to backfilling or covering over, clearly showing orientation to overall site.

C. Take photographs of installed concealed features — especially sub-slab, within walls, or in closed cavities — prior to backfilling or covering over, clearly showing orientation to overall site.

- END -

SECTION 013330

SUBMITTALS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractor's administrative and procedural requirements for submission of shop drawings, product data, samples and other required information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Submittal Schedule specified in Construction Scheduling, Section 013216.

1.3 WORK WITHOUT APPROVED SUBMITTALS

A. City may withhold payment for the value of Work installed without first obtaining approved submittals, when submittal is required by individual specification sections. Refer to section 012900 "Payment Procedures".

1.4 SHOP DRAWINGS

A. Shop drawings are Contractor's or subcontractor's Drawings made specifically for this Project, for use in fabrication and installation.

B. Shop drawings must show sufficient data including layout, fabrication and erection details to establish evidence of conformance with design concept and compliance with the Contract Documents. Shop drawings must show relationships with adjacent construction.

C. Do not use reproductions of Contract Drawings as Shop Drawings unless specifically permitted in the Contract Documents.

D. Identify details by reference to sheet and detail numbers shown on Contract Drawings and by reference to paragraphs and specification section.

E. Orient Shop Drawings in same manner as drawings.

F. Manufacturer's Standard Schematic Drawings

1. Modify drawings to delete information that is not applicable to Project. Drawings showing information which is not applicable or unaltered standard drawings shall be returned without review.

2. Add supplemental information applicable to Project.

1.5 PRODUCT DATA

A. Manufacturer's Catalog Sheets, Brochures, Diagrams, Schedules, Performance Charts, Illustrations and Other Standard Descriptive Data.

B. Clearly mark each copy to identify materials, products or models applicable to this Project. Submittals not marked shall be returned without review.

C. Show colors when required for evaluation, record or other purpose. Where product data is printed in color, submit all copies in original colors as published.

D. Show dimensions and clearances required.

E. Show performance, characteristics and capacities.

F. Show wiring and piping diagrams, and controls.

G. Show by reference to paragraphs and specification section.

1.6 SAMPLES

A. Samples: Actual samples of products proposed for use. Samples must be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of product or material, with integrally related parts and attachment devices.

2. Full range of color, texture and patterns.

1.7 FIELD SAMPLES AND MOCKUPS

A. Erect at project site in location as directed.

B. Construct each sample or mock-up complete, including work of all trades required in the finished work.

C. Remove mockup at conclusion of work or when directed by City.

1.8 COORDINATION

A. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

B. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

C. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

D. The City reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

E. When mock-ups are required, submittals for all products used in mock-up shall be coordinated with schedule for mock-up construction.

1.9 SUBMISSION REQUIREMENTS

A. Comply with Schedule of Submittals.

B. Accompany each submission with a transmittal indicating project name, location, City’s project number, referenced specification number, submission number, date, item submitted, Contractor’s name, Sub-contractor, supplier or manufacturer.

1. Transmittal shall include Contractors certification that information complies with Contract Documents.

2. Indicate on transmittal or on submittal deviations from Contract Documents requirements.

C. Copies

1. Submit two (2) prints of each shop drawing.

2. Submit five (5) copies of product data. One (1) copy will be retained by Design Professional.

3. For sample selections, submit one (1) set. For sample approval, submit three (3) sets. The Design Professional will retain one (1) set.

D. Where product data is printed in color and requires color for evaluation, record, or other purpose, all copies submitted shall be in original colors as published.

E. In addition to information required on the transmittal, submittals shall include:

1. Relation to adjacent structure or materials.

2. Field dimensions, clearly identified as such.

3. Finishes.

4. Shipping and operating weights

5. Gauges, fastenings, reinforcements, welding details.

6. Applicable standards, such as ASTM or Federal Specification numbers.

7. A blank space, 3 inches by l0 inches for action stamp.

F. Contractor's Review:

1. Contractor shall review each submittal and indicate approval with a stamp, dated, initialed and/or signed. Review shall include but not be limited to; verification of field measurements, coordination with all trades involved and compliance with Contract Documents. The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the City's or Design Professional's action on submittals unless the Contractor has given specific notice of deviation at the time of submission and written approval of the specific deviation is given. The Contractor shall not be relieved from responsibility for errors or omissions in submittals by the City's or Design Professional's approval thereof.

2. If Contractor does not review submittals and provide the signed approval stamp before sending them to the Design Professional, they will be returned unchecked.

1.10 SUBMISSION ROUTING

A. Forward submittal direct to Design Professional and fax copy of transmittal letter to Project Coordinator.

B. Design Professional will forward Submittals marked as "Approved" or "Approved as Noted" to Project Coordinator.

C. Design Professional will forward Submittals marked as "Revise and Resubmit" or "Rejected" back to Contractor and will fax copy of transmittal to Project Coordinator.

D. Project Coordinator will forward Submittals back to Contractor and will fax copy of transmittal to Design Professional.

1.11 DESIGN PROFESSIONAL'S DUTIES

A. Review submittals within 10 working days of receipt.

B. Review for conformance to design concept of Project and for compliance with information given in Contract Documents. Review of separate item does not constitute review of an assembly in which item functions.

C. Affix stamp and initials or signature certifying to review of submittal.

D. Design Professional's action on submittals will result in the making of one of the following notations with related meanings:

1. APPROVED: The work involved may proceed, and no further submission is required.

2. APPROVED AS NOTED: The work involved may proceed incorporating comments. Annotations do not authorize changes to Contract Sum.

3. REVISE AND RESUBMIT: The work involved may not proceed. Submittal must be corrected and resubmitted.

4. REJECTED: The submittal is not in accordance with the Contract Documents, and a completely new submittal is required.

E. In the event any comment made to the Submittal results in a claim for a change in the Contract, the Project Coordinator shall be notified immediately and fabrication may not be undertaken until contract modification procedures are completed.

1.12. CITY'S RESPONSIBILITY

A. Review submittals within 5 working days of receipt.

B. Review for compliance Contract Documents. Review of separate item does not constitute review of an assembly in which item functions.

C. Affix stamp and initials or signature certifying to review of submittal.

D. City's action on submittals will result in the making of one of the following notations with related meanings:

1. NO EXCEPTION TAKEN: The work involved may proceed, and no further submission is required.

2. MAKE CORRECTIONS NOTED, RESUBMISSION NOT REQUIRED: The work involved may proceed by incorporating comments. Annotations do not authorize changes to Contract Sum.

3. REVISE AND RESUBMIT: The work involved may not proceed. Submittal must be corrected and resubmitted.

4. SUBMIT SPECIFIED ITEM: Substitution of specified item not permitted.

5. REJECTED: The work involved may not proceed. Submittal must be resubmitted.

1.13 RESUBMISSION REQUIREMENTS

A. Identification of Changes - Clearly identify changes made from the initial submittal other than those requested by the Design Professional. The Design

Professional will review only those changes requested and those identified by the Contractor.

1.14 DISTRIBUTION OF APPROVED SUBMITTALS

A. Contractor shall reproduce and distribute copies of submittals having the Design Professional's and City's stamp ("Approved" or "Approved as Noted") as required to coordinate and complete the Work and to records documents file.

1.15 SUBSTITUTIONS

A. Substitutions submitted as a shop drawing, product data or sample will be returned without action.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

- END -

SECTION 013500
SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general protection and treatment procedures for designated historic spaces, areas, rooms, and surfaces in the Project, including:

1. Preserve and protect the historic fabric of the site, structure, exterior and interior finishes;
2. Provide qualified site supervision, craftspersons and subcontractor personnel;
3. Coordinate construction activities with Architect and Owner;
4. Verify that the Work, including work by subcontractors, is complete and complies with the Contract Documents.

B. Related Sections:
1. Section 013233 – Construction Photographs

1.2 QUALITY ASSURANCE

A. The McPherson Square Library branch building is a contributing resource to the Carnegie Library Thematic Historic District. Work completed within the scope of the McPherson Square Library Renovations and Park Improvements shall comply with the following:
1. Work must be completed in compliance with the United States Secretary of the Interior's *Standards for the Treatment of Historic Properties*.
2. Strict compliance with the Construction Documents is required to assure compliance of the Work with the Secretary of the Interior's *Standards*.
3. Failure to comply with the Construction Documents could jeopardize project funding and may result in rejection of the Work.

B. Exercise extreme care in all aspects of the Work to conserve, preserve and protect the existing site and structure:
1. Do not use methods which will result in loss of detail or material in existing surfaces;
2. Develop new methods and techniques where necessary to accomplish the objectives of preservation and conservation;
3. If in doubt, contact Architect for assistance.

C. Assure that site supervision, craftspersons, and subcontractors are knowledgeable and experienced in their portion of the Work and know and understand the specified requirements and methods for performance of the Work.

D. Comply with qualification requirements of individual sections.

1.3 DEFINITIONS

A. Dismantle: To disassemble and detach items by hand from existing construction to the limits indicated, using small hand tools and small one-hand power tools, so as to protect nearby historic surfaces; and legally dispose of dismantled items off-site, unless indicated to be salvaged or reinstalled.

B. Existing to Remain: Existing items that are not to be removed or dismantled.

C. Historic: Spaces, areas, surfaces, materials, finishes, and overall appearance which are important to the successful preservation as determined by the Architect. Designated historic spaces and surfaces are generally described below.

1. Carnegie plaques.

2. Exterior sculptural elements above the main entry door.

3. Exterior light fixtures at main entry door.

4. Interior dome, moldings, and columns.

5. Plaster arches at the window openings.

6. Existing roof, cornice, and dome to remain and be protected and undisturbed throughout construction.

D. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by the Architect.

E. Reconstruct: To remove existing item, replicate damaged or missing components, and reinstall in original position.

F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.

G. Reinstall: To protect removed or dismantled item, repair and clean it as indicated for reuse, and reinstall it in original position, or where indicated.

H. Remove: Specifically for historic spaces, areas, and surfaces, the term means to detach an item from existing construction to the limits indicated, using hand tools and hand-operated power equipment, and legally dispose of it off-site, unless indicated to be salvaged or reinstalled.

I. Repair: To correct damage and defects, retaining existing materials, features, and finishes while employing as little new material as possible. Includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

J. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

K. Replicate: To reproduce in exact detail, materials, and finish, unless otherwise indicated.

L. Reproduce: To fabricate a new item, accurate in detail to the original, and in either the same or a similar material as the original, unless otherwise indicated.

M. Restore: To consolidate, replicate, reproduce, repair, and refinish as required to achieve the indicated results.

N. Retain: To keep existing items that are not to be removed or dismantled.

O. Reversible: New construction work, treatments, or processes that can be removed or undone in the future without damaging historic materials, unless otherwise indicated.

P. Salvage: To protect removed or dismantled items and deliver them to Owner.

Q. Stabilize: To provide structural reinforcement of unsafe or deteriorated items while maintaining the essential form as it exists at present; also, to reestablish a weather-resistant enclosure.

R. Strip: To remove existing finish down to base material, unless otherwise indicated.

1.4 MATERIAL OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, markers, antiques, and other items of interest or value to Owner that may be encountered during removal and dismantling work remain Owner's property.
   1. If any such materials are identified, consult with Owner and Architect.

B. Coordinate with Architect to establish special procedures for dismantling and salvage.

1.5 STORAGE AND PROTECTION OF HISTORIC MATERIALS

A. Salvaged Historic Materials:

   1. Clean only loose debris from salvaged historic items unless more extensive cleaning is indicated.
   2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area on-site.
   5. Protect items from damage during transport and storage.

B. Historic Materials for Reinstallation:

   1. Repair and clean historic items as indicated and to functional condition for reuse.
   2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make item functional for use indicated.

C. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after historic treatment and construction work in the vicinity is complete.

D. Storage and Protection: When taken from their existing locations, catalog and store historic items within a weathertight enclosure where they are protected from wetting by rain, snow, condensation, or ground water, and from freezing temperatures.

   1. Identify each item with a nonpermanent mark to document its original location. Indicate original locations on plans elevations, sections, or photographs by annotating the identifying marks.
   2. Secure stored materials to protect from theft.

1.6 PROJECT CONDITIONS

A. General Size Limitations: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches or more.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.

D. Storage or sale of removed or dismantled items on-site is not permitted unless otherwise indicated.

PART 2 - PRODUCTS – (Not Used)

PART 3 - EXECUTION

3.1 LAYOUT AND VERIFICATION OF MEASUREMENTS

A. Verify all measurements at the Site. Data indicated on the Drawings and in these Specifications are as exact as could be secured, but absolute accuracy is not warranted. The exact locations, distances, levels, and other conditions, including utilities and underground features, will be governed by existing conditions.

B. Identify, locate and mark above-grade and below-grade features affected by the Work, including but not limited to:
1. Location and protection of adjacent structures;
2. Active or abandoned utilities;
3. Active or abandoned drainage structures;

C. Notify the Architect immediately of any discrepancy between existing conditions and the Drawings or Specifications.

3.2 PHOTOGRAPHIC SURVEY OF EXISTING CONDITIONS

A. Record existing conditions by use of preconstruction photographs and preconstruction videotapes. See related section 013233, Construction Photographs.

3.3 EXAMINATION

A. Do not load or permit any part of the structure to be loaded without Contractor's professional engineer's certification that the structure can support the imposed loadings without damage. Loadings include but are not limited to:

1. Construction materials
2. Equipment (certification to include gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use)

3. Staging and scaffolding.
4. Hoisting facilities
5. Waste disposal facilities.
6. Field offices.
7. Storage and fabrication sheds.
8. Temporary enclosures.
9. Construction aids and miscellaneous facilities

3.4 PROTECTION, GENERAL

A. Ensure that supervisory personnel are on-site and on duty when historic treatment work begins and during its progress.

B. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from historic treatment procedures.

1. Use only proven protection methods, appropriate to each area and surface being protected.
2. Provide barricades, barriers, and temporary directional signage to exclude public from areas where historic treatment work is being performed.
3. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of historic treatment work.
4. Contain dust and debris generated by removal and dismantling work and prevent it from reaching the public or adjacent surfaces.
5. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
6. Protect floors and other surfaces along haul routes from damage, wear, and staining.
7. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.

C. Temporary Protection of Historic Materials:

1. Protect existing historic materials with temporary protections and construction. Do not deface or remove existing materials.
2. Do not attach temporary protection to historic surfaces except as indicated as part of the historic treatment program and approved by Architect.

3.5 PROTECTION FACILITIES INSTALLATION

A. Temporary Exterior 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 and insulated enclosure for building exterior.

3.6 GENERAL HISTORIC TREATMENT

A. Ensure that supervisory personnel are present when historic treatment work begins and during its progress.

B. Halt the process of deterioration and stabilize conditions, unless otherwise indicated. Perform work as indicated on Drawings. Follow the procedures in subparagraphs below and procedures approved in historic treatment program.

1. Retain as much existing material as possible; repair and consolidate rather than replace.

2. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure.
3. Use reversible processes wherever possible.
4. Use historically accurate repair and replacement materials and techniques unless otherwise indicated.
5. Record existing work before each procedure (preconstruction) and progress during the work with digital preconstruction documentation photographs.

C. Notify Architect of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movement, or distortion.

1. Do not proceed with the work in question until directed by Architect.

D. Where missing features are indicated to be repaired or replaced, provide features whose designs are based on accurate duplications rather than on conjectural designs, subject to the approval of Architect.

E. Where Work requires existing features to be removed or dismantled and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.

F. Identify new and replacement materials and features with permanent marks hidden in the completed work to distinguish them from original materials. Record a legend of identification marks and the locations of the items on Record Drawings.

3.7 HISTORIC REMOVAL AND DISMANTLING

A. General: Have removal and dismantling work performed by a qualified historic removal and dismantling specialist. Ensure that historic removal and dismantling specialist's field supervisors are present when removal and dismantling work begins and during its progress.

B. Perform work in accordance with the restoration program.

1. Provide supports or reinforcement for existing construction that becomes temporarily weakened by the work, until the work is completed.
2. Perform cutting by hand or with small power tools wherever possible. Cut holes and slots neatly to size required, with minimum disturbance of adjacent work.
3. Do not operate air compressors inside building, unless approved by Architect in each case.
4. Do not drill or cut columns, beams, joints, girders, structural slabs, or other structural supporting elements, without having Contractor's professional engineer's written approval for each location before such work is begun.
5. Do not use explosives.

C. Water-Mist Sprinkling: Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.

D. Unacceptable Equipment: Keep equipment that is not permitted for historic removal or dismantling work away from the vicinity where such work is being performed.

END OF SECTION 013510

SECTION 013513.18

SPECIAL REQUIREMENTS FOR WORK WITHIN THE PHILADELPHIA PARKS & RECREATION SYSTEM

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This section describes special administrative and procedural requirements for all contractors, subcontractors and their employees performing work within the Philadelphia Parks & Recreation System under the jurisdiction of Philadelphia Parks & Recreation.

1.2 DEFINITIONS

A. “Park Authorities” or “proper authorization” shall mean the Park Engineer or Project Manager unless specified otherwise.

B. “Personnel” shall mean all employees or related staff or associates of the contractors, subcontractors, suppliers, delivery services, consultants, testing or inspection agencies, or other group performing work or services required for completion of this contract.

1.3 ADMINISTRATION REQUIREMENTS

A. All Contractors must complete an Application for Permit (a form of which is attached to the end of this section). This Permit Application must be submitted to the Park Engineer and approved before the start of any work on Park property.

B. All work is to be coordinated with the Park Engineer or designated representative to minimize disruption to the Parks & Recreation's daily operations, programs, and special events.

1.4 ACCESS, STAGING, STORAGE AND PROPOSED WORK

A. All Contractors’ must provide a Logistic Plan including access, staging, storage and the proposed work to be reviewed and approved by the Park Engineer.

B. No parking of any vehicles or equipment on grass areas.

C. Trees within proximity of work, plant materials, and historic features are to be protected from injury.

D. Advise the Park Engineer of any hazardous materials proposed and provide all Material Safety Data Sheets for such materials.

E. Truck tires to be free from mud when leaving work site. All truck and debris containers must be covered tightly to prevent dust and spillage.

1.5 PERSONNEL ACTIVITY

A. The following items are prohibited from being brought into the Park areas and construction sites, any violation of these regulations may result in default of contract and may additionally be subject to prosecution:

1. Alcoholic beverages and drugs.
2. Explosives and firearms.
3. Inflammable material except as required for performance of work (with prior Parks & Recreation approval).

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END

PHILADELPHIA PARKS & RECREATION

APPLICATION FOR PERMIT

SEND TO:
PHILADELPHIA PARKS & RECREATION
ONE PARKWAY BUILDING, 10TH FLOOR
1515 ARCH STREET
PHILADELPHIA, PA. 19102

DATE OF APPLICATION

APPLICATION FOR PERMIT TO:

- ☐ ERECT POLES
- ☐ REMOVE POLES
  } *Submit plans, if required. If temporary, state when poles will be removed.*
- ☐ HAULING
- ☐ DUMPING
- ☐ CONTRACTUAL WORK IN PARK
- ☐ CONTRACTUAL WORK ON PRIVATE PROJECT *(Adjacent to Park)*
- ☐ TEST BORING
- ☐ TRUCK MOVEMENT ON PARK ROADS *(List truck numbers under "Equip. to be Used")*
- ☐ OTHER

NAME OF COMPANY	TELEPHONE	PRINCIPAL TO CONTACT
ADDRESS	E-MAIL	PERSON IN CHARGE OF OPERATION

LOCATION *(Specify job site)*

LENGTH OF TIME TO COMPLETE *(Give intended completion date)*

WORK TO BE PERFORMED *(Give details; if City Contract, give number and date)*

EQUIPMENT TO BE USED *(Give loaded and tare weights)*

DO NOT WRITE BELOW - THIS AREA FOR PHILADELPHIA PARKS & RECREATION USE

☐ **PERMIT DISAPPROVED, REASON:**

☐ **PERMIT APPROVED: This permit is issued to the company for the purpose and conditions stated in the application above with the following qualifications and conditions:**

1. Permit is not valid for use by any subsidiary company unless listed below:
2. This permit is cancelled if any employee of the company uses it for purposes other than herein specified.
3. PP&R reserves the right to withdraw this permit and issue a "Stop Work Order," if work is being performed in an unsatisfactory manner.
4. Permittee will immediately stop work upon notification of PP&R Stop Work Order.
5. Permittee will restore any damage to turf, soils, sidewalks, or structures.
6. Permittee will restore areas of unauthorized damage to vegetation in accordance with "PPR/PWD – STANDARDS for NATIVE TREE, SHRUB PLANTING and HERBACEOUS SEEDING" specifications.
7. Permittee shall protect Site and nearby areas from vehicle's tires, track, etc. by using plywood or other weight distribution materials.
8. Permittee shall keep vehicles must stay off lawn, walks and trails. Must not block walks or trails.
9. Permittee shall remove and dispose of drill spoils in accordance with all applicable laws.
10. Permittee shall clearly mark all well caps.
11. Permittee shall repair all damage that occurs in connection with Permittee's work.
12. Permittee shall secure excavted areas either by fencing or a cap over the area, with proper signage.
13. Permittee shall post signage for pedestrians stating that site is a work area , closed to pedestrians.
14. Once excavation site is filled and tamped, Permittee shall place stakes and caution tape around it.

INSURANCE: Permitee must submit with this application a "Certificate of Insurance" that lists the City of Philadelphia as additionally insured and that complies with the attached insurance requirements.

KEEP THIS PERMIT ON SITE AND WITH EACH VEHICLE AT ALL TIMES

Additional Notes Below: Permittee, intending to be llegally bound, agrees to comply with the attached provisisons.

Permittee shall cause each of its Contractors to comply with this Permit, including the attached provisions.
A Violation of this Permit by any of Permittee's contractors is deemed a violation of this Permit by Permittee.
This Permit is effective on date stated beneath the signature of the Park Manager (the " **Effective Date**").

TO:

Roger S Tenant Jr, Park Manager, Philadelphia Parks and Recreation

(Date)

Cc:

PPR revised.08.03.2016

SECTION 013591

HISTORIC TREATMENT PROCEDURES

1.1 SUMMARY

A. General protection and treatment procedures for designated historic spaces, areas, rooms, and surfaces. It is the intention of this project to preserve designated areas within the building for future historic preservation.

1.2 QUALITY ASSURANCE

A. Preservation protection program.

B. Preservation Area Protection Plan.

C. Historic treatment preconstruction conference.

D. Before commencing work in the building, provide photographs and video of existing conditions of areas indicating on the Drawings as “Existing to Remain: Protect for Future Preservation.” Especially document existing conditions which could be misconstrued as damage resulting from selective demolition work. File photographs with the Construction Manager prior to starting work.

1.3 PROJECT CONDITIONS

A. City will not occupy portions of building immediately adjacent to removal and dismantling area.

1.4 EXECUTION

A. Areas for Preservation:

1. Areas indicating on the Drawings as “Existing to Remain: Protect for Future Preservation” are excluded from the scope of selective demolition. These areas are to be protected by the Contractors. No invasive work or removal of building and finish materials is allowed in these areas. This includes removal of building systems, ductwork, plumbing, conduit or abatement of installed hazardous building materials.
2. All selective demolition for all Contractors is to be terminated outside the envelope shown on the drawings for “Existing to Remain: Protect for Future Preservation.”
    a. All building systems i.e. conduit, ductwork, sprinkler and plumbing piping shall be terminated 12” outside the envelope of the preservation area.
3. Contractors shall enforce restricted access to areas indicated as “Existing to Remain: Protect for Future Preservation.” Entry to these areas shall only be by essential personnel as verified by the Construction Manager.
4. Access through these spaces shall be limited to access required within the spaces. Route all general circulation, egress and hauling routes around these areas.
5. Removal of existing debris and trash, including those areas requiring hazardous materials abatement, within the boundary of the areas indicating on the Drawings as “Existing to Remain: Protect for Future Preservation” shall be conducted under the supervision of the Construction Manager.

B. Protection:

1. Maintain supervisory personnel on-site and on duty during work in and adjacent to areas designated for preservation.
2. Provide barricades, barriers, and temporary directional signage to exclude non-essential construction personnel.
3. Provide shoring, bracing, and supports as required to maintain the perimeter of areas to be protected to prevent movement, settlement or collapse of areas to be demolished as adjacent facilities to remain.
4. Provide floor, wall, door, door frame and other surface protection along circulation, egress and haul routes.
5. Maintain protection for all exterior building and site feature surfaces and materials including, but not limited to masonry walls, windows, doors, stairs, site walls, fences, light fixtures, railings, roofing and other artifacts.
6. Prepare a Preservation Area Protection Plan for review by the Construction Manager. No construction shall commence until the Preservation Area Protection Plan is accepted by the Construction Manager. The Preservation Area Protection Plan shall show all barricades, barriers, directional signage, surface protection, circulation, egress and haul routes, and designation of access restriction.

1.5 HISTORIC REMOVAL AND DISMANTLING SCHEDULE

A. No existing building materials or finishes shall be removed from the areas indicating on the Drawings as “Existing to Remain: Protect for Future Preservation.” Any loose items in these areas shall be salvaged on site as per the direction and review of the Design Professional and Construction Manager.

B. Historic artifacts, including their contents, commemorative plaques and tablets, antiques and other articles of historic significance remain property of the City. Notify the Construction Manager if such items are encountered and obtain acceptance regarding method of removal and salvage from the Design Professional.

1.6 HISTORIC PRESERVATION SCHEDULE

A. Spaces, areas, rooms, and surfaces requiring special care and treatment to ensure successful preservation are indicated on Drawings as “Existing to Remain: Protect for Future Preservation.”

B. Please note that areas designated as “Existing to Remain: Protect for Future Preservation” may isolate the areas for selective demolition into two separate areas. Provide access and haul routes from these selective demolition areas that do not pass through the area for future preservation. This may require routes through intervening floors or two separate vertical routes.

END OF SECTION 090391

SECTION 014100

CODES, REGULATIONS AND STANDARDS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractor's responsibilities regarding codes, regulations and standards included in the Contract Documents by reference.

1.2 RELATED REQUIREMENTS

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. All technical sections.

1.3 APPLICABLE CODES AND REGULATIONS

A. The following codes and regulations are applicable to the project. The list does not represent all codes, regulations and standards:

1. The Philadelphia Building Construction and Occupancy Code
    a. The Philadelphia Administrative Code
    b. The Philadelphia Building Code
    c. The Philadelphia Electrical Code
    d. The Philadelphia Fire Prevention Code
    e. The Philadelphia Mechanical Code
    f. The Philadelphia Plumbing Code
    g. The Philadelphia Property Management Code

B. It is not the intent of the Contract Documents to conflict with any Code, or Regulation. Report any conflicts to Design Professional for clarification.

1.4 REFERENCED STANDARDS

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes or intended use.

B. The referenced standards shall have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

C. Should specified reference standards conflict with Contract Documents, request clarification from Design Professional before proceeding but generally the more stringent requirement shall apply.

D. In the absence of specific instructions in the specifications, materials, products, equipment, and their installation shall conform to the applicable codes, regulations and standards specified herein.

E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any referenced document.

F. Dates of codes, regulations and standards specified shall be the latest date prior to the date of issue of this Project Manual, except where, prior to the date of issue of this Project Manual, modified or otherwise directed by the applicable codes and their supplements and amendments adopted by the code authorities having jurisdiction.

G. Each entity engaged in construction of the Project shall be familiar with industry standards applicable to its construction activity. If unfamiliar, obtain copies and review with all workers. Obtain copies of standards when required by individual specification sections. Maintain copy at job site until Substantial Completion.

1.5 ASSOCIATIONS, INSTITUTIONS AND SOCIETIES

A. Associations, Institutions, and Societies and their abbreviations if any, appearing in the Project Manual or elsewhere in the Contract Documents, shall be as generally recognized in the industry. Refer to the "Encyclopedia of Associations" published by Gale Research Company for abbreviations, addresses and phone numbers.

PART 2 PRODUCTS Not Used

PART 3 PRODUCTS Not Used

- END -

SECTION 014516.13

CONTRACTOR'S QUALITY CONTROL

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. This section describes each Prime Contractor's requirements for quality assurance including:

1. Control of installation
2. Tolerances
3. Mockups
4. Inspection and Testing services
5. Manufacturer's field services

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Each technical section required for materials and products in mockup

C. Each technical section requiring independent inspection and testing.

1.3 QUALITY ASSURANCE – CONTROL OF INSTALLATION

A. Each Prime Contractor is responsible to deliver Work of quality specified regardless Contractor's sub-contracting or purchasing arrangements.

B. Monitor quality control over suppliers, manufacturer's products, services, site conditions and workmanship to produce Work of specified quality.

C. Comply with manufacturers written instructions, including preparation and each step in sequence.

1. Should manufacturer instructions differ from Contract Documents, request clarification but assume the more stringent will apply.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

1.4 TOLERANCES

A. Monitor tolerance control of installed products to produce acceptable Work. Do not allow tolerances to accumulate.

B. Comply with manufacturers written tolerances.

1. Should manufacturer tolerances differ from Contract Documents, request clarification but assume the more stringent will apply.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.5 INSPECTION AND TESTING SERVICES

A. Each Prime Contractor shall retain independent inspection and testing services when required by individual specification sections or by building code authority.

B. The independent agency shall perform inspection and testing services on and off site as required by individual specification sections and as required to comply with requirements of the building code authority.

C. Independent agency shall submit reports to Prime Contractor and direct to City indicating compliance or non-compliance. Notify City the same day of non-compliance.

D. Cooperate with independent agency; furnish samples, mix designs, equipment, tools, storage, safe access, and assistance by incidental labor.

E. Inspection and testing does not relieve Contractor to perform Work to contract requirements.

F. Retesting required because of non-conformance to specified requirements shall be performed by the original agency at no additional cost to City.

1.6 MANUFACTURERS FIELD SERVICES

A. When specified in individual specification sections, require manufacturer to provide qualified technical staff personnel to observe site conditions, quality of workmanship, start-up or training of City personnel as specified.

B. Technical staff shall not be the local sales staff or independent manufacturers sales representatives.

C. Manufacturers technical representative shall submit written reports of findings to Contractor and direct to City. Notify City the same day of non-compliance

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractor's construction facilities and services required for performance of the Work but not a permanent part of the finished construction. Included are temporary utilities, temporary construction and support facilities and security and protection services.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Environmental Controls: Division 1.

1.3 SUBMITTALS

A. Submit reports of tests, inspection, meter readings and similar procedures performed on temporary utilities.

1.4 INSPECTION

A. Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certificates and permits.

PART 2 PRODUCTS

2.1 TEMPORARY MATERIALS

A. Materials may be new or used, but must be adequate in capacity for the required usage and must not violate requirements of applicable codes and standards. Generally, temporary materials shall comply with related specification sections for materials to be incorporated into final work.

PART 3 EXECUTION

3.1 TEMPORARY UTILITIES

A. Provide temporary utilities including water, drainage, electrical power, communications, lighting, heat, and steam where applicable.

B. Contractor shall pay all costs associated with temporary utilities.

3.2 TEMPORARY ELECTRICITY

A. Provide electrical service adequate for work of all trades, and terminate in fused safety switch and circuit breaker distribution panels.

B. For welding at site or electrical requirements beyond the capacity of temporary system, supply generator, fuel, maintenance, and other incidentals required.

3.3 TEMPORARY LIGHTING

A. Provide temporary lighting required for construction operations

B. Provide temporary lighting for exterior staging and storage areas for security purposes.

C. Provide temporary lighting in interior work areas after dark for security purposes.

D. Provide lighting at each landing of each stair or ladder run.

E. Permanent building lighting may [not] be utilized during construction.

3.4 HEATING AND VENTILATING

A. Provide temporary heat as required for construction operations. Temporary sources of heat shall be direct vented and thermostatically controlled. Open flame devices or solid fuels are not allowed.

B. Provide forced ventilation by portions of the permanent system or by portable units, to cure materials, to disperse humidity, and to prevent accumulations of dust, fumes, vapors, or gases. Provide ductwork with temporary filters to prevent the broadcasting of dust and debris.

C. In occupied facilities, while performing operations that generate fumes or dust, provide both fresh air intake and fan powered ventilation to control spread of fumes or dust to occupied areas of the building.

3.5 TEMPORARY TELEPHONE

A. City telephones on-site may not be used by Contractors.

3.6 TEMPORARY WATER SUPPLY

A. Provide temporary water service of adequate size as required for fire protection and construction operations.

B. Provide drinking water, paper cups, and waste receptacles for personnel.

3.7 SANITARY FACILITIES

A. Provide sanitary facilities according to law at locations approved by the City. Provide privacy enclosures, toilet paper, waste receptacles, and periodic janitorial services.

B. Enforce use of sanitary facilities. Evidence to the contrary shall require removal, disinfecting, and reconstruction of defaced work or landscape.

C. The use of the Owner's toilet facilities by construction personnel will not be permitted.

3.8 FIRE PROTECTION

A. Provide temporary fire protection and portable fire extinguishers according to law.

3.9 CONSTRUCTION AIDS

A. Provide construction aids required for execution of the work, including scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other facilities and equipment.

B. Provide and operate drainage and pumping equipment; maintain excavations and site free of standing water. Coordinate with Division 2.

3.10 STAIRS AND ELEVATORS

A. Designated existing stairs may be used by Construction personnel.

3.11 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas to allow for City's use of site, and to protect existing facilities and adjacent properties from damage from construction and demolition operations.

B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

3.12 FENCING

A. Construction - Commercial grade chain link fence.

B. Provide 6 foot high (min.) fence around construction site; equip with vehicular gates with locks.

3.13 EXTERIOR ENCLOSURES

A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

B. Provide temporary tarps or other protection to roofs made open to weather by construction operations.

3.14 INTERIOR ENCLOSURES

A. Provide temporary partitions to separate work areas from City occupied areas, to prevent penetration of dust and moisture into City occupied areas, to prevent damage to existing materials and equipment and as indicated.

B. Construction - Steel stud framing and gypsum board with closed joints and sealed edges at intersections with existing surfaces.

3.15 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

C. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by covering with durable sheet materials.

D. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

E. Prohibit traffic from landscaped areas.

F. Provide HVAC conditioned indoor areas for all finishes requiring controlled temperature and humidity for installation and maintenance.

3.16 SITE SECURITY

A. The City assumes no responsibility for loss, theft, or damage to the work, tools, equipment, and construction. In the instance of any such loss, theft, or damage, the Contractor shall be responsible to renew, restore, or remedy the work, tools, equipment, and construction in accordance with requirements of the Contract Documents without additional cost to the City.

B. The Contractor, at his own cost, may provide watchman services, and other means of site security.

C. Site parked equipment, operable machinery, and hazardous parts of the new construction subject to mischief and accidental operation, shall be inaccessible, locked, or otherwise made inoperable when left unattended.

D. Liability - The City is not responsible for damage, liability, theft, casualty, or other hazard to the automobiles or other vehicles, nor to injury including death to occupants of automobiles or other vehicles on the City's property. Provide signs to this effect in the designated parking area.

3.17 ACCESS ROADS AND PARKING AREAS

A. Access Roads

1. Use existing roads on Site for access. Protect roads from damage from extra heavy loading by use of timbers or other approved means.

B. Parking Areas

1. City will permit use of a designated area of the existing parking lot on the Site for exclusive parking of workmen's automobiles and of the automobiles of the Design Professional, Consultants, and other visitors having business at the Site.

3.18 PROJECT SIGN

A Provide project identification sign, and temporary information and direction signs as required and approved. See Specification section 015800 for requirements.

3.19 TERMINATION AND REMOVAL

A. Remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, but no later than Substantial Completion. Complete or restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

B. Materials and facilities that constitute temporary facilities are property of the Contractor

C. Remove temporary paving that is not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances which might impair growth of plant materials or lawns. Repair or replace street paving, curbs and sidewalks at the temporary entrances, as required by the governing authority.

- END -

SECTION 015639

TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 STIPULATIONS

A. The specifications sections “General Conditions of Contract”, “Special Conditions” and “Division 1 General Requirements” form a part of this section by reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. Related Sections:
1. Division 01 Section “Construction Waste Management”
2. Division 01 Section “Sustainable Design Requirements”
3. Division 01 Section "Field Engineering" for field engineering and surveying.
4. Division 02 Section "Selective Demolition" for partial demolition of buildings or structures.
5. Division 31 Section "Site Clearing and Erosion Control".

1.3 DEFINITIONS

A. Caliper: Diameter of a trunk measured by a diameter tape at 6 inches above the ground for trees up to, and including, 6-inch size; and breast height (DBH) for trees larger than 6-inch size.

B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.

D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of the following:
1. Organic Mulch: One (1) gallon of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.
2. Protection-Zone Fencing: Manufacturer’s cut sheets
3. Protection-Zone Signage: Manufacturer’s cut sheets.

C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.

D. Qualification Data: For qualified arborist and tree service firm.

E. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

F. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

G. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1. Use sufficiently detailed photographs or videotape.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.5 QUALITY ASSURANCE

A. Arborist Qualifications: Certified Arborist as certified by ISA.

B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

C. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:

a. Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
b. Enforcing requirements for protection zones.
c. Arborist's responsibilities.
d. Field quality control.

1.6 PROJECT CONDITIONS

A. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.

5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

D. Protection fencing must be approved by the Owner's Representative prior to commencing with any demolition or construction work.

E. Install protection fencing before installing erosion and sedimentation controls. Trenched silt fence is prohibited within plant protection zones. Utilize tubular sediment control device, such as Filtrexx® Sediment Control or similar product in accordance with the manufacturers instructions, in lieu of silt fencing. Trenching is prohibited within plant protection zones.

F. Flows of water redirected from construction areas or generated by construction activity are prohibited from entering or crossing plant protection zones. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

G. Work within the plant protection zone must be approved by and supervised by Owner's Representative.

H. The Owner's Representative may require additional protection fencing or relocation of fencing as work progresses.

I. Bring any unforeseen site conditions, such as structural roots, that will impact new construction to the attention of the Owner's Representative. Do not proceed with work without written authorization.

J. Arborist may require crown pruning to compensate for root loss caused by damaging or cutting of the root system. Provide subsequent maintenance during contract period as recommended by arborist.

K. Campus care manager or his representative should be present when any work is done to or around campus plantings.

PART 2 - GENERAL

2.1 MATERIALS

A. Topsoil: Refer to 32 91 00 'Soil Preparation'.

B. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:

1. Type: Shredded hardwood.
2. Size Range: 3 inches (76 mm) maximum, 1/2 inch (13 mm) minimum.
3. Color: Natural.

C. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements.

1. Safety Fence: 4’ high plastic orange safety fence; 6’ tall steel posts with tie wires, and other accessories for a complete fence system.

D. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:

1. Size and Text: TREE PROTECTION AREA – DO NOT ENTER
2. Lettering: 3-inch high minimum, white characters on red background.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. For the record, prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE- AND PLANT-PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect. Install one sign spaced approximately every 35 feet on protection-zone fencing, but no fewer than four signs with each facing a different direction.

C. Maintain protection zones free of weeds and trash.

D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

E. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.

1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
2. Temporary removal of protection-zone fencing is allowed in order to complete work. Follow specifications for all areas shown within tree protection fence on Drawings, even if the fence is removed temporarily. Fence shall be replaced immediately upon completion of work.
3. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving."

B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate and/or air-spade under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

C. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

A. Prune roots that are affected by temporary and permanent construction. Prune roots as follows:

1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
2. Cut Ends: Do not coat cut ends of roots with an emulsified asphalt or similar coatings.
3. Temporarily support and protect roots from damage until they are covered with soil.
4. Cover exposed roots with burlap and water regularly.
5. Backfill as soon as possible according to requirements in Section 312000 "Earth Moving."

B. Root Pruning at Edge of Protection Zone: Prune roots 6 inches inside of the protection zone, by cleanly cutting all roots to the depth of the required excavation.

C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

3.6 CROWN PRUNING

A. Prune branches that are affected by temporary and permanent construction. Prune branches as follows:

1. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.
2. Pruning Standards: Prune trees according to ANSI A300 (Part 1) and the following:
   a. Type of Pruning: Cleaning, Thinning, and/or Reduction.
   b. Specialty Pruning: Restoration.
3. Cut branches with sharp pruning instruments; do not break or chop.
4. Do not apply pruning paint to wounds

B. Chip removed branches and dispose of off-site.

3.7 REGRADING

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

B. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.

1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.

C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

D. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.8 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.9 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

1. Submit details of proposed root cutting and tree and shrub repairs.
2. Have arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.
3. Treat damaged trunks, limbs, and roots according to arborist's written instructions.
4. Perform repairs within 24 hours.
5. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.

1. Provide new trees of same size and species as those being replaced for each tree that measures 6 inches or smaller in caliper size.

2. Provide two new trees of 4-inch caliper size for each tree being replaced that measure between 6-inch caliper and 8-inch caliper in size at a location directed by the Owner or Owner's Representative.

3. Provide 6-inch caliper size for each tree being replaced that measure greater than 8-inch caliper in size at a location directed by the Owner or Owner's Representative. Quantity of trees shall equal the total diameter at breast height (DBH) size of the tree removed unless directed otherwise by the Owner. For example, a 32-inch DBH shall require five new trees.

4. Species: Species selected by Landscape Architect.

5. Plant and maintain new trees as specified in Section 32 93 00 'Plants'.

C. Soil Aeration: Where directed by Landscape Architect, aerate surface soil compacted during construction. Aerate to extent as directed by Landscape Architect beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with approved Compost.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 01 56 39

SECTION 015719

ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractors requirement for protection of the atmosphere, waterways, groundwater, plants, animal habitats, soils, etc., both on and off site.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Earthwork in Division 2.

1.3 REGULATORY AGENCIES AND CODES

A. Comply with the following in accordance with Division 1:

1. United States Department of Agriculture (USDA)

2. Urban Hydrology for Small Watersheds, Technical Release No. 55, Engineering Division, Soil Conservation Service.

3. National Engineering Handbooks, Section 4 (Hydrology); Section 5 (Hydraulics); Section 16 (Drainage), Soil Conservation Service.

4. City of Philadelphia

1.4 DEFINITIONS

A. Sediment - Soil that has been eroded and transported by runoff water.

B. Degradable Debris - Debris which can undergo biodegradation or combustion, or which can be dissolved in or suspended by water.

C. Nondegradable Debris - Inorganic debris which will not disintegrate nor dissolve when exposed to moisture or water.

D. Chemicals - Petroleum or cementitious products, bituminous materials, salts, acids, alkalis, herbicides and pesticides.

E. Waste - Sewage, including domestic sanitary sewage, garbage, and trash.

PART 2 PRODUCTS

2.1 MATERIALS

A. Compost Sock: 5mil photo-degradable HDPE fabric, in-filled with weed-free, well-decomposed organic compost. Fabric sock “Siltsoxx” as manufactured by MCS Inc. (www.mcsnjinc.ocm) or approved equal.

B. Silt Fences: Three (3) foot wide fabric designed to filter sediment, as manufactured by Mirafi, Inc. Amoco, or Exxon.

C. Earth Stabilizer: Rye grass seed, hay, straw mulch, chemical stabilizer, or other devices approved by the environmental protection agency having jurisdiction and by the Design Professional.

D. RipRap: Sizes as shown on drawings.

PART 3 EXECUTION

3.1 GENERAL

A. Establish and enforce ecological preservation measures which will avoid pollution of the atmosphere, waterways, groundwater, plants, soils, animal habitats, landfills, wetlands, the site, adjacent sites, roadways, etc.

B. Prevent spilling of chemicals or waste. Provide emergency plans and methods for abatement of accidental spills of toxic substances.

3.2 SEDIMENT CONTROL

A. Until permanent work establishes sediment control, provide temporary control, using vegetative cover with seeding, mulch, and binder within [ten (10)] days after completion of grading of any given area.

B. As a temporary measure, provide silt fences, arranged along the toe of surface drainage ways and inlets, in such a manner that water will pass through the silt fences and filter the sediment. Embed silt fence in ground 6 inches deep and anchor to the ground with posts, as shown on the drawings. Replace silt fences when they become clogged and ineffective.

C. During pipe laying work, prevent silt from entering the piping systems by use of hay bales, silt fence, temporary closures of pipe ends, or other means as best suited to the conditions.

3.3 CONTROLS DURING EARTH MOVING

A. Perform earth moving in phases to minimize the area and extent of exposed land.

B. Control the rate of water runoff by diversion ditches, benches, berms, and other earth-formed shaping so that the rate of flow is retarded and silting shall be minimized. Reshape and restore conditions showing evidence of earth erosion.

3.4 DUST CONTROL

A. Keep dust down at all times, including non-working days, weekends, and holidays. Wet down or treat disturbed soil with dust suppressers as required and approved.

B. Do not leave areas of disturbed earth unworked for long periods of time. Provide temporary or permanent earth stabilization promptly.

C. In sandblasting operations, confine the dust.

D. Use wet-cutting methods for cutting concrete, asphalt, and masonry.

E. Do not shake out bags containing dust-causing substances.

3.5 NOISE CONTROL

A. Provide mufflers on internal combustion engine equipment. Maximum noise level

shall be 90 dbA at 50 feet.

B. Where blasting is permitted, special permit and other requirements of the governing authorities regarding blasting shall govern.

3.6 C. Limit hours of operation of noisy construction to limits set by City ordinance.

DISPOSAL OF DEBRIS, CHEMICALS AND WASTE

A. Legally dispose of debris, chemicals, and waste off the site

B. Collect and contain materials before disposal in orderly fashion and by means which prevent contamination of air, water and soil.

C. Store chemicals in watertight containers.

D. Do not burn materials on the site.

3.7 TRUCKS

A. Dump trucks shall be tarpaulin-covered so that spillage does not occur.

B. Provide a gravel surfaced truck wheel washing area at entrances. Clean all truck wheels of mud and debris before the trucks leave the site

3.8 MAINTENANCE AND TERMINATION

A. Maintain in working order environmental protection measures until they are no longer required.

B. Terminate environmental control measures when there is no longer a threat of pollution. Remove temporary control measures. Complete or, if necessary, restore permanent construction that may have been delayed or damaged because of interference with environmental controls.

- END -

SECTION 015800
PROJECT IDENTIFICATION AND SIGNS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

Requirements include the following which shall be provided by the Contractor for General Construction:

A. Furnish, install and maintain project identification sign.

B. Provide temporary on-site information signs to identify Owner's temporary relocation.

C. Remove signs on completion of construction.

D. Allow no other signs to be displayed without approval of owner.

1.2 RELATED REQUIREMENTS

A. Section 011100 – Summary of Work

B. Section 015000 – Temporary Facilities and Controls

C. Section 0151719 – Environmental Controls

1.3 PROJECT IDENTIFICATION SIGN

A. Two (2) digitally printed signs, not less than 4 feet x 8 feet, with graphic content as shown on sample exhibit (1) in this section.

B. Erect/Fasten on the site at location shown on drawing or as directed by the owner.

1.4 INFORMATIONAL SIGNS

A. Provide at all public entrances, stairways and temporary gates with digitally printed signs providing information about relocated services, if applicable, or other relevant information as determined by the CPO project team.

1. Each sign to be 3 feet by 3 feet and up to 100 letters, with graphic content as shown on sample exhibit (2) on the next page of this section.

2. Allow for a total of eight [8] signs.

B. Erect/Install at appropriate locations to provide required information.

1. Coordinate location with owner/owner's representative.

1.5 SUBMITTALS

A. Provide draft of sign to CPO project manager for review.

1.6 QUALITY ASSURANCE

A. Digital Sign Printer: Professional experience in type of work required.

B. Finishes: Adequate to resist weathering and fading for scheduled construction period.

PART 2 PRODUCTS

2.1 SIGN MATERIALS

A. Structure and framing: May be new or used, wood or metal, in sound condition, structurally adequate to work, and suitable for specified finish.

B. Sign surfaces: Exterior softwood plywood with medium-density overlay, in standard large sizes to minimize joints.

1. Thickness: As required by standards to span framing members (not less than ¾ inch thick), to provide even, smooth surface without knots, waves or buckles.

2. Rough hardware: Galvanized.

3. Paint: Manufacturer's Best Exterior quality as approved by architect.

a. Use exhibit for colors and graphics.

3.1 SIGN GRAPHICS

A. Sign should be printed/manufactured with style, sizes and colors shown on exhibits attached on page 3 of this section.

1. Sign templates are available from the CPO project manager in Adobe Illustrator, PDF, and PNG formats.

B. Project Identification Signs

1. Fonts & Colors:

a. Blue: #104c8f

b. Yellow: #f3c613

c. Font: Raleway

2. Logos, all signs

a. City of Philadelphia, Capital Program Office and City Council logos are on ALL signs.

3. Logos, project-specific: The following logos are dependent on project delivery and client agency (see below).

a. PPR - only when site is a PPR site.

b. FLP - only when site is a FLP site.

c. Rebuild – only when site is a Rebuild site.

d. William Penn Foundation – only when site is a Rebuild site.

e. PPR/FLP - need to show both when a co-located site exists.

f. Funders – It may be required for funder logos to be included on the project sign. This will be at the direction of the Capital Program Office.

4. Titles and names: All construction signs must include the following positions in this order;

a. Mayor

b. City Councilmember

c. State Elected Officials

d. Managing Director

e. Capital Program Office Director

f. Client Department Executive

5. Grant acknowledgement text:

a. For projects with grant funding, include acknowledgement of the grantor on the project signs.

i. CPO project manager will provide required acknowledgement text.

b. DCED - recognition on construction signage required

c. RACP - recognition on construction signage required

d. DCNR - recognition on permanent signage required, recognition on construction signage may be requested

e. Other as required by project grants

6. Social media:

a. For Rebuild project sites include the following copy beneath any grant language, “Follow us @RebuildPHL, or email questions to rebuild@phila.gov”

b. For all other projects use the following copy, “Follow us @CPO.PHL, or email questions to cpo@phila.gov”

C. Information Signs

a. PPR Info Sign - QR code to direct to the Rebuild.Phila.gov website

b. FLP Info Sign – QR code to direct to the freelibrary.org website

PART 3 EXECUTION

3.1 PROJECT IDENTIFICATION SIGN

A. Install at a height for optimum visibility, on ground-mounted poles or attached to temporary structural surfaces.

3.2 INFORMATION SIGNS

A. Install at a height for optimum visibility, on ground-mounted poles or attached to temporary structural surfaces.

3.3 MAINTENANCE

A. Maintain signs, fasteners, and hardware in a neat, clean condition; repair damaged sign if needed.

B. Relocate informational signs as required by progress of work.

3.4 REMOVAL

A. Remove signs, supports, fasteners at completion of project.

END OF SECTION

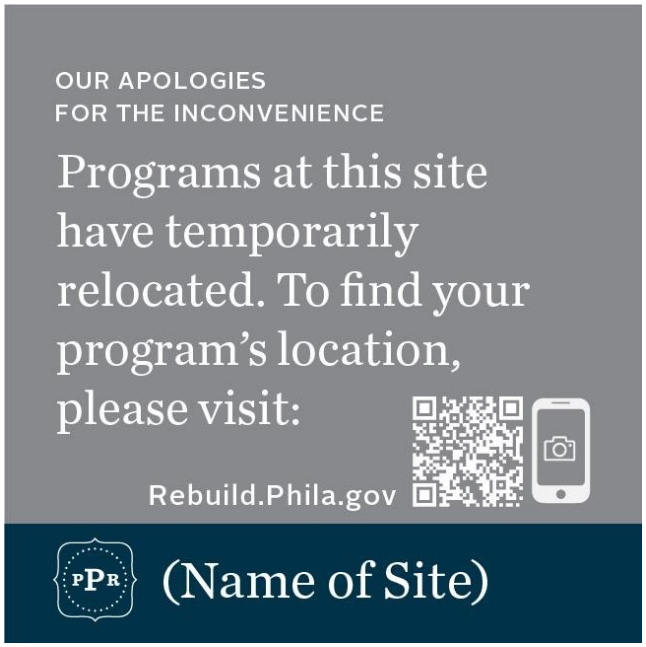
PROJECT 52025E-06-01
MCPHERSON SQUARE LIBRARY RENOVATIONS AND PARK IMPROVEMENTS
015800
PROJECT IDENTIFICATION AND SIGNS

Sample – Exhibit 1 - PROJECT IDENTIFICATION SIGN

Project Identification Sign w/ Render for a Rebuild Program Site

Project Identification Sign w/o Render for Rebuild Program Site

Sample – Exhibit 2 - INFORMATION SIGNS (PPR & FLP)



PROJECT 52025E-06-01
MCPHERSON SQUARE LIBRARY RENOVATIONS AND PARK IMPROVEMENTS
015800
PROJECT IDENTIFICATION AND SIGNS

COMMONWEALTH OF PENNSYLVANIA
Department of Conservation and Natural Resources

Bureau of Recreation and Conservation (BRC)

Administrative Policy/Grant Guidelines

SUBJECT: Project Signage

EFFECTIVE DATE: 3/9/11

REVISED: 12/6/12, 9/23/16

BACKGROUND:

The Bureau requires that a permanent sign be erected and maintained on all grant-funded project sites. This requirement is reflected in the grant agreement terms and conditions - Article XVIII Acknowledgement of Assistance. The purpose of the permanent sign is to provide acknowledgement of Department of Conservation and Natural Resources (DCNR) grant assistance, to notify the public that the facility is a public facility and to promote DCNR's recreation and conservation work to the general public. Below are the minimum standards for the permanent signs.

The Bureau of Recreation and Conservation also suggests that an "under construction" sign be displayed at the site during the construction period. The "under construction" sign is intended to demonstrate, during the time of construction, that DCNR grant assistance is helping to make the project possible.

POLICY:

1. **Permanent Signs:**
   - **a.** A permanent sign shall be erected and maintained at all project sites. The term "site" means the properties and facilities, including any portion of them acquired, rehabilitated, or developed with a grant from DCNR.
   - **b.** The permanent sign will conform with the minimum standard design and specifications established by the Bureau (provided below), unless local ordinance or local sign design standards require differently.
   - **c.** At a minimum, the permanent sign will state the site name, state that funding is provided in partnership with the Bureau of Recreation and Conservation, identify the funding source and the funding source logo. The sign should be installed in a highly visible location. The sign design needs to be approved by DCNR and it is acceptable to acknowledge other partners on the sign.
   - **d.** Costs associated with the development and installation of signs are eligible for reimbursement at the designated rate based on the program and funding source used. Costs for sign maintenance are not eligible for grant program funding.

e. When multiple projects are funded at a site with DCNR funding, or the project is of a linear basis, the Bureau may waive the requirements for additional permanent signs on a case-by-case basis.

f. When multiple sites are being acquired or developed utilizing a grant from DCNR, permanent signs are required for each site.

DCNR Logo

Keystone Recreation, Park and Conservation Fund Logo

Growing Greener Program, Environmental Stewardship Fund & Growing Greener Bond Fund

Land and Water Logo

Standard Permanent Sign Requirements: Use the sign language that coincides with your project's FUNDING Source.

Overall Size:	18" x 24"
Font Size:	Range from .71" to 1.75" will have layout sheet defined on language text
Font Style:	Arial
Orientation:	Landscape
Base Material:	Aluminum
Thickness:	.080
Sides printed:	1
Corners:	Round
Base Color:	Green
Text Color:	White
Border:	Yes
Mounting:	At funded project site
Mounting Holes:	No
Overlay:	EG Vinyl
Language:	Standard Language for various signs provided below

Language for the Standard DCNR - Keystone Recreation, Park and Conservation funded project:

Language for the Standard DCNR - Growing Greener Program, Environmental Stewardship Funded Project:

Language for the Standard DCNR - Growing Greener Program, Growing Greener Bond Funded Project:

IF Funding is from the Federal Highway Administration via DCNR:

IF Funding is from the Snowmobile/ATV Fund via DCNR:

IF Funding is from the Land & Water Conservation Fund (LWCF) via DCNR:

2. "Under Construction" Signs:

The Bureau encourages applicants to develop and display an "under construction" sign consistent with the design and specifications provided below or any other reasonable alternative (ex. vinyl banner, etc.) for all projects where site development occurs.

Suggested "Under Construction" Sign Specifications: (Local ordinance or local sign design standards may supersede these specifications.)

Overall Size:	18" x 24" or larger
Font Size:	Range from .71" to 1.75"
Font Style:	Arial
Orientation:	Landscape
Base Material:	Foam Core
Thickness:	
Sides printed:	1
Corners:	Square
Base Color:	White
Text Color:	Blue
Border:	Yes
Mounting:	At funded project site
Mounting Holes:	No
Overlay:	EG Vinyl
Language:	Standard language provided below

This policy remains in effect until revised or rescinded.

SECTION 016001

PRODUCTS AND MATERIALS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes administrative procedures regarding each Prime Contractor's selection of products, materials, and equipment required for the completion of the Work. Requirements for handling, storing and installing products are also included.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties", "structure", "finishes", "accessories", and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.

B. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment", "system", and terms of similar intent.

C. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature.

D. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

E. "Equipment" is a product with operational parts, whether motorized or manually operated, that require service connections such as wiring or piping.

F. "System" is an integrated assembly of materials and/or equipment which when combined form an integral whole to serve a function.

1.4 QUALITY ASSURANCE

A. Source Limitations - To the fullest extent possible, provide products of the same kind, from a single source.

B. Compatibility of Options - When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Each Prime Contractor is responsible for providing products and construction methods that are compatible with products and construction methods of other prime or separate Contractors.

D. If a dispute arises between prime Contractors over concurrently selectable, but incompatible products, the Design Professional will determine which products shall be retained and which are incompatible and must be replaced.

E. Nameplates - Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.

F. Labels - Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.

G. Equipment Nameplates - Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

1. Name of product and manufacturer.
2. Model and serial number.
3. Capacity.
4. Speed.
5. Ratings.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

B. Schedule delivery in accordance with the Construction Schedule and to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

C. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damages, or sensitive to deterioration, theft and other losses.

D. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with legible labels and instructions for handling, storing, unpacking, protecting and installing.

E. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

F. Store products at the site in a manner that will facilitate inspection and measurement of quantity of counting of units.

G. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.

H. Store product subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

1.6 OPERATION, MAINTENANCE, TRAINING AND CALIBRATION

A. Furnish manuals and services specified and as required to start-up, operate and maintain all equipment and systems.

PART 2 PRODUCTS

2.1 GENERAL PRODUCT REQUIREMENTS

A. Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation. All products shall be certified asbestos-free.

B. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

C. Where the work requires testing for assurance of performance, that portion of the work shall not proceed until such testing has been completed and written test report has been approved.

D. Do not use material or equipment for any purpose other than for which it is designed or specified.

E. Certification of Compatibility: If indicated, the material and equipment manufacturers shall certify in writing that:

1. Other manufacturer's materials or equipment coming into contact with their product are compatible with their product in every way and that the intended performance of the system in which their product is incorporated will not be affected as a result of such contact. Also, physical breakdown of their product by chemical reaction or otherwise will not occur as a result of such contact.

2. The combination of products by one (1) manufacturer to make up the manufacturer's specified system, will contribute to the performance of the system as intended, and will remain operational, reliable and durable. The manufacturer will be the source of routine maintenance and replacement parts.

F. Reuse of Existing Material

1. Except where indicated or otherwise approved in writing, materials and equipment removed from an existing structure shall not be used in the work.

2. Where use of existing material is indicated or approved, use special care in removing, handling, storing, and reinstallation to assure proper function in the completed work.

2.2 PRODUCT SELECTION PROCEDURES

A. Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:

B. Where products or manufacturers are specified by name, description, or performance accompanied by the term "or equivalent substitution", "or approved substitution", "or approved equal" or similar terms comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

C. Proprietary Specification Requirements - Where products or manufacturers are named, provide the product indicated or submit a substitution request.

D. Descriptive Specification Requirements - Where Specifications describe a product or assembly, listing exact characteristics required, without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements. If descriptive specification also includes manufacturers or products, provide product indicated of submit a substitution request.

E. Performance Specification Requirements - Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. Compliance shall be certified by independent testing agencies furnished by manufacturer. General overall performance of a product is implied where the product is specified for a specific application.

F. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

G. Compliance with Standards, Codes and Regulations - Where the Specifications require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified. Compliance shall be certified by independent testing agencies furnished by manufacturer.

H. Visual Matching - Where Specifications require matching an established sample or existing construction, the Design Professional's decision will be final on whether a proposed product matches satisfactorily.

I. Visual Selection - Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Design Professional will select the color, pattern and texture from the product line selected.

J. Allowances - Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection, and for procedures required for processing such selections.

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS

A. Installers shall be familiar with products and experienced in their installation. Comply with more stringent requirements of individual sections for installer qualifications.

3.2 EXAMINATION OF SUBSTRATE

A. Each installer shall examine substrate onto which the product will be installed. Inspect for any condition which would in any way reduce the quality, performance or durability of the product including but not limited to; dimensional or location tolerances, dampness, dryness, installation not meeting specified criteria for substrate, poor workmanship, etc. Do not proceed with installation over unacceptable substrates. Notify Contractor to have substrate

repaired. Work installed over unacceptable substrates shall be redone after substrate is repaired at no cost to the City.

3.3 PREPARATION

A. Protect adjacent work from possible damage which installation could cause including but not limited to staining, overspray, denting, gouging, displacement, etc.

B. Clean and prepare substrates to receive products with primers, bonding agents, barrier coats, etc. as per manufacturer's instructions.

3.4 PASSAGE OF MATERIALS AND EQUIPMENT

A. Establish passage clearances required to deliver and install materials and equipment.

B. Where there will be insufficient clearance for passage of materials and equipment, deliver and protect such equipment before confining construction is installed.

C. If existing structures, equipment and systems must be altered to provide passage of new materials and equipment, engage those skilled in the respective trade to restore structures, equipment, and systems to their original condition at no additional cost. Do not alter structure, equipment, or systems without written approval.

D. In lieu of altering structures to provide passage of materials and equipment, provide materials and equipment that can be disassembled, brought into the building, and reassembled.

E. If exterior windows or doors must be removed to provide passage of materials and equipment into the building, store and protect removed work at the site and reinstall as soon as possible. If any damage occurs to the work during their removal, transit, storage or reinstallation, replace or repair the work to like new condition at no cost to Owner.

3.5 INSTALLATION

A. Comply with manufacturer's instructions and recommendations and requirements of individual specification sections in the applications indicated. If manufacturer's instructions and specifications indicate differing installation techniques, request clarification from Design Professional but generally comply with more stringent requirement.

B. Anchor each product securely in place accurately located and aligned with other Work.

C. Coordinate installation with surrounding Work to allow for optimum end product.

3.6 FIELD QUALITY CONTROL

A. Have manufacturer's technical representative on-site to observe crucial installation steps as required by individual specification sections or as required to meet manufacturer's warranty or to meet other indicated criteria.

3.7 ADJUSTING

A. Adjust installed products for proper operation and fit.

- END -

SECTION 017123

FIELD ENGINEERING

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. The General Contractor shall engage the services of a Surveyor to establish grades, lines and levels.

B. Each separate Prime Contractor shall be responsible for layout of his own work, from grades, lines and levels established by the General Contractor.

1.2 RELATED REQUIREMENTS

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 QUALITY ASSURANCE

A. Surveyor shall be licensed in the Commonwealth of Pennsylvania.

1.4 SUBMITTALS

A. Submit name, address, and telephone number of Surveyor prior to starting survey work.

B. On request, submit documentation verifying accuracy of survey work.

C. Submit reference point survey including field notes for record.

D. Submit certification, signed and sealed by the Surveyor showing that elevations and locations of all improvements are or are not in conformance with Contract Documents.

1.5 PROJECT RECORD DOCUMENTS

A. Maintain complete, accurate log of control and survey work as it progresses.

B. Record on record documents all pertinent information under provisions of Division 1.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.1 INSPECTION

A. Verify locations of survey control points prior to starting work. Promptly notify Design Professional of any discrepancies discovered.

3.2 SURVEY REFERENCE POINTS

A. Protect survey control points prior to starting site work; preserve permanent reference points during construction. Make no changes without prior written notice to Design Professional.

B. Promptly report to Project Coordinator destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey control points based on original survey control.

3.3 SURVEY REQUIREMENTS

A. Use instruments to establish a minimum of two (2) permanent bench marks on the site. Reference benchmarks to data established by survey control points. Record bench mark locations with horizontal and vertical data for Project Record Documents. Reference these benchmarks to finish floor lines. Provide accurate alignment and level of the work, and correct slope and curvatures as required.

B. Periodically verify layouts by same means. No extra charges will be allowed for differences between dimensions shown and actual measurements. Advise the Project Coordinator of any differences.

C. Prepare as-built site utility plan showing all utilities including stormwater, sanitary, water, gas and electric lines for permanent record.

- END -

SECTION 017329

CUTTING, PATCHING, SLEEVES AND INSERTS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractor's cutting, fitting, patching, sleeves, and inserts required to complete the Work and to:

1. Make the parts come together properly.
2. Uncover or remove portions of the Work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove samples of installed work for testing as specified.
5. Provide penetrations for installation of piping and electrical conduit.
6. Repair surfaces shown to remain in the finished work, which are damaged in the process of demolition.
7. Coordinate penetrations, sleeves, and inserts that are specified in one specification section and installed by another.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 REGULATORY REQUIREMENTS

A. All cutting, fitting and patching shall be performed in compliance with governing code regulations relative to firestopping and smoke penetration.

PART 2 PRODUCTS

2.1 MATERIALS

A. Use materials that exactly match materials being cut or patched. If exact materials are not available, match with new materials with installed performance matching or exceeding cut or patched material. Comply with specifications and standards for each material involved.

B. Sleeves and Inserts: as specified in the Trade Sections requiring inserts and sleeves for the installation of their work.

PART 3 EXECUTION

3.1 INSPECTION

A. Inspect existing conditions, including work subject to damage or movement during cutting and patching.

B. Report unsatisfactory conditions to the City. Do not proceed until directed.

3.2 PREPARATION

A. Provide temporary support as required to maintain the structural integrity of work.

B. Provide materials and methods to protect other work from damage, including exposure to the elements.

3.3 PERFORMANCE

A. Do not cut or alter the work of another Prime Contractor without written consent of the City.

B. Perform cutting of structural steel, structural concrete or load bearing unit masonry only after approval of the City.

C. Execute cutting and demolition by methods that will prevent damage to other work, and provide proper surfaces to receive installation of repairs.

D. Remove excess materials resulting from cutting and patching and dispose of legally off site.

E. Perform excavating and backfilling by methods that will prevent settlement or damage to other work. Maintain excavations free of water.

F. Where cutting and patching of materials provided under this Contract is required, employ the original installer or fabricator to perform cutting and patching of:

1. Structural steel and concrete.

2. Weather-exposed elements.

3. Moisture- or corrosion-resistant elements.

4. Sight-exposed finished surfaces.

G. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

H. Restore work to remain, or be reused, which has been cut or removed. Install new products to provide complete work in accordance with Contract Documents.

I. Refinish entire surface to provide an even finish to match adjacent surfaces. For continuous surfaces, refinish to nearest intersection. For an assembly, refinish the entire unit.

J. Furnish sleeves and inserts required under individual specification sections to Contractor installing the Work to be sleeved or to have insert embedded. Be responsible for their correct location and installation.

K. Penetrations required, but not shown on the Drawings, shall be cut into the work.

- END -

SECTION 017419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of this Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous construction waste.
2. Recycling nonhazardous construction waste.
3. Disposing of nonhazardous construction waste.

1.2 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

1.3 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed. See requirements for plan below.

1.4 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit waste reduction progress report. Waste Reduction Progress Report's reporting period to match period covering work as recorded in Application for Payment. **Use Form attached at the end of this Section for construction waste reporting.** Populate all fields on Form.

1. With each report, include 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.
2. With each report, include 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.

B. Final Waste Management Report: 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. **Use Form attached at the end of this Section for construction waste reporting.** Populate all fields on Form.

1.5 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management

Coordinator.

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

C. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation, and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

A. General: **Develop a waste management plan in accordance with requirements in this Section.** Include the following in the Construction Waste Management Plan:
1. Identify strategies to reduce the generation of waste during project construction.
2. Establish construction waste diversion and total construction waste goals for the project.
   a. 50% of construction waste to be diverted from landfills (salvaged or recycled).
      1) Exclude excavated soil and land-clearing debris from calculations.
      2) Include materials destined for alternative daily cover (ADC) in the calculations as waste (not diversion).
      3) Any materials sent to a comingled recycling facility for processing must take the facility average recycling rate and must include any ADC as waste (not diversion).
   b. Generate <10lbs/sf of total construction waste (diverted and not diverted).
      1) Project gross floor area (sq ft) as identified in LEED Project Information: 15,666sf. Generate less than 156,660 pounds of total construction waste.
      2) Include all diverted and not diverted waste in the calculation of the waste generated. Exclude hazardous materials, land-clearing debris, and on-site reused materials from calculations.
3. Describe diversion strategies planned for the project. Specify whether materials targeted for diversion will be separated on site or commingled.
   a. List at least five materials targeted for diversion.
4. Describe where the material will be taken and, for those materials sent for recycling, how the recycling facility will process the material including expected diversion rates for each material. Indicate any commingled recycling facilities used that have third party verification of recycling rates.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for construction waste and diverted construction waste as required for LEED credits as follows:
1. 50% of construction waste to be diverted from landfills (salvaged or recycled).

a. Exclude excavated soil and land-clearing debris from calculations.
b. Include materials destined for alternative daily cover (ADC) in the calculations as waste (not diversion).
c. Any materials sent to a comingled recycling facility for processing must take the facility average recycling rate and must include any ADC as waste (not diversion).

2. Generate <10lbs/sf of total construction waste (diverted and not diverted).

a. Project gross floor area (sq ft) as identified in LEED Project Information: 9,860 SF. **Generate less than 986 pounds of total construction waste.**
b. Include all diverted and not diverted waste in the calculation of the waste generated. Exclude hazardous materials, land-clearing debris, and on-site reused materials from calculations.

B. Practice efficient waste management in use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

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

B. Preparation of Waste: Prepare and maintain recyclable waste materials in accordance with recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to maximum extent practical in accordance with approved construction waste management plan.

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

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

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

3.3 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. 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.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cutoffs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in containers and store in a dry location.

D. Paint: Seal containers and store by type.

3.4 DISPOSAL OF WASTE

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

1. Unless otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning:

1. Do not burn waste materials.

3.5 ATTACHMENTS

A. Construction waste reporting form.

END OF SECTION 017419

CONSTRUCTION AND DEMOLITION WASTE TRACKING

SMP ARCHITECTS | 1600 WALNUT ST, SECOND FLOOR, PHILADELPHIA, PA 19103 LEED v4.1 BD+C:NC

PROJECT: 718.10 | McPHERSON SQUARE LIBRARY RENOVATIONS AND PARK IMPROVEMENTS | CITY OF PHILADELPHIA SPEC SECTION 017419

CONTRACTOR: CONTRACTOR

INFO

REPORT NUMBER: _____

DATE: _____

REPORTING PERIOD: _____

CONSTRUCTION PERCENT COMPLETE: _____

NOTES, QUESTIONS, COMMENTS TO ARCHITECT: _____

CERTIFICATION

ATTACH TO REPORT ALL RECYCLING AND PROCESSING FACILITY RECORDS GENERATED DURING THE REPORTING PERIOD LISTED ABOVE.
ATTACH TO REPORT ALL LANDFILL AND INCINERATOR DISPOSAL RECORDS GENERATED DURING THE REPORTING PERIOD LISTED ABOVE.

ALL WASTE GENERATED, INCLUDING FROM DEMOLITION AND NEW CONSTRUCTION ACTIVITIES, HAS BEEN TRACKED AND RECORDED AS REQUIRED PER SPECIFICATIONS. ☐ **YES** _____ SIGN _____ DATE

REPORTING

	DEMOLITION WASTE		**NEW CONSTRUCTION WASTE**	
	NOT DIVERTED	DIVERTED	NOT DIVERTED	DIVERTED
FROM PREVIOUS REPORT				
+ THIS PERIOD				
= UPDATED TOTALS	A	B	C	D
TOTAL DEMO WASTE | TOTAL NC WASTE	A+B		C+D	
PROJECT TOTAL WASTE	A+B+C+D			
PROJECT TOTAL NOT DIVERTED	A+C			
PROJECT TOTAL DIVERTED	B+D			
DEMO DIVERSION % | NC DIVERSION %	B/(A+B)		D/(C+D)	
PROJECT TOTAL DIVERSION %	(B+D)/(A+B+C+D)			

NOTES

REFER TO SPECIFICATIONS SECTION 017419 "CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL" FOR ADDITIONAL INFORMATION.

RECORD ALL WASTE IN POUNDS (LBS) UNLESS NOTED OTHERWISE.

EXCLUDE HAZARDOUS MATERIALS, EXCAVATED SOIL, ON-SITE REUSED MATERIALS, AND LAND-CLEARING DEBRIS FROM CALCULATIONS.

MATERIALS DESTINED FOR ALTERNATIVE DAILY COVER (ADC) TO BE RECORDED AS 'NOT DIVERTED'.

FOR PROJECTS DIVERTING COMMINGLED WASTE:

- ATTACH TO REPORT DOCUMENTATION VERIFYING THE DIVERSION RATE OF COMMINGLED WASTE. INCLUDE PROOF THAT THE FACILITY IS REGULATED BY A LOCAL OR STATE GOVERNING AUTHORITY.
- INCLUDE AN AVERAGE RECYCLING RATE FOR THE FACILITY DURING THE TIME PERIOD THAT WASTE WAS SENT TO THE FACILITY FOR PROCESSING.
- INCLUDE AN ADC PERCENTAGE (IF APPLICABLE) FOR THE FACILITY.
- IF ELIGIBLE, INCLUDE PROOF OF THIRD-PARTY RECYCLING RATE AND FACILITY CERTIFICATION THROUGH AN APPROVED PROGRAM, SUCH AS RECYCLING CERTIFICATION INSTITUTE.

SMP

SECTION 017423

CLEANING

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section specifies each Prime Contractor's cleaning of the Work during construction and before completion.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Additional cleaning is specified under the technical sections for that work.

PART 2 PRODUCTS

2.1 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.1 PERIODIC CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Broom clean paved surfaces. Rake clean other surfaces of grounds. Remove snow and ice from access to building.

C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

D. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

E. Collect and remove waste materials, debris, and rubbish from site at least weekly and dispose of legally off-site.

F. Open free-fall chutes not permitted. Terminate closed chutes into appropriate containers with lids.

G. Clean mechanical equipment, ductwork and replace filters as specified under Division 23.

H. Clean electrical work including lighting fixtures as specified under Division 26.

I. Maintain cleaning until Project or portion thereof is accepted by Certificate of Substantial Completion. If minor work is required after Substantial Completion, clean affected areas afterwards.

3.2 FINAL CLEANING

A. Immediately before observation of the Work for Substantial Completion, clean all sight-exposed surfaces. Clean all ledges and other horizontal or near horizontal surfaces that may not be sight-exposed but are contiguous to finished spaces.

B. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

1. Replace significantly worn parts and parts that have been subject to unusual operating conditions.

2. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

- END -

SECTION 017700

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section specifies each Prime Contractor's administrative and procedural requirements for project closeout.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 SUBSTANTIAL COMPLETION

A. When the work is considered substantially complete, submit a written notice to the PRA that the Work, or a designated portion thereof, is substantially complete. Include a list of all items that require completion or correction.

B. Within a reasonable time after receipt of such notice, an inspection by the PRA/City will be made to determine the status of completion.

C. If the Work is not considered substantially complete; the Contractor will be notified in writing, giving the reasons therefore.

D. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion. This notice shall include a statement of action taken on each item noted as requiring correction or completion to achieve "Substantial Completion" status.

E. The Work will be inspected a second time and if not considered substantially complete, the two steps in paragraphs A and B above will be repeated.

F. When the PRA/City concurs that the Work is substantially complete, they will:

1. Prepare a Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the PRA.

2. Submit the Certificate to Contractor for written notice of the responsibilities assigned in the Certificate.

G. Contractor shall prepare Application for Payment at Substantial Completion and complete administrative and submittal requirements per Section 012900 Payment Procedures.

1.4 FINAL OBSERVATION

A. When the Work is considered complete, submit written certification that:

1. Contract Documents have been reviewed.

2. Work has been inspected by the Contractor and has been completed in compliance with Contract Documents.

3. Equipment and systems have been tested in the presence of the Project Coordinator and are operational.

4. Work is ready for final observation.

B. Inspection by the PRA/City will be made to verify the status of completion with reasonable promptness after receipt of such certification.

C. If the Work is not considered complete; the Contractor will be notified in writing, listing the incomplete or defective Work.

D. Contractor shall take immediate steps to remedy the stated deficiencies, and, after correcting deficiencies, he shall send a second written certification that the Work is complete. This certification shall itemize each deficiency noted and a statement of action taken to remedy or complete the Work.

E. The Work will be observed a second time and if not considered substantially complete, the two steps in paragraphs A and B above will be repeated.

F. When the Work is acceptable under the Contract Documents, the Contractor shall be requested to make closeout submittals.

1.5 ADDITIONAL OBSERVATION FEES

A. Should more than two observations at substantial or final completion and/or for required mock ups be required due to failure of the Work to comply with the claims of status of completion made by the Contractor:

1. PRA will compensate the Design Professional for such additional services.

2. PRA will deduct the amount of such compensation from the final payment to the Contractor.

1.6 CLOSEOUT SUBMITTALS

A. When the Work is complete submit the following:

1. Evidence of compliance with requirement of governing authorities as follows:

a. Certificate of Occupancy.

b. Certificates of Inspection for Work requiring Certificate of Inspection by governing authority.

c. Certificate and Reports of Inspection, Testing and Approval.

2. Project Record Documents as specified under Division 1.

3. Operation and Maintenance Manuals as specified under Division 1.

4. Warranties as specified under Division 1.

5. Keys and Keying Schedule as specified under Finish Hardware - Division 8.

6. Spare Parts and Maintenance Materials as specified.

7. Evidence of Payment and Release of Liens to the requirements of General and Supplementary Conditions.

8. Requirements for Final Payment Application per Section 012900 Payment Procedures, Division 1.

9. Consent of Surety.

1.7 SPARE PARTS AND MAINTENANCE MATERIALS

A. Furnish spare parts and maintenance materials as specified under various Sections of the Specifications.

B. Package and label parts and materials as directed and store in area of the building where directed by the PRA.

1.8 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

a. Previous Change Orders.

b. Change Orders caused by substitutions including deductions for review.

3. Deductions for uncorrected Work.

4. Deductions for re-inspection payments.

5. Other adjustments.

6. Total Contract Sum, as adjusted.

7. Previous payments.

8. Sum remaining due.

C. The PRA will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.9 FINAL APPLICATION FOR PAYMENT

A. Submit the final Application for Payment in accordance with procedures and requirements stated herein.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.1 Sample Certificate of Substantial Completion Form, see Project Coordinator for actual form.

– END –

SECTION 017823

OPERATION AND MAINTENANCE MANUALS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractor's procedural requirements for compiling and submitting operation and maintenance data.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Individual Specifications Sections: Specific requirements for operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.4 FORMAT

A. Prepare data in the form of an instructional manual.

B. Binders: Commercial quality, 8-1/2 by 11 inch three ring binders with plastic covers. When multiple binders are used, correlate data into related consistent groupings.

C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

D. Provide tabbed flyleaf, indexed for each separate product and system, with typed description of product and major component parts of equipment.

E. Text: Manufacturer's printed data or typewritten data.

F. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

G. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Design Professional, Contractor, Subcontractors, and major equipment suppliers.

2. Part 2: Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses and telephone numbers of Subcontractors and suppliers. Identify the following:

   a. Significant design criteria.

   b. List of equipment.

   c. Parts list for each component.

d. Operating instructions.

e. Maintenance equipment for equipment and systems.

f. Maintenance instructions for [special] finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3. Part 3 - Project documents and certificates, including the following:

a. Shop drawings and product data.

b. Air and water balance reports.

c. Certificates.

d. Photocopies of warranties and bonds.

H. Data

1. For Each Product or System - List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

2. Product Data - Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

3. Drawings - Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawing.

1.5 MANUAL FOR MATERIALS AND FINISHES

A. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional Requirements: As specified in individual Product Specification sections.

1.6 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

B. Panelboard Circuit Directories - Provide electrical service characteristics, controls, and communications.

C. Include color-coded wiring diagrams as installed.

D. Operating Procedures - Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown and emergency instructions. Include summer, winter, and any special operating instructions.

E. Maintenance Requirements: Include routine procedures and guide for disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

F. Troubleshooting: Include step-by-step chart listing common problems with appropriate repairs.

G. Provide servicing and lubrication schedule, and list of lubricants required.

H. Include manufacturer's printed operation and maintenance instructions.

I. Include sequences of operation by controls manufacturer.

J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

K. Provide control diagrams by controls manufacturer as installed.

L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

N. Include test and balancing reports as specified.

O. Additional Requirements - As specified in individual Product specification sections.

P. Where the complexity of machinery is such that regular maintenance by a specialty service company is normal, or may be required by law, give notice thereof in writing.

1.7 INSTRUCTION OF CITY PERSONNEL

A. Before final inspection, instruct City's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.

B. For equipment requiring seasonal operation, perform instructions for other seasons within two (2) months.

C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

1.8 SUBMITTALS

A. For equipment, or component parts of equipment put into service during construction and operated by City, submit documents within ten days after acceptance.

B. Submit 2 copies of completed volumes fifteen (15) days prior to final inspection. This copy will be reviewed and returned after final observation, with comments. Revise content of all document sets as required prior to final submission.

C. Submit six (6) sets of revised final volumes in final form prior to or coincidental with Final Application for Payment.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

- END -

SECTION 017836

WARRANTIES

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractor's procedural requirements for executing, assembling and submitting warranties.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

B. Individual Specification sections requiring warranties or service/maintenance contracts.

1.3 SUBMITTAL REQUIREMENTS

A. Submit two (2) sets of original signed copies and (1) digital file of warranties, bonds, service and maintenance contracts, executed by the respective manufacturers, suppliers, and subcontractors.

B. Contents - Neatly type, in orderly sequence, the following information for each item.

1. Product or work item.

2. Subcontractor supplier and manufacturers names, addresses, and telephone numbers.

3. Date of beginning and duration time of warranty, bond, or service and maintenance contract.

4. Proper procedure in case of failure.

5. Instances which might affect the validity of warranty or bond.

C. Bind each set in 8 1/2 inch by 11 inch commercial quality, three-ring binders with plastic covers. Identify each binder with typed or printed title "Warranties" with title of project and location.

1.4 TIME OF SUBMITTALS

A. For equipment or component parts of equipment placed into service during progress of construction, submit documents within ten (10) days after inspection and acceptance.

B. Make other submittals within ten (10) days after Date of Substantial Completion, prior to final request for payment.

C. For items of work, where acceptance is delayed materially beyond the Date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing the date of acceptance as the start of the warranty period.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

- END -

SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section describes each Prime Contractor's administrative and procedural requirements for recording final product and material selections, changes to the Contract, and recording Work concealed by subsequent construction.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Applicable provisions of Bidding Requirements, Contract Requirements in Division 0 and all applicable Division 1 sections.

1.3 MAINTENANCE OF DOCUMENTS

A. Maintain at job site, one (1) copy of record documents including Drawings, Specifications, Addenda, Change Orders and other modifications, Shop Drawings, product data and samples.

B. In addition, maintain one (1) copy of field orders or written instructions, field test records, testing and inspection reports, progress reports, meeting minutes and construction photographs.

C. Maintain documents in a clean, dry, legible condition and in good order.

D. Make documents available at all times for inspection.

E. Review documents at progress meetings.

1.4 RECORDING

A. Neatly label each document and binder with "Project Record" and project name and location.

B. Record information concurrently with construction progress.

C. Do not conceal any work until required information is recorded.

D. Record Construction Drawings and Shop Drawings: Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Note horizontal and vertical locations of concealed elements, referenced to permanent, visible features.

2. Note field changes of dimension and detail.

3. Note details not on original Contract Drawings.

E. Record Project Manual: Mark to show substantial variations in actual Work performed in comparison with the text of the original. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

F. Record Product Data: Maintain one copy of each Product Data submittal. Mark documents to show significant variations in actual Work performed in comparison with information submitted. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1.5 SUBMITTALS

A. Preceding or coincidental with the final pay application, submit the following:

B. Record Construction Drawings: One (1) set of reproducible Mylar transparencies showing all clearly-indicated notations specified above, and including notation "AS BUILT DRAWINGS" with submission date and General Contracting company's information grouped together near the titleblock's original date. Transparencies of the Design Professional's drawings may be used for this purpose upon reimbursement of the printing costs to the Design Professional.

C. Record Shop Drawings: One (1) copy of any shop drawings.

D. Record Project Manual: One (1) copy bound in 3 ring binder(s).

E. Record Product Data: One (1) copy organized by CSI format bound in 3 ring binder(s).

F. If review of Record Documents reveals noncompliance with Contract Documents, errors or omissions, Contractor shall correct deficiencies and resubmit.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

- END -

SECTION 018113.20

SUSTAINABLE DESIGN REQUIREMENTS - LEED v4.1 BD+C: NEW CONSTRUCTION AND MAJOR RENOVATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general requirements and procedures for compliance with USGBC's LEED prerequisites and credits needed for Project to obtain LEED Gold certification based on USGBC's "LEED v4.1 for Building Design and Construction" (hereafter, LEED v4.1 BD+C).

1. Specific requirements for LEED are also included in other Sections.
2. Other LEED prerequisites and credits needed to obtain LEED certification depend on product selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests and comparable product requests.

1.2 DEFINITIONS

A. ANSI/BIFMA e3 Furniture Sustainability Standard: Standard addressing environmental and social impacts throughout the furniture supply chain.

B. Bio-Based Materials: Products containing some percentage of biologically renewable resource.

C. BUG Rating Method: The BUG rating of a fixture determines how much light trespass is produced by considering backlight (B), uplight (U), and glare (G).

D. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001. Certificates to include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.

E. Cradle to Cradle: Product certification assessing material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness.

F. Declare: A product transparency disclosure that identifies material source, composition, and end-of-life procedures.

G. Environmental Product Declaration (EPD): A transparency reporting tool communicating what a product is made of and the environmental impact.

H. Extended Producer Responsibility: A waste management strategy promoting integration of life-cycle costs associated with goods into the market price of products. Typically, this involves a take-back or recycling program run by manufacturer at the end of the product's lifespan.

I. Facts: Standard evaluating sustainability of furniture products over the product life cycle.

J. Health Product Declaration (HPD): Disclosure of products contents and associated health

information.

K. LEED: USGBC's "LEED v4.1 for Building Design and Construction." Definitions that are part of this document apply to this Section.

L. Living Product Challenge: A product framework for manufacturers examining place, water, energy, health, materials, and equity in production of materials.

M. Manufacturer Inventory: A published, complete content inventory for products.

N. Product Lens: Transparency disclosure highlighting hazard information.

O. REACH Optimization: International standard outlining hazardous substances of high concern to be avoided in material composition.

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

1. "Postconsumer" 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.
2. "Preconsumer" material is defined as material diverted from the waste stream during the manufacturing process. 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) is excluded.

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

R. WaterSense Label: The WaterSense label from the EPA specifies water efficiency and performance.

S. Whole-Building Life-Cycle Assessment: The Life Cycle Assessment (LCA) is a methodology that evaluates the carbon and other environmental impacts of building materials over the projected lifespan of the building.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project Site. Review sustainability goals, municipal and state sustainability requirements, LEED objectives, and action plans for meeting requirements.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Respond to questions and requests from Architect about USGBC's LEED prerequisites and credits that are Contractor's responsibility, that depend on product selection or product qualities, or that depend on Contractor's procedures until USGBC has made its determination on Project's LEED certification application.

B. Submit documentation to USGBC and respond to questions and requests from USGBC about its LEED prerequisites and credits that are Contractor's responsibility, that depend on product selection or product qualities, or that depend on Contractor's procedures until USGBC has made its determination on Project's LEED certification application.

1. Document correspondence with USGBC as informational submittals.

1.5 ACTION SUBMITTALS

A. General: Submit sustainable design submittals required by other Sections.

1. **With all sustainable design submittals, include LEED Environmental Reporting form.**

B. Sustainable design submittals are in addition to other submittals.

1. If submitted item is identical to that submitted to comply with other requirements, include additional copy with other submittal as a record of compliance with indicated LEED requirements instead of separate sustainable design submittal. Mark additional copy "Sustainable design submittal."

C. Construction Waste Management and Disposal:

1. Comply with Section 017419 "Construction Waste Management and Disposal."

D. Construction Activity Pollution Prevention:

1. **Construction Activity Pollution Prevention Plan Submittal:**

a. Within thirty (30) days after receipt of Notice to Proceed, the Contractor shall develop and submit to the Architect for review a Construction Activity Pollution Prevention Plan. The Plan shall include, but not be limited to, the following:

1) Description of measures to be implemented by the Contractor to meet requirements of the design team Erosion and Sedimentation Control plans.

b. From the design team, obtain a copy of the Erosion and Sedimentation Control [ESC] plan conforming to the erosion and sedimentation requirements of the 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) or local equivalent, whichever is more stringent. Projects must apply the CGP regardless of size.

2. **Construction Activity Pollution Prevention Progress Report Submittals**: Submit a monthly report containing the following:

a. Report shall capture all areas of the site covered in the ESC Plan during the construction period.
b. Report to include date-stamped photos showing the ESC measures taken, including any corrective action, to effectively implement the ESC plan.
c. Include brief narratives describing the ESC measures in the photos.

E. Construction Indoor Air Quality (IAQ):

1. **Indoor Air Quality Management Plan Submittal**: Within thirty (30) days after receipt of Notice to Proceed, the Contractor shall develop and submit to the Architect for review an indoor air quality management plan. The Plan shall include, but not be limited to, the following:
   a. Address each of the five categories (including subsections) covered by the SMACNA "IAQ Guidelines for Occupied Buildings under Construction" as follows:
      1) HVAC Protection
         a) Permanently installed HVAC equipment
         b) Duct protection and cleaning
         c) Filtration media
         d) Material storage
      2) Source Control
         a) Allowed products
         b) Product substitution
         c) High-toxicity material protocols
         d) Local and temporary exhaust
         e) Air cleaning
         f) Smoking
         g) Moisture protection
         h) Sealing sources of pollution
      3) Pathway Interruption
         a) Isolate work area
         b) Depressurize work area, pressurize occupied or completed space
         c) Relocate pollutant sources
         d) Entryway walk-off mats
         e) Dust guards and collectors on tools
      4) Housekeeping
         a) Maintenance of site
         b) Vacuum filters
         c) Dust control for sweeping
         d) Final cleaning of site
      5) Scheduling
         a) Sequencing of trades and material installation
         b) If applicable, flush-out and/or perform IAQ testing
         c) Filtration media

   b. Procedures for protecting stored on-site or installed absorptive materials from moisture damage.
   c. Description of the smoking policy for the project site during construction.
   d. Indicate whether air handlers will be operated during construction and specify filtration procedures for permanent equipment that will be used.
   e. Schedule for inspection and maintenance of IAQ measures.
   f. Include provisions in the Plan for addressing conditions in the field that do not adhere to the Plan, including provisions to implement a stop work order or rectify non-compliant conditions.

2. If permanently installed HVAC systems are used for heating, cooling or ventilation during construction, provide the following:

   1) **Product data sheet submittal:** for temporary filtration media, including the filtration rating.
   2) **Log submittal:** identifying installation date of temporary filtration media,

dates that filtration media was inspected and dates for when permanent filters were installed.

3. **Product data submittal:** for permanent filtration media installed prior to occupancy.
4. **IAQ Management Progress Report Submittals**: Submit a monthly report containing photographs of each IAQ measure implemented (see below). At minimum, include 6 photographs monthly.
    a. By the end of construction, at least 3 photographs over the course of construction of each IAQ measure implemented must be included in the report.
    b. Include photographs that demonstrate methods employed to protect absorptive materials from moisture damage during construction and pre-occupancy. Highlight materials stored or installed on-site.
    c. Photographs should be annotated to indicate the IAQ measure depicted and the general location of the photograph.

1.6 INFORMATIONAL SUBMITTALS

A. **Sustainable Design Progress Reports**: Concurrent with each Application for Payment, submit Sustainable Design Progress Reports as required:

1. Construction Activity Pollution Prevention Progress Reports (see above).
2. IAQ Management Progress Reports (see above).
3. Construction Waste Management Progress Reports (see Section 017419 “Construction Waste Management and Disposal” for requirements).

PART 2 - PRODUCTS

2.1 MATERIALS

A. Contractor to provide products and procedures necessary to obtain LEED credits as indicated below. Other Sections specify requirements that contribute to these LEED credits. References to LEED requirements are as published by the US Green Building Council, LEED v4.1 BD+C: New Construction Rating System and LEED v4.1 BD+C: New Construction credit library:

1. Environmental Product Declarations:

    a. Contractor to use at least 20 different permanently installed products sourced from at least five different manufacturers which comply with LEED requirements for environmental product declaration disclosure criteria.
    b. Contractor to use products that have a compliant embodied carbon optimization report or action plan separate from the LCA or EPD. Use at least 5 permanently installed products sourced from at least three different manufacturers. Products are valued according to LEED requirements.

2. Sourcing of Raw Materials:

    a. Contractor to use products sourced from at least five different manufacturers that meet at least one of the responsible sourcing and extraction criteria complying with LEED requirements and indicated below for at least 30%, by cost, of the total value of permanently installed building products in the project.

1) 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. Products meeting extended producer responsibility criteria are valued at 50% of their cost for the purposes of credit achievement calculation.
2) Bio-based materials. Bio-based products and materials other than wood must be tested using ASTM Test Method D6866 or equivalent method ISO 16620-2, or be certified to the USDA BioPreferred Voluntary Labeling Initiative that includes verification via ASTM 6866 testing. Exclude hide products, such as leather and other animal skin material.

    a) Bio-based products that meet the criteria above: value at 50% of cost multiplied by the biobased content of the product for the purposes of credit achievement calculation.

3) Wood products. Wood products must be certified by the Forest Stewardship Council or USGBC-approved equivalent. Products meeting wood products criteria are valued at 100% of their cost for the purposes of credit achievement calculation.
4) Materials reuse. Reuse includes salvaged, refurbished, or reused products. Products meeting materials reuse criteria are valued at 200% of their cost for the purposes of credit achievement calculation.
5) Recycled content. Products meeting recycled content criteria are valued at 100% of their cost for the purposes of credit achievement calculation.

    a) Recycled content is the sum of postconsumer recycled content plus one-half the preconsumer recycled content, based on weight.
    b) The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

3. Material Ingredients:

    a. Use at least 20 different permanently installed products from at least five different manufacturers that use any of the programs indicated in the LEED credit library and complying with LEED requirements to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).
    b. Contractor to use products that have a compliant material ingredient optimization report or action plan. Use at least 5 permanently installed products sourced from at least three different manufacturers. Products are valued according to LEED requirements.

2.2 LOW-EMITTING MATERIALS

A. Provide products and procedures necessary to obtain LEED credits indicated. Other Sections specify requirements that contribute to these LEED credits. LEED requirements related to installed low-emitting materials indicated below for reference:

1. Paints and Coatings: For field applications that are inside the weatherproofing system, 75 percent of paints and coatings meet the VOC emissions evaluation and 100 percent meet the VOC content evaluations.
2. Adhesives and Sealants: For field applications that are inside the weatherproofing system, 75 percent of adhesives and sealants meet the VOC emissions evaluation and 100 percent meet the VOC content evaluations.

3. Flooring: A minimum of 90 percent of flooring products meet the VOC emissions evaluation or inherently non-emitting sources criteria or salvaged and reused materials criteria. Subflooring is excluded.
4. Walls: A minimum of 75 percent of wall panel products meet the VOC emissions evaluation or inherently non-emitting sources criteria or salvaged and reused materials criteria. Wall panel products include wall paneling, wall coverings, wall tile, surface wall structures, cubicle/curtain/partition walls, trim, doors, frames, windows, and window treatments. Removable/interchangeable fabric panels, built-in cabinetry, and vertical structural elements are excluded.
5. Ceilings: A minimum of 90 percent of ceilings meet the VOC emissions evaluation or inherently non-emitting sources criteria or salvaged and reused materials criteria. Ceiling products include ceiling panels, ceiling tile, surface ceiling structures, suspended systems, and glazed skylights. Overhead structural elements are excluded.
6. Insulation: A minimum of 75 percent of insulation products meet the VOC emissions evaluation. Insulation products include all thermal and acoustic boards, batts, rolls, blankets, sound attenuation fire blankets, and foamed-in-place, loose-fill, blown, and sprayed insulation. HVAC duct and plumbing piping insulation are excluded.
7. Furniture: A minimum of 75 percent of furniture meets the furniture emissions evaluation or inherently non-emitting sources or salvaged and reused materials criteria. All standalone furniture is included.
8. Composite Wood: A minimum of 75 percent of all composite wood meet the formaldehyde emissions evaluation or salvaged and reused materials criteria. Composite wood materials include particleboard, MDF, hardwood veneer plywood, and structural composite wood.

2.3 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT MATERIALS

A. Cleaning:

1. Using low-toxic cleaning supplies for cleaning of surfaces, equipment, and personal use complying with GS-37 or other equivalent standard.

B. Filtration Media:

1. If permanently installed air handlers are used during construction, temporary filtration media must meet one of the following performance criteria:
   a. MERV of at least 8, as determined by ASHRAE 52.2-2007 (with errata but without addenda).
   b. Class F5 or higher, as defined by CEN Standard EN 779-2002, Particulate Air Filters For General Ventilation, Determination of the filtration performance.

PART 3 - EXECUTION

3.1 NONSMOKING BUILDING

A. Smoking is not permitted within the building or within 25 ft. of entrances, operable windows, or outdoor-air intakes.

3.2 CONSTRUCTION WASTE MANAGEMENT

A. Comply with Section 017419 "Construction Waste Management and Disposal."

3.3 CONSTRUCTION INDOOR AIR QUALITY (IAQ) MANAGEMENT

A. The General Contractor/Construction Manager shall be responsible for implementation of the Construction IAQ Management Plan, and for the coordination of the Plan with all affected trades. Sub-contractors shall be responsible for the implementation of specific control measures, as impacted by their trade. Subcontractors shall coordinate their responsibilities through the Construction Manager and their designated Construction IAQ Representative.

B. Comply with SMACNA's "SMACNA IAQ Guideline for Occupied Buildings under Construction."

1. Temporary filtration media must be used at each return air grille if permanently installed air handlers are used during construction.
2. After completion of construction and prior to occupancy, temporary filtration media must be replaced with new permanent filters as specified.

C. Flush-Out:

1. After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total volume of 14,000 cu. ft. of outdoor air per sq. ft. of floor area while maintaining an internal temperature of at least 60 deg F and a relative humidity no higher than 60 percent.
2. Review flush-out procedure with Architect at least 7 days prior to scheduled date.

D. Conduct regular inspection and maintenance of indoor air quality measures.

E. Implement policies and procedures outlined in the Indoor Air Quality Management Plan.

F. Use safety meetings, signage, and subcontractor agreements to communicate the goals of the Indoor Air Quality Management Plan.

END OF SECTION 018113.20 (see following pages for LEED reporting form)

LEED REPORTING FORM

SMP ARCHITECTS | 1600 WALNUT ST, SECOND FLOOR, PHILADELPHIA, PA 19103 LEED v4.1 BD+C:NC

PROJECT: 718.10 | McPHERSON SQUARE LIBRARY RENOVATIONS AND PARK IMPROVEMENTS | CITY OF PHILADELPHIA

CONTRACTOR:

POPULATE ALL FIELDS BELOW AS REQUIRED.
FILL OUT ONE FORM PER INDIVIDUAL PRODUCT. IF SUBMITTAL INCLUDES MULTIPLE PRODUCTS, INCLUDE MULTIPLE FORMS.
ESTIMATES FOR VOLUMES ARE ACCEPTABLE. PROVIDE TOTAL VOLUME OF PRODUCT, IN LITERS.
ESTIMATES FOR COST ARE ACCEPTABLE. PROVIDE TOTAL COST FOR PRODUCT, IN US DOLLARS.
PROVIDE COST FOR MATERIAL ONLY, INCLUDING TAXES AND DELIVERY. EXCLUDE FROM COST ANY LABOR OR EQUIPMENT REQUIRED FOR INSTALL.

INFO

SUBMITTAL NUMBER: _____

PRODUCT NAME: _____

MANUFACTURER / PRODUCER: _____

MANUFACTURER'S PRODUCT CODE: _____

NOTES, QUESTIONS, COMMENTS TO ARCHITECT: _____

SOURCE

IS PRODUCT EXTRACTED, MANUFACTURED, AND PURCHASED WITHIN 100 MILES OF THE PROJECT SITE? ☐ **YES -** PROVIDE ADDRESSES BELOW

EXTRACTED (IF APPLICABLE): _____

MANUFACTURED (IF APPLICABLE): _____

PURCHASED / DISTRIBUTED FROM (IF APPLICABLE): _____

REPORTS

CHECK BOXES BELOW IF DOCUMENTATION LISTED IS AVAILABLE.
SEE REFERENCE MATERIALS FOR DESCRIPTIONS OF ACCEPTABLE EPD'S AND MATERIAL INGREDIENT REPORTS.

DOCUMENTATION INCLUDED FOR: ☐ **ENVIRONMENTAL PRODUCT DECLARATIONS**

DOCUMENTATION INCLUDED FOR: ☐ **MATERIAL INGREDIENT REPORTING**

RAW MATERIALS

REQUIRED FOR ALL PRODUCTS. CHECK BOXES BELOW IF DOCUMENTATION LISTED IS AVAILABLE.
SEE REFERENCE MATERIALS FOR DESCRIPTIONS OF ACCEPTABLE RESPONSIBLY-SOURCED-RAW-MATERIAL REPORTS.

TOTAL MATERIAL COST: $ _____

DOCUMENTATION INCLUDED FOR: ☐ **EXTENDED PRODUCER RESPONSIBILITY**

DOCUMENTATION INCLUDED FOR: ☐ **BIO-BASED PRODUCT CONTENT** PERCENTAGE: _____

DOCUMENTATION INCLUDED FOR: ☐ **FSC CERTIFIED WOOD CONTENT** PERCENTAGE: _____

DOCUMENTATION INCLUDED FOR: ☐ **RECYCLED CONTENT** % PRECONSUMER: _____ % POSTCONSUMER: _____

LOW-EMITTING MATERIALS

ONLY REQUIRED FOR MATERIALS INSTALLED WITHIN AIR BARRIER MEMBRANE. NO REPORTING REQUIRED FOR EXTERIOR MATERIALS.
SEE REFERENCE MATERIALS FOR ADDITIONAL INFORMATION ON LOW-EMITTING MATERIAL REPORTING AND REPORT TYPES.

PRODUCT TYPE:

☐ PAINTS AND COATINGS:
TOTAL VOLUME: _____ **L**
DOCUMENTATION INCLUDED FOR: ☐ **VOC EMISSIONS EVALUATION** **AND** ☐ **VOC CONTENT EVALUATION**

☐ FLOORING:
TOTAL COST: **$** _____
DOCUMENTATION INCLUDED FOR: ☐ **VOC EMISSIONS EVALUATION** **OR** ☐ **INHERENTLY NON-EMITTING**

☐ WALL PANELS:
TOTAL COST: **$** _____
DOCUMENTATION INCLUDED FOR: ☐ **VOC EMISSIONS EVALUATION** **OR** ☐ **INHERENTLY NON-EMITTING**

☐ CEILINGS:
TOTAL COST: **$** _____
DOCUMENTATION INCLUDED FOR: ☐ **VOC EMISSIONS EVALUATION** **OR** ☐ **INHERENTLY NON-EMITTING**

☐ INSULATION:
TOTAL COST: **$** _____
DOCUMENTATION INCLUDED FOR: ☐ **VOC EMISSIONS EVALUATION**

☐ COMPOSITE WOOD:
TOTAL COST: **$** _____
DOCUMENTATION INCLUDED FOR: ☐ **FORMALDEHYDE EMISSIONS EVALUATION**

☐ ADHESIVES AND SEALANTS:
NO REPORTING REQUIRED.

REFERENCE MATERIALS

ENVIRONMENTAL PRODUCT DECLARATION (EPD) REPORTING GUIDELINES

Provide documentation that meets one of the following disclosure criteria:

Life-cycle assessment and environmental product declarations.

- Products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope are valued as one whole product for the purposes of credit achievement calculation.
- Product-specific Type III EPD -- Internally Reviewed. Products with an internally critically reviewed LCA in accordance with ISO 14071. Products with product-specific internal EPDs which conform to ISO 14025, and EN 15804 or ISO 21930 and have at least a cradle to gate scope are valued as one whole product for the purposes of credit achievement calculation.
- Industry-wide Type III EPD -- Products with third-party certification (Type III), including external verification, in which the manufacturer is explicitly recognized as a participant by the program operator. Products with industry-wide EPDs, which conform to ISO 14025, and EN 15804 or ISO 21930 and have at least a cradle to gate scope are valued as one whole product for the purposes of credit achievement calculation.

Environmental Product Declarations which conform to ISO 14025 and EN 15804 or ISO 21930 and have at least a cradle to gate scope.

- Product-specific Type III EPD -- Products with third-party certification (Type III), including external verification and external critical review are valued as 1.5 products for the purposes of credit achievement calculation

MATERIAL INGREDIENTS REPORTING GUIDELINES

Provide documentation of material reporting from any of the following programs:

ANSI/BIFMA e3 Furniture Sustainability Standard. The documentation from the assessor or scorecard from BIFMA must demonstrate the product earned 4, 5, 7, or 8 points under 7.5.1.1 Chemical Assessment in e3-2019 (Pathway 1), 3 points under 7.5.2.2 Advanced Level in e3-2019 (Pathway 2), or at least 3 points under 7.5.1.3 Advanced Level in e3-2014 or at least 3 points under 7.5.1.3 Advanced Level in e3-2014.

- For e3-2019: If product achieved 3 points under 7.5.1.1 in e3-2019 using the GHS classification sub-path, then the product meets this requirement. Manufacturer to provide additional backup documentation to show which sub-path was used in Pathway 1 (7.5.1) in this instance.

Cradle to Cradle. Product has Material Health Certificate or is Cradle to Cradle Certified™ under standard version 3 or later with a Material Health achievement level at the Bronze level or higher.

Declare. The Declare product label must meet the following requirements:

- Declare labels designated as Red List Free, LBC Red List Free, or Declared.
- Declare labels designated as LBC Red List Approved or LBC Compliant that demonstrate content inventory to 0.1% (1000 ppm).

Facts – NSF/ANSI 336: Sustainability Assessment for Commercial Furnishings Fabric at any certification level.

Global Green TAG. Product Health Declaration (PHD) labels issued after January 1, 2020.

Health Product Declaration. The end use product has a published and complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration Open Standard.

Living Product Challenge. The included Declare product label must demonstrate content inventory to 0.1% (1000 ppm).

Manufacturer Inventory. The manufacturer has published complete content inventory for the product following these guidelines:

- A publicly available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CASRN) and/or European Community Number (EC Number).
- Materials defined as trade secret or intellectual property may withhold the name and/or CASRN/EC Number but must disclose ingredient/chemical role, amount and hazard score/class using either:
  - Greenscreen List Translator (LT) score and/or Full GreenScreen Benchmark (BM)
  - The Globally Harmonized System of Classification and Labeling of Chemicals rev.6 (2015) (GHS)

Product Lens Certification.

RESPONSIBLE SOURCING OF RAW MATERIALS REPORTING GUIDELINES

Provide documentation showing products have been responsibly sourced and extracted by one of the following criteria:

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.

Bio-based materials. Bio-based products and materials other than wood must be tested using ASTM Test Method D6866 or equivalent method ISO 16620-2, or be certified to the USDA BioPreferred Voluntary Labeling Initiative that includes verification via ASTM 6866 testing. Exclude hide products, such as leather and other animal skin material.

Wood products. Wood products must be certified by the Forest Stewardship Council or USGBC-approved equivalent.

Recycled content. Report recycled content (preconsumer and postconsumer) as a percentage, based on weight.

REFERENCE MATERIALS

LOW-EMITTING MATERIALS REPORTING GUIDELINES

Reporting applies to products installed within the air barrier membrane. Exclude products installed outboard of the air barrier membrane layer.

The following products and materials are not applicable to the low-emitting materials product categories: equipment related to fire suppression, HVAC (including ductwork), plumbing, electrical, conveying and communications systems, poured concrete, structural framing, structural insulated panels (SIPs), and water-resistive barriers (material installed on a substrate to prevent bulk water intrusion).

Descriptions of product categories as follows:

Paints and Coatings: The paints and coatings product category includes all interior paints and coatings wet-applied on site, specialized finished (dyes, sealers, hardeners and toppings for concrete floors), and plasters.
Exclude foamed-in place and sprayed insulation (include in Insulation category).

Flooring: The flooring product category includes all types of hard and soft surface flooring (carpet, ceramic, vinyl, rubber, engineered, solid wood, laminates), raised flooring, wall base, transition strips/stair nosing, grills, entryway systems, underlayments, and other floor coverings.
Exclude poured concrete, subflooring (include subflooring in the composite wood category, if applicable), and wet-applied products applied on the floor (include in paints and coatings category).

Wall Panels: The wall panels product category includes all finish wall treatments (wall coverings, wall paneling, wall tile), gypsum or curtain walls, retail slatwall, trim, interior and exterior doors, non-structural wall framing, interior and exterior windows, window treatments, countertops, laminate/veneer used for built-in cabinetry, non-structural sandwich panels, and CMU.
Exclude cabinetry (include the composite wood components of built-in cabinetry in the composite wood category and free-standing cabinetry in the furniture category), and vertical structural elements (include structural wood panels or structural composite wood in the composite wood category, if applicable), bathroom accessories, and door hardware.

Ceilings: The ceilings product category includes all ceiling panels, ceiling tile, surface ceiling structures such as gypsum or plaster, suspended systems (including canopies and clouds), and glazed skylights.
Exclude overhead structural elements (include structural elements in the composite wood category, if applicable).

Insulation: The insulation product category includes all thermal and acoustic boards, batts, rolls, blankets, sound attention fire blankets, foamed-in place, loose-fill, blown, and sprayed insulation. Include elements within the wall cavity only (i.e. exclude outboard insulation).
Exclude insulation for HVAC ducts and plumbing piping from the credit. Exclude insulation outboard of the air barrier membrane layer.

Composite Wood: The composite wood product category includes all particleboard, medium density fiberboard (both medium density and thin), hardwood plywood with veneer, thermally fused laminate panels, composite or combination core, and wood structural panels or structural wood products. Include the composite wood and veneer paneled components of built-in cabinetry.
Exclude products covered in the flooring, ceiling, wall panels, or furniture categories from this category.

Low-emitting criteria report types and requirements:

Inherently Non-Emitting Sources. Product is an inherently nonemitting source of VOCs (stone, ceramic, powder-coated metals, plated or anodized metal, glass, concrete, clay brick, and unfinished or untreated solid wood) and has no binders, surface coatings, or sealants that include organic chemicals.

VOC Emissions Evaluation. Product has been tested according to California Department of Public Health (CDPH) Standard Method v1.2–2017 and complies with the VOC limits in Table 4-1 of the method. Additionally, the range of total VOCs after 14 days (336 hours) was measured as specified in the CDPH Standard Method v1.2 and is reported (TVOC ranges: 0.5 mg/m3 or less, between 0.5 and 5 mg/m3, or 5 mg/m3 or more). Laboratories that conduct the tests must be accredited under ISO/IEC 17025 for the test methods they use. Products used in any setting other than schools and classrooms must be modeled to private office scenario. For schools projects, modeling to office and/or schools scenario is permitted.
The statement of product compliance must include the exposure scenario(s) used, the range of total VOCs, and must follow the product declaration guidelines in CDPH Standard Method v1.2-2017, Section 8. Manufacturer statements must also include a summary report from the laboratory that is less than three years old and the amount of wet-applied product applied in mass per surface area (if applicable). Organizations that certify manufacturers' claims must be accredited under ISO/IEC 17065.

VOC Content Evaluation. Product meets the VOC content limits outlined in one of the applicable standards and for projects in North America, methylene chloride and perchloroethylene may not be intentionally added.
Statement of product compliance must be made by the manufacturer or a USGBC-approved third-party. Any testing must follow the test method specified in the applicable regulation. If the applicable regulation requires subtraction of exempt compounds, any content of intentionally added exempt compounds larger than 1% weight by mass (total exempt compounds) must be disclosed.

Paints and coatings:

- California Air Resource Board (CARB) 2007 Suggested Control Measure (SCM) for Architectural Coatings
- South Coast Air Quality Management District (SCAQMD) Rule 1113, amended February 5, 2016, effective date 1/1/19.

Formaldehyde Emissions Evaluation. Product meets one of the following:

- Certified as ultra-low-emitting formaldehyde (ULEF) product under EPA Toxic Substances Control Act, Formaldehyde Emission Standards for Composite Wood Products (EPA TSCA Title VI)or California Air Resources Board (CARB) Airborne Toxic Control Measure (ATCM).
- Certified as no added formaldehyde resins (NAF) product under EPA TSCA Title VI or CARB ATCM.
- Wood structural panel manufactured according to PS 1-09 or PS 2-10 (or one of the standards considered by CARB to be equivalent to PS 1 or PS 2) and labeled bond classification Exposure 1 or Exterior.
- Structural wood product manufactured according to ASTM D 5456 (for structural composite lumber), ANSI A190.1 (for glued laminated timber), ASTM D 5055 (for I-joists), ANSI PRG 320 (for cross-laminated timber), or PS 20-15 (for finger-jointed lumber).

PART 1 - GENERAL

1.01 SUMMARY

A. Wright Commissioning has been selected as the Commissioning Authority.

This specification section describes the commissioning platform for each of the systems to be commissioned within the commissioning scope, and shall apply to any related division-specific specification sections.

1.02 DEFINITIONS AND ABBREVIATIONS

A. Definitions set forth in the General Conditions, AIA Document A201, are applicable to this Section. In addition, the following definitions shall apply to the terms used in this section.

1. **"Acceptance Phase"** Phase of construction after startup and functional performance tests, when performance verification, O&M documentation review and training occurs.
2. **"Approval"** Acceptance that a piece of equipment or a system has been properly installed and is functioning in the tested modes according to the Contract Documents.
3. **"Architect/Engineer (A/E)"** The prime consultant (architect) and sub-consultants who comprise the design team, generally the mechanical designer/engineer and the electrical designer/engineer.
4. **"Basis of Design (BOD)"** The basis of design is the documentation of the primary thought processes and assumptions behind design decisions that were made to meet the owner's performance requirements. The basis of design describes the systems, components, conditions and methods chosen to meet the requirements. Some reiterating of the requirements may be included.
5. **"Commissioning Authority (CxA)"** Directs and coordinates the day-to-day commissioning activities. The CxA does not take an oversight role like the Construction Manager. The CxA is part of the Construction Management team and shall report directly to the Owner.
6. **"Commissioning Plan"** An overall plan, developed before and typically revised after bidding, that provides the structure, schedule and coordination planning for the Commissioning platform.
7. **"Contract Documents"** The documents binding on parties involved in the construction of the project (drawings, specifications, change orders, amendments, contracts, Cx plan, etc.)
8. **"Contractor"** The Construction Manager or authorized representative.
9. **"Control system"** The central building automation/energy management control system.
10. **"Datalogging"** Monitoring flows, currents, status, pressures, etc. of equipment using standalone dataloggers separate from the control system.
11. **"Deferred Tests"** Commissioning tests that are performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions that disallow the test from being performed initially.
12. **"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 (that is, does not perform properly or is not complying with the owner's performance requirements or basis of design).
13. **"Design Narrative"** Section of the Basis of Design.
14. **"Factory Testing"** Testing of equipment on-site or at the factory by factory personnel with an Owner's representative present.
15. **"Field Installation Verification (FIV)"** Verification of all installed systems for compliance to plans and specifications. These inspections are to be described in detail in the commissioning plan. They are primarily static inspections and procedures to prepare the equipment

or systems for initial operation (e.g., the belt tension, oil levels OK, labels affixed, gauges in place, sensors calibrated, etc.).

16. **"Construction Manager (CM)"** The prime contractor for this project. Generally refers to all the CM's subcontractors as well. Can also be referred to as the Contractor.
17. **"Indirect Indicators"** Indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100% closed.
18. **"Manual Test"** Using handheld instruments, immediate control system readouts or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the observation).
19. **"Monitoring"** The recording of parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of control systems.
20. **"Non-Compliance"** See Deficiency.
21. **"Non-Comformance"** See Deficiency.
22. **"Over-written Value"** Writing over a sensor value in the control system to see the response of a system (e.g. changing the outside air temperature value from 50F to 75F to verify economizer operation.) See also Simulated Signal.
23. **"Owner-Contracted Tests"** Tests paid for by the Owner outside the CM's contract and which the CxA does not oversee. These tests will not be repeated during performance verification if properly documented.
24. **"Owner's Performance Requirements (OPR)"** A dynamic document that provides the explanation of the ideas, concepts and criteria that are considered to be very important to the Owner. It is initially the outcome of the programming and schematic design phases.
25. **"Performance Verification Testing (PVT)"** Testing of the dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Performance verification is the dynamic testing of systems (rather than just components) under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure set point). Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through all the control system's sequences of operation and components are verified to be responding as the sequences state. Traditional air or hydronic testing and balancing (TAB) work is setting up the system flows and pressures as specified, while performance verification is verifying that which has already been set up. The Commissioning Authority develops the performance verification test scripts in a sequential written form, and coordinates, oversees and documents the actual testing. PVTs are performed after Field Installation Verification (FIV) and start-up functional testing are complete.
26. **"Phased Commissioning"** Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues, in order to minimize the total construction time.
27. **"Post Occupancy Phase"** Commissioning activity that occurs after the end users occupy the facility.
28. **"Project Manager (PM)"** The contracting and managing authority for the owner over the design and/or construction project, a staff position.
29. **"Seasonal Performance Tests"** PVTs that are deferred until the system(s) will experience conditions closer to their design conditions.
30. **"Simulated Conditions"** Conditions that are created for the purpose of testing the response of a system (e.g., applying a hair blower to a space sensor to see the response in a VAV box.)
31. **"Simulated Signal"** Disconnecting a sensor and using a signal generator to send an amperage, resistance or pressure to the transducer and DDC system to simulate a sensor value.

32. **"Specifications"** The construction specifications of the Contract Documents.
33. **"Startup"** The initial starting or activating of dynamic equipment, including functional testing of all components and verification of the calibration of all devices.
34. **"Subs"** The subcontractors to the CM who provide and install building components and systems.
35. **"Test Procedures"** The step-by-step process which must be executed to fulfill the test requirements. The test procedures are developed by the CxA.
36. **"Trending"** Monitoring using the building control system (after all points are verified to be functional, calibrated and mapped correctly).
37. **"Vendor"** Supplier of equipment.
38. **"Warranty Period"** Warranty period for entire project, including equipment components. Warranty begins at Substantial Completion and extends for at least one year, unless specifically noted otherwise in the Contract Documents and accepted submittals.

B. Abbreviations. The following are common abbreviations used in the Specifications and in the Commissioning Plan.
1. A/E: Architect and design engineers.
2. CxA: Commissioning Authority.
3. CC: Controls Contractor.
4. Cx: Commissioning.
5. Cx Plan: Commissioning Plan document.
6. EC: Electrical Contractor
7. FIV: Field Installation Verification
8. CM: Construction Manager –or- General Contractor
9. HC: HVAC Contractor
10. PC: Plumbing Contractor
11. PM: Project Manager (of the Owner)
12. PVT: Performance Verification Testing
13. Subs: Subcontractors to General
14. TAB: Test and Balance

1.03 SYSTEM DESCRIPTION

A. Commissioning - Commissioning is a systematic process of ensuring that building systems perform interactively according to the owner's performance requirements and operational needs, and the design intent. This is achieved by beginning in the design phase, documenting the requirements, and continuing through construction, acceptance and the post-occupancy/warranty period with actual verification of performance. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training.

B. The commissioning platform does not take away from or reduce the responsibility of the system designers or installing contractors to provide a finished and fully functioning product.

C. Commissioning services shall conform to the scope of work as outlined in the project specifications and shall comply with NEBB Procedural Standards and WCx's professional methodology of performing commissioning.

D. Systems to be commissioned: The following systems shall be commissioned for this project.

- **Building Automation System (BAS)** – the HVAC/R system controls will be tested and verified, including calibration of devices, point mapping, verification of sequences of operation and graphics
- **HVAC/R Equipment, Components and Systems**
- **Exhaust Equipment, Components and Systems**
- **Air and Hydronic Test and Balance Verification**
- **Electrical Power pertaining to new equipment**
- **Lighting Controls**
- **Domestic Hot Water System, including temperature testing and verification at fixtures**

1.04 COORDINATION

A. Commissioning Team. The members of the Commissioning team consist of the Commissioning Authority (CxA), the Project Manager (PM), the Construction Manager (CM or Contractor), the architect and design engineers (particularly the mechanical and electrical engineer), the HVAC Contractor (HC), the Plumbing Contractor (PC), the Electrical Contractor (EC), the TAB representative, the Controls Contractor (CC) and any other installing subcontractors or suppliers of equipment. If known, the Owner's building or plant operator/engineer is also a member of the commissioning team.

B. Management. The CxA is hired by the Owner. The CxA directs and coordinates the commissioning activities and reports to the Owner. All members work together to fulfill their contracted responsibilities and meet the objectives of the Contract Documents.

C. Scheduling.
1. The CxA will work with the CM according to the established protocols to schedule the commissioning activities. The CxA will provide sufficient notice to the CM for scheduling commissioning activities. The CM will integrate all commissioning activities into the master schedule. All parties will address scheduling issues and make necessary notifications in a timely manner in order to facilitate the commissioning process.
2. The CxA will provide the initial schedule of primary commissioning events at a commissioning meeting. As construction progresses, more detailed schedules are developed by the CxA.

1.05 COMMISSIONING PLATFORM

A. Commissioning Plan. A draft Commissioning Plan shall be developed by the CxA and will be provided at a meeting. The commissioning plan provides guidance in the execution of the commissioning platform. Just after the initial commissioning meeting, the CxA will update the plan. This is considered to be the "final" plan, though it will continue to evolve and expand as the project progresses. The final commissioning plan is binding on the Contractor. The Specifications will take precedence over the Commissioning Plan.

B. Commissioning Platform. The following narrative provides a brief overview of the typical commissioning tasks during the design, construction, acceptance and post occupancy/warranty phases and the general order in which they occur.

1. Design Phase - Design Document Review. The CxA shall provide a complete review of all design documents for commissioning requirements. The CxA shall provide a sheet-by-sheet narrative indicating any areas that may prevent a complete and successful commissioning project. A Cx Design Review comment log will be maintained throughout the design phase of the project. The A/E design team will provide responses to each line item in the log, and final approval of the responses/resolutions will be provided by the Owner. Major areas of review are: equipment access and maintainability, equipment and system "testability," installation clearances and available space, and any specific layout or design issue that would prevent its ability to be commissioned.
2. Design Phase - Construction Document Review (pre-construction). The CxA shall provide a pre-construction review of all drawings, specifications, and equipment and vendor submittals. The documents shall be reviewed for any conflicts or design details that would hinder or prevent the equipment/systems from being tested, balanced, commissioned and maintained. In addition to the Design Review comment log, a documented review report will be furnished to the A/E design professionals that details any areas of concern. Final acceptance shall be provided by the Owner.
3. Commissioning during construction begins with a kick-off meeting conducted by the CxA where the commissioning process is reviewed with the commissioning team members.
4. Additional meetings will be required throughout construction, scheduled by the CxA with necessary parties attending, to plan, scope, coordinate and schedule future activities, and resolve problems.
5. Equipment documentation is submitted to the CxA during normal submittals, including detailed start-up procedures.
6. The CxA works with the Subs in planned startups and startup documentation formats.
7. In general, the checkout and performance verification proceeds from simple to complex; from component level to equipment to systems and intersystem levels with FIV and functional testing being completed before performance verification. The CxA shall provide field installation inspection for each system and subsystem covered in the scope of work for the project and provide installation observation reports to the commissioning team. The report shall cover any installation deficiencies from plans and specifications.
8. The Subs perform startup per the project specifications. The CxA documents that the startup was completed according to the approved plans. This shall include the CxA witnessing start-up of all equipment.
9. The CxA develops specific equipment and system performance verification test procedures.
10. During the acceptance phase, any manipulation of the equipment or systems is done at the direction of the CxA and documented.
11. Items of non-compliance in material, installation or setup are identified by the CxA and corrected at the Sub's expense and the system retested.
12. The CxA reviews the O&M documentation for completeness.
13. Commissioning is completed before Substantial Completion.
14. The CxA reviews the training provided by the Subs and verifies that it was completed and documented.
15. During the Post Occupancy/Warranty Phase, the CxA prepares a Systems Manual for the project.
16. The CxA oversees opposite-season functional testing and performance verification.

17. The CxA provides a warranty visit approximately ten months after occupancy.

1.06 RESPONSIBILITIES

A. The responsibilities of various parties in the commissioning platform are provided in this section.

B. All Parties
   1. Assist in the development of the Final Commissioning Plan.
   2. Follow the Final Commissioning Plan.
   3. Attend commissioning kick-off meeting and additional meetings as necessary.

C. Architect (of A/E)
   1. Design, Construction, and Acceptance Phases:
      a. Attend the commissioning kick-off meeting and selected commissioning team meetings.
      b. Perform normal submittal review, construction observation, as-built drawing preparation, O&M manual preparation, etc. as contracted.
      c. Provide any design narrative documentation requested by the CxA.
      d. Coordinate resolution of system deficiencies identified during commissioning, according to the contract documents.
      e. Prepare and submit final record drawing documentation for inclusion in the O&M manuals. Review and approve the O&M manuals.
   2. Post Occupancy/Warranty Period: Coordinate resolution of design non-conformance and deficiencies identified during warranty-period commissioning activities.

D. Mechanical and Electrical Designers/Engineers (of the A/E)
   1. Design, Construction, and Acceptance Phases:
      a. Perform normal submittal review, construction observation, as-built drawing preparation, etc. as contracted. At least one site observation should be completed prior to system startup.
      b. Provide any design narrative and sequence of operation documentation requested by the CxA. The designers shall assist (along with the contractors) in clarifying the operation and control of commissioned equipment in areas where the specifications, control drawings or equipment documentation is not sufficient for writing detailed testing procedures.
      c. Attend commissioning kick-off meeting and other selected commissioning team meetings.
      d. Participate in the resolution of system deficiencies identified during commissioning, according to the contract documents.
      e. Prepare and submit the final as-built and operating parameters documentation for inclusion in the O&M manuals. Review and approve the O&M manuals.
      f. From the Contractor's red-line drawings, edit and update one-line diagrams developed as part of the design narrative documentation and those provided by the vendor as shop drawings for the chilled and hot water, condenser water, domestic water, steam and condensate systems; supply, return, exhaust and relief air systems, and normal and emergency power systems.
      g. Provide a presentation at one of the training sessions for the Owner's personnel.
   2. Post Occupancy/Warranty Period: Participate in the resolution of non-compliance, non-conformance and design deficiencies identified during warranty-period commissioning activities.

E. Commissioning Authority (CxA): The CxA is not responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating or construction management. The CxA assists with resolving non-conformance or deficiencies, but ultimately that responsibility resides with the CM and the A/E. The primary role of the CxA is to develop and coordinate the execution of testing plans, observe and document performance - that systems are functioning in accordance with the documented requirements and in accordance with the Contract Documents.

1. All Phases:
   a. Coordinate and direct the commissioning activities in a logical, sequential and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules, and technical expertise.
   b. Coordinate the commissioning work and, with the CM, ensure that commissioning activities are being scheduled into the master schedule.
   c. Revise, as necessary, the draft Commissioning Plan
   d. Plan and conduct a commissioning kick-off meeting and other commissioning meetings as appropriate.
   e. Request and review additional information required to perform commissioning tasks, including O&M materials, contractor start-up and checkout procedures.
   f. Before startup, gather and review the current control sequences and interlocks and work with the contractors and design engineers until sufficient clarity has been obtained to be able to write detailed testing procedures.
   g. Review approved Contractor submittals applicable to systems being commissioned for compliance with commissioning needs, concurrent with the A/E reviews.
   h. Develop a start-up and functional test plan with the Subs.
   i. Perform site visits, as necessary, to observe component and system installations. Attend selected planning and job-site meetings to obtain information on construction progress. Review construction meeting minutes for revisions/substitutions relating to the commissioning process. Assist in resolving any discrepancies.
   j. Witness the HVAC piping test and flushing procedures, sufficient to be confident that proper procedures were followed. Document this testing and include the documentation in the O&M manuals. Notify owner’s PM of any deficiencies in results or procedures.
   k. Witness ductwork testing and cleaning procedures, sufficient to be confident that proper procedures were followed. Document this testing and include the documentation in the O&M manuals. Notify owner’s PM of any deficiencies in results or procedures.
   l. Witness startup of all equipment being commissioned.
   m. Review TAB execution plan
   n. Perform complete point-to-point checkout of the control system and approve it to be used for TAB, before TAB is executed.
   o. Witness TAB activity for compliance to the procedural standards and verify the systems are, in fact, balanced within acceptable tolerences.
   p. With necessary assistance and review from the installing contractors, write the performance verification procedures and scripts for equipment and systems. This may include building automation/energy management control system trending, stand-alone datalogger monitoring or manual performance verification.

q. Analyze performance verification trend logs and monitoring data to verify performance.
r. Coordinate, witness and approve manual performance verification tests. Coordinate retesting as necessary until satisfactory performance is achieved.
s. Maintain a master issues and resolution log and a separate testing record. Provide the commissioning team with written progress reports and test results with recommended actions.
t. Witness and assist with training of the Owner's operating personnel.
u. Compile and maintain a commissioning record.
v. Review and assist in the preparation of the O&M manuals.
w. Provide a final commissioning report (as described in this section).
x. Prepare a Systems Manual.
y. Oversee opposite-season/deferred testing.
z. Perform ten-month warranty visit.

F. Owner's Project Manager (PM)
1. Design, Construction, and Acceptance Phases:
a. Manage the contract of the A/E and of the CM.
b. Arrange for facility operating and maintenance personnel to attend various field commissioning activities and field training sessions according to the Commissioning Plan.
c. Provide final approval for the completion of the commissioning work.
2. Post Occupancy/Warranty Period: Ensure that Post Occupancy, seasonal or deferred testing is completed and any deficient items are addressed.

G. Construction Manager (CM)
1. Construction and Acceptance Phases:
a. Facilitate the coordination of the commissioning work by the CxA, and with the CxA ensure that commissioning activities are being scheduled into the master schedule.
b. Review the final Commissioning Plan.
c. Attend a commissioning kick-off meeting and other commissioning team meetings.
d. Perform the normal review of Contractor submittals.
e. Furnish a copy of all construction documents, addenda, change orders and approved submittals and shop drawings related to commissioned equipment to the CxA.
f. In each purchase order or subcontract written, include requirements for submittal data, O&M data and training per their specific specification sections.
g. When necessary, observe and witness FIV, startup, functional testing and performance verification of selected equipment.
h. Review commissioning progress and deficiency reports.
i. Facilitate issues log corrective actions by instructing the contractors that are responsible for the item.
j. Coordinate the resolution of non-compliance and design deficiencies identified in all phases of commissioning.
k. Coordinate the training of owner personnel.
l. Prepare O&M manuals, according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions.

2. Post Occupancy/Warranty Period:
   a. Assist the CxA as necessary in the Post Occupancy, seasonal or deferred testing and deficiency corrections required by the specifications.
   b. Ensure that Subs correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.

H. HVAC Contractor (HC)
1. The HC is responsible only for supplying submittal and other data, operating their purchased/installed equipment and performing the startups that the design professionals' specifications call for them to provide for the project. Other commissioning information gathering, and commissioning testing performed, will be accomplished by the CxA's qualified personnel.

I. Plumbing Contractor (PC)
1. The PC is responsible only for supplying submittal and other data, operating their purchased/installed equipment and performing the startups that the design professionals' specifications call for them to provide for the project. Other commissioning information gathering, and commissioning testing performed, will be accomplished by the CxA's qualified personnel.

J. Electrical Contractor (EC)
1. The EC is responsible only for supplying submittal and other data, operating their purchased/installed equipment and performing the startups that the design professionals' specifications call for them to provide for the project. Other commissioning information gathering, and commissioning testing performed, will be accomplished by the CxA's qualified personnel.

K. Controls Contractor (CC)
1. The CC is responsible only for supplying submittal and other data, demonstrating their purchased/installed equipment, including calibration of devices and programmed sequences of operations, and performing the 100% point-to-point tests that the design professionals' specifications call for them to provide for the project. Other commissioning information gathering, and commissioning testing performed, will be accomplished by the CxA's qualified personnel.

L. TAB Firm (TAB)
1. The TAB firm is responsible only for supplying submittal and other data, proving that any instruments used are calibrated per their certifying organization's standards, demonstrating to the CxA that the TAB work was performed in accordance with their certifying organization's standards, and providing what the design professionals' specifications call for them to provide for the project. Other commissioning information gathering, and commissioning testing performed, will be accomplished by the CxA's qualified personnel.

M. Equipment Suppliers
1. Provide all requested submittal data, including detailed startup procedures and specific responsibilities of the Owner to keep warranties in force.
2. Assist with testing of equipment per contracts with Subs.

3. Include all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment according to the Contract Documents in the base bid price to the Contractor, except for stand-alone datalogging equipment that may be used by the CxA.
4. Through the contractors to whom products are supplied, analyze specified products and verify that the designer has specified the newest, most updated equipment that is reasonable for this project's scope and budget.
5. Provide information requested by CxA regarding equipment sequence of operation and testing procedures.
6. Review test procedures for equipment installed by factory representatives.

PART 2 - PRODUCTS

2.01 TEST EQUIPMENT

A. All standard tools required to perform startup, functional testing and required performance verification shall be provided by the Division contractor for the equipment. For example, the HVAC contractor shall ultimately be responsible for all standard testing tools for the HVAC and controls system, except for tools specific to and used by the TAB firm in its commissioning responsibilities.

B. Special equipment, tools and instruments (only available from vendor, specific to a piece of equipment, according to these Contract Documents) shall be included in the base bid price to the Contractor and left on site, except for stand-alone datalogging equipment that may be used by the CxA.

C. Datalogging equipment/software required to test equipment will be provided by the CxA, but shall not become the property of the Owner.

D. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the past year to an accuracy of .05F and a resolution of + or – 0.1F. Pressure sensors shall have an accuracy of + or - 2.0% of the value range being measured (not full range of the meter) and have been calibrated within the last year. All instruments shall be calibrated according to the manufacturer's recommended intervals and if dropped or damaged. For all instruments, current calibration tags shall be affixed or certificates readily available.

PART 3 - EXECUTION

3.01 MEETINGS

A. Kick-Off Meeting. Within 60 days of commencement of construction, the CxA will schedule, plan and conduct a commissioning scoping meeting with the entire commissioning team in attendance. Meeting minutes will be distributed to all parties by the CxA. Information gathered from this meeting will allow the CxA to revise the draft Commissioning Plan to its "final" version, which will also be distributed to all parties.

B. Miscellaneous Meetings. Other meetings will be planned and conducted by the CxA as construction progresses. These meetings will cover coordination, deficiency resolution and planning is-

sues with particular parties. The CxA will plan these meetings and will minimize unnecessary time being spent by the contractors. For large projects, these meetings may be held monthly, until the final months of construction when they may be held as frequently as one per week.

3.02 REPORTING

A. The CxA will provide regular reports to the Commissioning team, depending on the management structure, with increasing frequency as construction and commissioning progresses. Standard forms are provided and referenced in the Commissioning Plan.

B. The CxA will regularly communicate with all members of the commissioning team, keeping them apprised of commissioning progress and scheduling changes through e-mails, memos, progress reports, etc.

C. Testing or review approvals and non-conformance and deficiency reports are made regularly as review and testing occur.

3.03 SUBMITTALS

A. The CxA will provide the appropriate contractors with a specific request for the type of submittal documentation that the CxA requires to facilitate the commissioning work. These requests will be integrated into the normal submittal process and protocol of the construction team. At minimum, the request will include the manufacturer and model number, the manufacturer's printed installation and detailed start-up procedures, full sequences of operation, O&M data, performance data, any performance test procedures, control drawings, user interface graphics for each system and details of owner contracted tests. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the Commissioning Authority. All documentation requested by the CxA will be included by the Subs in their O&M manual contributions.

B. The Commissioning Authority will review approved submittals related to the commissioned equipment for conformance to the Contract Documents and as they relate to the commissioning platform, to the performance verification of the equipment and adequacy for developing test procedures. This review is intended primarily to aid in the development of functional testing and performance verification procedures and only secondarily to verify the compliance with equipment specifications. The Commissioning Authority will notify the CM, PM and A/E as requested, of items missing or areas that are not in conformance with the Contract Documents, and which require resubmission.

C. The CxA may request additional design narrative from the A/E and Controls Contractor, depending on the completeness of the documentation and sequences provided with the Specifications.

D. These submittals to the CxA do not constitute compliance for O&M manual documentation. The O&M manuals are the responsibility of the Contractor, though the CxA will review them.

3.04 FIELD INSTALLATION VERIFICATION AND FUNCTIONAL PERFORMANCE TESTS

A. The following procedures apply to the equipment and systems to be commissioned.

B. General. FIVs and functional tests are important events to ensure that the equipment and systems are hooked up and operational. It ensures that performance verification can proceed without unnecessary delays or equipment failures. Each piece of equipment receives full FIV checkout. No sampling strategies are to be used. FIVs and functional tests for a given system must be successfully completed prior to performance verification of equipment or subsystems of a given system.

C. Startup Plan. The CxA shall assist the commissioning team members responsible for startup of any equipment in developing detailed startup plans. The primary role of the CxA in this process is to ensure that there is written documentation that each of the manufacturer-recommended procedures have been completed. The contractor or factory representative is responsible for performing the equipment startup procedures in the presence of the CxA.
   1. The subcontractor responsible for the purchase of the equipment assists in the development of the full startup plan by combining (or adding to) the CxA's procedures with the manufacturer's detailed startup and checkout procedures. The full startup plan shall consist of the following:
      a. The CxA's checkout procedures.
      b. The manufacturer's standard written startup procedures from the installation manuals.
      c. The manufacturer's normally used field checkout sheets.
   2. The CxA reviews the procedures and the format for documenting them, noting any procedures that need to be added.

D. Controls System Verification
   1. The operation of all control system components and devices shall be verified in the presence of the CxA.
   2. All procedures used shall be fully documented on the point-to-point checkout report, clearly referencing the procedures followed and written documentation of initial, intermediate and final results.
   3. All control point-to-point tests shall be verified through the graphic front end software. The graphics shall be complete prior to performing the point-to-point checks.
   4. All sensors and analog inputs shall be calibrated by the manufacturer's standard procedures and to project calibration tolerances.
   5. All analog outputs, actuators and valves shall be ranged for correct action to the controls signal.

E. Execution of FIV and functional test procedures
   1. The CxA shall perform FIVs throughout the construction period.
   2. Approximately four weeks before startup, the Subs and vendors schedule startup and checkout with the CM and CxA. The performance of startup and checkout are executed by the Sub or vendor in the presence of the CxA.
   3. The CxA shall observe the startup procedures for each piece of equipment.

F. Deficiency issues log
   1. The CxA shall provide a periodic commissioning issues log clearly listing any deficiencies or areas of concern from any FIV or functional test.
   2. The issues log shall be provided to the commissioning team for distribution to the appropriate parties for review, response and action. All actions and results will be listed on the issues log for future reference.

3.05 PHASED COMMISSIONING

A. The project may require startup and functional testing to be executed in phases. This phasing will be planned and scheduled in a coordination meeting of the PM, CxA, HVAC, plumbing, TAB and controls contractors, and the CM. Results will be added to the master and commissioning schedule.

3.06 PERFORMANCE VERIFICATION TESTING

A. This sub-section applies to commissioning performance verification for all divisions.

B. Objectives and Scope.

1. The objective of performance verification testing is to demonstrate that each system is operating according to the documented requirements and Contract Documents, and to optimize system performance. Performance verification will identify areas of deficient performance so they can be corrected, improving the operation and functioning of the systems.
2. In general, each system is operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part-, full-load) where there is a specified system response. Verifying each sequence in the sequences of operation is required. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. shall also be tested and verified.

C. Development of Test Procedures

1. Before test procedures/scripts are written, the CxA shall obtain all requested documentation and a current list of change orders affecting equipment or systems, including an updated points list, program code, control sequences and parameters. The CxA shall develop specific test procedures and scripts to verify and document proper operation of each piece of equipment and system. Each responsible Sub or vendor shall provide assistance as requested by the CxA to develop the procedures, i.e. answering questions about equipment, operation, sequences, etc. and, prior to testing, review the tests for feasibility, safety, equipment and warranty protection. The CxA may also submit the tests to the A/E for review, if requested.
2. The CxA shall review owner-contracted, factory testing or required owner acceptance tests which the CxA is not responsible to oversee, including documentation format, and shall determine what further testing or format changes may be required to comply with the Specification. Redundancy of testing shall be minimized.
3. The purpose of any specific test is to verify and document compliance with the stated criteria of acceptance given.

D. Test Methods

1. Performance verification may be achieved by manual testing (persons manipulate the equipment and observe performance) or by monitoring the performance and analyzing the results using the control system's trend log capabilities, or by stand-alone dataloggers. The CxA may substitute specified methods or require an additional method to be executed, other than what was specified, with the approval of the Owner or CM. The CxA will determine which method is most appropriate for tests that do not have a method specified.

E. Coordination and Scheduling
1. The Subs shall provide sufficient notice to the CxA regarding their schedule for the startup of all equipment/systems. The CxA will schedule performance verification through the CM and affected Subs. The CxA shall direct, witness and document the performance verification of equipment and systems.
2. In general, performance verification is conducted after FIVs and functional tests have been satisfactorily completed. The control system is sufficiently tested and approved by the CxA before it is used for TAB or to verify performance of other components or systems. The air and hydronic balancing are completed and "debugged" before performance verification of air-related or hydronic-related equipment/systems. Testing proceeds from components to subsystems to systems. When the proper performance of all interacting individual systems has been achieved, the interface or coordinated responses between systems is checked.

F. Problem Solving. The CxA will recommend, troubleshoot and assist in solutions to problems found, however the burden of responsibility to solve, correct and retest problems is with the CM, Subs and A/E.

3.07 DOCUMENTATION, NON-CONFORMANCE AND APPROVAL OF TESTS

A. Documentation. The CxA shall witness and document the results of all performance verification tests using specific procedural forms and scripts developed for that purpose. The CxA will include the completed forms in the final Commissioning report.

B. Non-Conformance.
1. The CxA will record the results of performance verification on the procedure or test form. All deficiencies or non-conformance issues shall be noted and reported to the Commissioning Team on the standard commissioning issues log.
2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CxA. In such cases, the deficiency and resolution will be documented.
3. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. However, the CxA will not be pressured into overlooking deficient work or loosening acceptance criteria to satisfy scheduling or cost issues, unless there is an overriding reason to do so at the request of the Owner.
4. As tests progress and a deficiency is identified, the CxA discusses the issue with the responsible contractor.
    a. When there is no dispute on the deficiency and the Sub accepts responsibility to correct it:
        1. If the deficiency can be corrected easily, it shall be corrected and the commissioning shall proceed.
        2. The CxA reschedules the test and the test is repeated.
    b. If there is a dispute about a deficiency regarding whether it is a deficiency or who is responsible or the repair will take more than one hour:
        1. The deficiency shall be documented on the issues log or the test report form with the Sub's response and a copy given to the CM, or Commissioning Team including the Owner, and the Sub representative assumed to be responsible.

2. Resolutions are made at the lowest management level possible. Other parties are brought into the discussions as needed. Final interpretive authority is with the A/E. Final acceptance authority is with the Owner.
3. The CxA documents the resolution process.
4. Once the interpretation or resolution has been decided, the appropriate party corrects the deficiency, signs off and provides it to the CxA. The CxA reschedules the test and the test is repeated until satisfactory performance is achieved.

5. Cost of Retesting.
   a. The cost for the Sub to retest, if they are responsible for the deficiency or issue, shall be theirs.
6. The contractor shall respond in writing to the CxA and Owner at least as often as commissioning meetings are scheduled concerning the status of each outstanding discrepancy identified during commissioning. Discussion shall cover explanations or any disagreements and proposals for their resolution.
7. Required retesting by a contractor shall not be considered a justified reason for a claim of delay or for a time extension by the prime contractor.

C. Failure Due to Manufacturer Defect. If 10%, or three, whichever is greater, of identical pieces (size alone does not constitute a difference) of equipment fail to perform to the Contract Documents (mechanically or substantively) due to manufacturing defect, not allowing it to meet its submitted performance specification, all identical units may be considered unacceptable by the CxA or owner.

D. Approval. The CxA documents each satisfactorily demonstrated function. Formal approval of performance verification is made later after review by the CxA and by the Owner, as necessary.

3.08 OPERATION AND MAINTENANCE MANUALS

A. Standard O&M Manuals
1. Special requirements for the controls contractor and TAB contractor shall be as specified in Division 23 specification sections.
2. CxA Reviews. Prior to substantial completion, the CxA shall review the O&M manuals, documentation and final as-builts for systems that were commissioned to verify compliance with the Specifications. The CxA will communicate deficiencies in the manuals to the PM, CM or A/E as requested. Upon a successful review of the corrections, the CxA recommends acceptance of these sections of the O&M manuals to the PM, CM or A/E. The CxA also reviews each equipment warranty and verifies that all requirements to keep the warranty valid are clearly stated. This work does not supersede the A/E's review of the O&M manuals according to the A/E's contract.

B. Commissioning Final Report
1. Final Report Details. The final commissioning report shall include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods. For each piece of commissioned equipment, the report should contain the completed FIV, functional and performance verification reports. The report shall also include the issues logs and pertinent commissioning communications.
2. Other documentation will be retained by the CxA.

3.09 TRAINING OF OWNER PERSONNEL

A. The CM shall be responsible for training coordination and scheduling, and ultimately for ensuring that training is completed.

B. The CxA shall be responsible for reviewing the content and adequacy of the training of Owner personnel for commissioned equipment.

1. The CxA shall interview the facility manager and lead engineer to determine the special needs and areas where training will be most valuable. The CxA and owner shall decide how rigorous the training should be for each piece of commissioned equipment. The CxA shall communicate the results to the Subs and vendors who have training responsibilities.
2. Each Sub and vendor responsible for training will submit a written training plan to the CxA for review and approval prior to training. The plan will cover the following elements:
    a. Equipment (included in training)
    b. Intended audience
    c. Location of training
    d. Objectives
    e. Subjects covered (description, duration of discussion, special methods, etc.)
    f. Duration of training of each subject
    g. Instructor for each subject and instructor's qualifications
    h. All training methods shall include a classroom lecture and an actual operational demonstration of start up, turn down and maintenance procedures.
3. For the primary HVAC equipment, the Controls Contractor shall provide training on the control of the equipment during the mechanical or electrical training conducted by others.
4. The mechanical design engineer shall attend the first training session to present the overall system design concept and the design concept of each equipment section. This presentation shall include a review of all systems using the simplified system schematics (one-line drawings).

END OF SECTION 019100