

Maine
Cumberland **County**

Request for Proposals

Commissioning Services for the Cumberland County

Capital Improvement Projects.

RFP Release date	November 01, 2024
Question/ Clarification Submittal Deadline	2:00 pm November 22, 2024
Proposal Deadline	2:00 PM November 29, 2024

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I

Proposal Instructions

Cumberland County is seeking proposals for appropriate and qualified company or individual to provide Commissioning in accordance with these documents, for its proposed capital improvement projects. A copy of the RFP, as well as the Question & Answer Summary and all amendments related to the RFP, can be obtained at: https://www.cumberlandcountyme.gov/departments/finance_treasurer/bid_opportunities.php

Proposals must be submitted electronically and to the following persons: Sandra Warren Compliance and Audit Manager via e-mail, at: warren@cumberlandcounty.org, Mark Estabrook at MEstabrook@smrtinc.com, and Parker Sewell at parker.sewell@wsp.com. Proposals must be received no later than Friday, November 29, 2024, 2:00 PM and will be opened. Late Proposals will not be accepted.

All bidders must submit the required federal provision documents.

All questions regarding the Request for Proposals should be directed in writing to SMRT, the Project Architect, for Jail Medical and Air handler #1 attention Mark Estabrook (MEstabrook@smrtinc.com) and WSP, the 27 North Port Project Architect, attention Parker sewell, (parker.sewell@wsp.com) all questions must be received by 2:00 PM on November 22, 2024.

RFP Schedule

The following estimated timeline should be used as a working guide for planning purposes. The County reserves the right to adjust the schedule as required during the course of the solicitation process. The County will make good faith efforts to notify potential proposers of adjustments to the schedule; however, ultimate responsibility for obtaining notice of changes lies with the proposers. Any changes to the proposed schedule will be listed at: https://www.cumberlandcountyme.gov/departments/finance_treasurer/bid_opportunities.php

Questions/ clarification submittal deadline	2:00 pm November 22, 2024
Proposal Deadline	2:00 PM November 29, 2024
Notice of Intent to award	December 04,2024
Notice of Award	December 09, 2024
Target Date for work to begin	Upon execution of contract with Cumberland County.

Cost Incurred by Proposers

The County is not liable for any costs incurred by prospective proposers in the preparation of submitting a proposal in response to this RFP, in presentation of the proposal or any other activities related to responding to this RFP.

Evaluation of Proposers

An Evaluation Committee and or the Compliance Manager will examine proposal responses to eliminate those that are determined non-responsive to the stated requirements. The Evaluation Committee will then evaluate proposal responses and make recommendations of the top ranked proposer for contract award. The Evaluation Committee will apply the evaluation criteria set forth in the RFP or in any addenda issued. A detailed evaluation that follows the initial examination may result in more than one finalist. The Evaluation Committee may request additional information, request an interview, request a presentation, or request revised or best and final offers. Should interviews or presentations become necessary, the County will contact the top scoring firm(s) from the evaluation to schedule a date and time. The County reserves the right to invite some, all, or no proposers for interviews. At the conclusion of the interviews, if any, the Evaluation Committee will conduct final scoring of the proposals and will select one or more of the top ranked proposers to submit best and final offers. The Evaluation Committee will recommend for contract award the proposer(s) whose proposal who fully complied with all of the proposal requirements and whose past performance, reputation, and financial capability is deemed acceptable, and who has offered the most advantageous pricing or cost-benefit, based on the criteria stipulated herein.

Evaluation Criteria

The Evaluation Committee will evaluate proposals received on the following factors.

Price Competitiveness	30 Points
Ability to address all RFP requirements	35 Points
Experience providing requested services	35 Points
Total Points	100

II

Background/Details

The County of Cumberland ,(hereafter referred to as “The County” or “County”), seeks an appropriate and qualified company or individual to provide Commissioning in accordance with these documents, for its proposed capital improvement projects. The County has three projects in total it is seeking services for and those are as follows: The Cumberland County Jail Medical Addition located at 50 County, Portland, Maine, Courthouse Air handler Replacement Project located 142 Federal Street, Portland Maine and 32,000 SF, office renovation project located at 27 North Port, Portland Maine 04103. This document provides instructions for submitting proposals, the procedure and criteria by which the Provider(s) will be selected and the contractual terms which will govern the relationship between the County of Cumberland (County) and the awarded Bidder(s).The selected respondent to this Request for Proposals (hereafter referred to as “RFP”) shall serve as an independent selected respondent (not as an employee) and therefore shall not be entitled to any employment benefits. Addendum B of this RFP will include the following scope of commissioning for each respective project:

- I. Jail Medical Wing- Expansion shall consist of 3880 SF addition to the Cumberland County Jail.
- II. Air handler #1- Removal and replacement of existing air handling unit located in the ground floor of the County Courthouse with a new roof top unit, the erection of a new duct enclosure tower and replacement of VAV boxes and controls as well as other Work indicated in the Contract.
- III. 27 North Port - major interior renovation to the approximately 32,000 SF, three-story existing steel-framed structure. The renovation scope includes interior space reconfiguration; modifications to mechanical, plumbing, electrical, and fire protection systems; and interior finish upgrades. Exterior work is limited to addition of a generator and infrastructure for electric vehicle charging stations. The interior spaces include office space, meeting spaces, break rooms, restrooms, file storage areas, and support spaces.

These services are being solicited to assist the County in its implementation of one or more contracts financed and eligible under The American Rescue Plan Act (ARPA) of 2021 Coronavirus Local Fiscal Recovery Funds (CLFRF). The purpose is to support the Owner, design team, construction team, and operations team in assuring that the project’s design intent is properly implemented from design through operation. To reach this goal, it is necessary for the commissioning process to establish and document the Owner’s criteria for system function, performance, and maintainability, and to verify and document compliance with these criteria throughout design, construction, start-up, and the initial period of operation.

III

SCOPE OF WORK

The proposal is to include, but not be limited to, all labor, material, tools, equipment, plant supplies, transportation, supervision, contributions, insurance, coordination with entities, and other services necessary for the performance of work for the project. The systems to be commissioned are outlined within each addendum for each project and will be focused on but not limited to the following:

- I. Section 019113, Commissioning Requirements, as issued for the construction of the Cumberland County Jail Medical Addition are attached to and are herein made part of this Request for Proposals.**
- II. Section 019113, Commissioning Requirements, as issued for the construction of the Cumberland County Air handler #1 are attached to and are herein made part of this Request for Proposals.**
- III. 27 Northport Construction Documents- Specification issued for BID/Permit.**

The Commissioning Agent (CA) will verify completion of start-up and close activities for the equipment systems listed above., Testing, adjusting and balancing of these systems as well as operation of systems under building management control will be verified. The CA will not necessarily witness and be present for milestones related to every system listed; however, the CA will review documentation for each system. The Owner will be provided with systems that operate in accordance with the design intent and owner requirements.

IV

Submission Requirements/ Evaluation of Proposals

This section contains instructions for Bidders to use in preparing their proposals. The Bidder’s proposal must follow the outline used below, including the numbering and section and sub-section headings as they appear here. Failure to use the outline specified in this section, or to respond to all questions and instructions throughout this document, may result in the proposal being disqualified as non-responsive or receiving a reduced score. The County, and its evaluation team for this RFP, has sole discretion to determine whether a variance from the RFP specifications should result in either disqualification or reduction in scoring of a proposal.

Rephrasing of the content provided in this RFP will, at best, be considered minimally responsive. The County seeks detailed yet succinct responses that demonstrate the Bidder’s experience and ability to perform the requirements specified throughout this document.

A. Proposal Format

- 1. All pages of a Bidder’s proposal should be numbered consecutively beginning with number 1 on the first page of the narrative (this does not include the cover page or**

table of contents pages) through to the end, including all forms and attachments. For clarity, the Bidder's name should appear on every page, including Attachments. Each Attachment must reference the section or subsection number to which it corresponds.

2. The Bidder is asked to be brief and concise in responding to the RFP questions and instructions.
3. All electronic documents should be formatted for printing as formatting will not be adjusted prior to printing and reviewing these documents.
4. The Bidder may not provide additional attachments beyond those specified in the RFP for the purpose of extending their response. Additional materials not requested will not be considered part of the proposal and will not be evaluated.
5. Include any forms provided in the submission package or reproduce those forms as closely as possible. All information should be presented in the same order and format as described in the RFP.
6. It is the responsibility of the Bidder to provide all information requested in the RFP package at the time of submission. Failure to provide information requested in this RFP may, at the discretion of the County's evaluation review team, result in a lower rating for the incomplete sections and may result in the proposal being disqualified for consideration.
7. The Bidder should complete and submit all of the federal provision forms provided in Exhibit A titled Required Federal Provision Documents and outlined in Section VI of this RFP titled State and Local Fiscal Recovery Funds Federal Provisions. Failure to provide this certification may result in the disqualification of the Bidder's proposal, at the discretion of the County.

B. Proposal Contents

Section I Organization Qualifications and Experience

1. Overview of the Organization

The Bidder is to in writing describe their qualifications and skills to provide the requested services in this RFP. The Bidder is also to include three examples of projects which demonstrate their experience and expertise in performing these services as well as highlighting the Bidder's stated qualifications and skills.

2. Subcontractors

If subcontractors are to be used, provide a list that specifies the name, address, phone number, contact person, and a brief description of the subcontractors' organizational capacity and qualifications.

3. Organizational Chart

Provide an organizational chart of the bidder's organization. The organization chart must include the project being proposed. Each position must be identified by position title and corresponding to the personnel job descriptions and the Staffing Plan provided.

4. Litigation

Attach a list of all current litigation in which the Bidder is named and a list of all closed cases that have closed within the past five (5) years in which Bidder paid the claimant either as part of a settlement or by decree. For each, list the entity bringing suit, the complaint, the accusation, amount, and outcome. If no litigation will be included, write “none” on submitted attachment.

5. Licensure/Certification

The commissioning organization must be certified and in good standing with one of the following commissioning organizations: Building Commissioning Association (BCA), AABC Commissioning Group (ACG), Association of Energy Engineers, or a professional engineer. Current certifications must be submitted with this RFP response. Provide documentation of any applicable licensure/certification or any specific credentials required to provide the proposed services.

6. Certificate of Insurance

Provide a certificate of insurance on a standard Acord form (or the equivalent) evidencing the Bidder’s general liability, professional liability and any other relevant liability insurance policies that might be associated with the proposed services.

Section II Proposed Services

1. Services to be Provided

Discuss the Scope of Services and what the Bidder will offer. Give particular attention to describing the methods and resources you will use and how you will accomplish the tasks involved. Also, describe how you will ensure expectations and/or desired outcomes as a result of these services will be achieved. If subcontractors are involved, clearly identify the work each will perform.

2. Implementation - Work Plan

Provide a realistic work plan for the implementation of the program through the first contract period. Display the work plan in a timeline chart. Concisely describe each program development and implementation task, the month it will be carried out and the person or position responsible for each task. If applicable, make note of all tasks to be delegated to subcontractors.

Section III Cost Proposal

1. General Instructions

- a. Provide a fixed fee for these services. This is a Guaranteed Maximum Price contract. Agreed upon contract value shall be inclusive of all work.
- b. The Bidder must submit a cost proposal that covers the entire period of the initial contract.
- c. The cost proposal shall include the costs necessary for the Bidder to fully comply with the contract terms and conditions and RFP requirements.

- d. No costs related to the preparation of the proposal for this RFP or to the negotiation of the contract with the County may be included in the proposal. Only costs to be incurred after the contract effective date that are specifically related to the implementation or operation of contracted services may be included.

PROPOSAL EVALUATION AND SELECTION

Evaluation of the submitted proposals shall be accomplished as follows:

A. Evaluation Process - General Information

1. An evaluation team, comprised of qualified reviewers, will judge the merits of the proposals received in accordance with the criteria defined in the RFP.
2. Officials responsible for making decisions on the selection of a contractor shall ensure that the selection process accords equal opportunity and appropriate consideration to all who are capable of meeting the specifications. The goals of the evaluation process are to ensure fairness and objectivity in review of the proposals and to ensure that the contract is awarded to the Bidder whose proposal provides the best value to the County of Cumberland.
3. The County reserves the right to communicate and/or schedule interviews/presentations with Bidders if needed to obtain clarification of information contained in the proposals received, and the County may revise the scores assigned in the initial evaluation to reflect those communications and/or interviews/presentations. Interviews/presentations are not required, and changes to proposals will not be permitted during any interview/presentation process. Therefore, Bidders should submit proposals that present their rates and other requested information as clearly and completely as possible.

B. Scoring Weights and Process

1. **Scoring Weights:** The score will be based on a 100-point scale and will measure the degree to which each proposal meets the following criteria.

Section I. Organization Qualifications and Experience (35 points)

Includes all elements addressed above in Part IV, B, Section I.

Section II. Proposed Services (35 points)

Includes all elements addressed above in Part IV, B, Section II.

Section III. Cost Proposal (30 points)

Includes all elements addressed above in Part IV, B, Section III.

2. **Scoring Process:** The review team will use a consensus approach to evaluate and score Sections I & II above. Members of the review team will not score those sections individually but, instead, will arrive at a consensus as to assignment of

points for each of those sections. Sections III, the Cost Proposal, will be scored as described below.

- 3. Scoring the Cost Proposal:** The total cost proposed for conducting all the functions specified in this RFP will be assigned a score according to a mathematical formula. The lowest bid will be awarded 30 points. Proposals with higher bids values will be awarded proportionately fewer points calculated in comparison with the lowest bid.

The scoring formula is:

$(\text{Lowest submitted cost proposal} / \text{Cost of proposal being scored}) \times (30) = \text{pro-rated score}$

No Best and Final Offers: The County will not seek a best and final offer (BAFO) from any Bidder in this procurement process. All Bidders are expected to provide their best value pricing with the submission of their proposal.

- 4. Negotiations:** The County reserves the right to negotiate with the successful Bidder to finalize a contract at the same rate or cost of service as presented in the selected proposal. Such negotiations may not significantly vary the content, nature or requirements of the proposal or the County's Request for Proposals to an extent that may affect the price of goods or services requested. The County reserves the right to terminate contract negotiations with a selected Bidder who submits a proposed contract significantly different from the proposal they submitted in response to the advertised RFP. In the event that an acceptable contract cannot be negotiated with the highest ranked Bidder, the County may withdraw its award and negotiate with the next-highest ranked Bidder, and so on, until an acceptable contract has been finalized. Alternatively, the County may cancel the RFP, at its sole discretion.

C. Selection and Award

1. The final decision regarding the award of the contract will be made by representatives of the County subject to approval by the State Procurement Review Committee.
2. Notification of contractor selection or non-selection will be made in writing by the County.
3. Issuance of this RFP in no way constitutes a commitment by the County to award a contract, to pay costs incurred in the preparation of a response to this request, or to pay costs incurred in procuring or contracting for services, supplies, physical space, personnel or any other costs incurred by the Bidder.
4. The County reserves the right to reject any and all proposals or to make multiple awards.

V

General Requirements/Disclosures

Each proposer submits its proposal with the understanding that the acceptance in writing by the County of the offer to furnish the services requested shall constitute a contract between the proposer and the County, which shall bind the proposer to furnish the services, in the manner offered in the submission, at the rates accepted, and in accordance with conditions and requirements of the County.

A formal contract and/or purchase order will be signed between the County and the successful proposer. Each proposer submits its proposal with the understanding that nothing in this solicitation shall be construed to require the County to award a contract. With the proposal submission, the proposer must indicate that it is prepared to enter into a contract with the County in accordance with the terms and conditions set forth in this solicitation, any addenda, and the proposed contract. Submissions shall be valid for a minimum period of one hundred twenty days (120) from the date of the opening of the submission.

Proposals must be completed and be willing to adhere to the federal requirements associated with the fund for this project. Proposals that do not wish to comply will be automatically disqualified.

As previously mentioned, Cumberland County is utilizing The Coronavirus State and Local Fiscal Recovery Funds established under the American Rescue Plan Act. The Coronavirus State and Local Fiscal Recovery Funds provide a substantial infusion of resources to help turn the tide on the pandemic, address its economic fallout, and lay the foundation for a strong and equitable recovery. These funds have expenditure deadlines and compliance measures the County must be adhered to. All forms required to be submitted with each Bid are as follows:

- a. **Federal Provisions:** completely filled out.
- b. **Insurance Certificate;** Certificates of Insurance are to be submitted to Owner seven (7) calendar days after Contract Notice of Award; Selected respondent(s) shall carry Commercial General Liability Insurance (Bodily Injury, Property Damage, Products and Completed Operations) in an amount of not less than one million dollars (\$1,000,000) per occurrence with two million dollar (\$2,000,000) aggregate, combined single limits. Such coverage shall also include coverage for operations, completed operations, products and contractual liability insurance. Such policy shall name the County of Cumberland as additional insured and shall be primary and noncontributory to any valid and collectible insurance carried by the County.

Selected respondent(s) shall provide errors and omissions liability insurance covering the respondent and the County against loss for financial damages resulting from legal expenses and costs the County may incur by fines, and penalties assessed against the County through administrative of

judicial proceedings caused by errors or omission in the billing by the Respondent in the amount of one million dollars (\$1,000,000) each wrongful act and \$1,000,000 in the aggregate.

Selected respondent(s) shall provide the County with a certificate verifying such coverage before commencing services under this RFP. Such policy shall require thirty (30) days' notice to the County in writing prior to alteration, cancellation, termination or expiration of any kind.

Any Firms responding to this request for qualifications/proposal certifies that no officer, agent or employee of the County has a pecuniary interest in this request for proposal, that the proposal is made in good faith without fraud, collusion or connection of any kind with any other respondent of the same call for proposals, and that the respondent is competing solely in its own behalf without connection with or obligation to, any undisclosed person or firm.

Respondents must fully disclose, in writing to the County on or before the closing date of this request for proposals, the circumstances of any possible conflict of interest or what could be perceived as a possible conflict of interest if the respondent were to become a contracting party pursuant to this request for proposals. The County shall review any submissions by respondents under this provision and may reject any proposals where, in the opinion of the County, the respondent could be in a conflict of interest or could be perceived to be in a possible conflict of interest position if the respondent were to become a contracting party pursuant to this request for proposals. Respondents shall make all investigations necessary to inform itself regarding the service(s) to be performed under this request for proposal.

Any act or acts of misrepresentation or collusion shall be a basis for disqualification of any proposal or proposals submitted by such person guilty of said misrepresentation or collusion. In the event that the County enters into a contract with any respondent who is guilty of misrepresentation or collusion and such conduct is discovered after the execution of said contract, the County may cancel said contract without incurring liability, penalty, or damages. Minority, Woman, and/or Small Business Enterprises are encouraged to consider submitting proposals for consideration. The County is an Affirmative Action - Equal Opportunity Employer.

The County reserves the right to waive informalities, non-material defects, or clerical errors in any proposal. The County also reserves the right to reject any and all proposals, or any part of a proposal, when said action is deemed to be in the best interest of the County. The County reserves the right to negotiate with one of more respondent as it sees fit. Proposals will be evaluated based on what is in the best interest of the County. Costs will not be the sole factor in evaluating proposals. No contracts rights shall accrue to a respondent unless and until the County and the respondent execute a binding contract.

All costs incurred in the preparation of the proposals will be borne entirely by the individual/ firm submitter. All proposals submitted become property of the County. All proposals submitted, information contained therein, and attached thereto shall be subject to disclosure under the Freedom of Information Act. Proposals shall be final and binding and may not be withdrawn or amended for one hundred and twenty (120) days from the date and time when proposals are due.

Any person contracting with the County must, to the fullest extent permitted by law, indemnify, defend and hold harmless the County and its agents and employees from and against all claims, damages, loss or expense including reasonable attorney's fees arising out of or resulting from the performance of the contract. Selected

respondents shall pay any and all attorneys' fees incurred by the County, its agents, or its employees, in enforcing any of the selected respondents' defense or indemnification obligations. In any and all claims against the County, or any of its agents or employees, by any employee of a selected respondent, or anyone directly or indirectly employed by a selected respondent, or anyone for whose acts as a selected respondent is liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or a selected respondent under Workers' Compensation Acts, disability benefits acts, or other employee benefit acts.

VI

State and Local Fiscal Recovery Funds Federal Provisions

FEDERAL REQUIREMENTS FOR SLFRF

1. TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

(P.L. 88-352), as amended, (42 USC 2000d) and the requirements imposed by the Regulations of the Department of Commerce (15 CFR Part 8) issued pursuant to that Title. In accordance therewith no person in the United States shall, on the grounds of race, handicap, color, sex, national origin or familial status be excluded from participation in, be denied the benefits or be otherwise subjected to discrimination under any program or activity which is paid for with federal funds. The Owner further adds that there shall not be any form of discrimination by any party in any ARPA contract on the basis of familial status, sexual orientation or sex.

2. REHABILITATION ACT OF 1973

29 USC 794, Executive Order 11914, Section 504. No otherwise qualified handicapped individual shall, solely by reason of his/her handicap, be denied the benefits of, be excluded from participation in, or be subjected to discrimination under any program or activity receiving federal financial assistance.

3. SECTION 202 OF EXECUTIVE ORDER 11246 Applicable to Federally assisted construction contracts and related subcontracts. During the performance of this contract, the contractor agrees as follows:

- A. The contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of Compensation; and selection for training, including apprenticeship.
- B. The contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this non-discrimination clause. The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- C. Contractors shall incorporate foregoing requirements in all subcontracts.
- D. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration without regard to race, color, religion, sex, or national origin.

- E. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Contract Compliance Officer advising the said labor union or workers' representative of the contractor's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- F. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- G. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Department and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- H. In the event of the contractor's noncompliance with the non-discrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- I. The contractor will include the provisions of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Department may direct as a means of enforcing such provision, including sanctions for non-compliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Department the contractor may request the United States to enter into such litigation to protect the interest of the United States.
- J. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor." The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on -the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:
 - (b)The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor; state that all qualified applicants WM receive considerations for employment without regard to race, color, religion, sex, or national origin.
 - (c) The contractor will send to each labor union or representative of workers. With which he has a collective bargaining agreement or other contract.

4. **Disbarment & Suspension.** Debarment and Suspension (Executive Orders 12549 and 12689) - A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.
5. **CERTIFICATION OF NONSEGREGATED FACILITIES AS REQUIRED BY THE MAY 19, 1967, ORDER (32 F.R. 74390 ON ELIMINATION OF SEGREGATED FACILITIES, BY THE SECRETARY OF LABOR.** Prior to the award of any construction contract or subcontract, the Contractor shall submit signed Certification of Non-segregated Facilities Forms for him/herself and all subcontractors.
6. **THE AGE DISCRIMINATION ACT OF 1975**
No person in the United States shall, on the basis of age, be excluded from participation or be denied the benefits of, or be subjected to discrimination under, any program or activity undertaken with federal funds.
7. **LABOR STANDARDS**
Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.
 - A. Specific to ARAP and when it is the sole source of federal funds, Davis Bacon is applicable **only to Projects over 10 Million dollars:**
 - B. recipient may provide a certification that, for the relevant project, all laborers and mechanics employed by contractors and subcontractors in the performance of such project are paid wages at rates not less than those prevailing, as determined by the U.S. Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code (commonly known as the “Davis-Bacon Act”), for the corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work in the civil subdivision of the State (or the District of Columbia) in which the work is to be performed, or by the appropriate State entity pursuant to a corollary State prevailing-wage-in-construction law (commonly known as “baby Davis-Bacon Acts”). If such certification is not provided, a recipient must provide a project employment and local impact report detailing:
 - (a) The number of employees of contractors and sub-contractors working on the project;
 - (b) The number of employees on the project hired directly and hired through a third party;
 - (c) The wages and benefits of workers on the project by classification; and
 - (d) Whether those wages are at rates less than those prevailing.

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- (e) The County must maintain sufficient records to substantiate this information upon request.
 - (f) A recipient may provide a certification that a project includes a project labor agreement, meaning a pre-hire collective bargaining agreement consistent with section 8(f) of the National Labor Relations Act (29 U.S.C. 158(f)).
8. **Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333)**. All laborers and mechanics employed by contractors or subcontractors shall receive overtime compensation in accordance with and subject to the provisions of the Contract Work Hours and Safety Standards Act, and the contractors and subcontractors shall comply with all regulations issued pursuant to these acts and with other applicable Federal laws and regulations pertaining to labor standards. Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
9. **Rights to Inventions Made Under a Contract or Agreement**. If the Federal award meets the definition of “funding agreement” under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.
10. **Copeland Anti-Kickback Act** requires that workers be paid at least once a week, and without any deductions or rebates except permissible deductions. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency
11. **SPECIAL CONDITIONS PERTAINING TO HAZARDS, SAFETY STANDARDS AND ACCIDENT PREVENTION TITLE IV OF THE LEAD BASED PAINT POISONING PREVENTION ACT**
- A. Lead-Based Paint Hazards** (Applicable to contracts for construction or rehabilitation of residential structures) The construction or rehabilitation of residential structures is subject to the HUD Lead-Based Paint regulations, 24 CFR Part 35. The contractor and Subcontractors shall comply with the provisions for the elimination of lead-based paint hazards under sub-part B of said regulations. The Owner will be responsible for the inspections and certifications required under Section 35.14(f) thereof.
- B. Use of Explosives** When the use of explosives is necessary for the prosecution of the work, the Contractor shall observe all local, state and federal laws in purchasing and handling explosives. The Contractor shall take all necessary precautions to protect completed work, neighboring property, water lines, or other underground structures. Where there is danger to structures or property from blasting, the charges shall be reduced and the material shall be covered with suitable timber, steel or rope mats. The Contractor shall notify all owners of public utility property of intention to use explosives at least eight hours before blasting is done, close to such property. Any supervision of direction of use of

explosives by the Engineer does not in any way reduce the responsibility of the Contractor or his Surety for damages that may be caused by such use.

C. Danger Signals and Safely Devices The Contractor shall make all necessary precautions to guard against damages to property and injury to persons. They shall put up and maintain in good condition, sufficient red or warning lights at night, suitable barricades and other devices necessary to protect the public. In case the Contractor fails or neglects to take such precautions, the Owner may have such lights and barricades installed and charge the cost of this work to the Contractor. Such action by the Owner does not relieve the Contractor of any liability incurred under these specifications or contract.

12. **THE UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970.** (P.L. 91-646 as amended), 15 CFR Part 916 including amendments thereto and regulations there under, as provided by 1. M.R.S.A 901 et seq. The Contractor and Grantee will ensure that all work performed under this Agreement will be done in accordance with this act.
13. **ARCHITECTURAL BARRIERS ACT (P.L 90-480), 42 USC 4151, AS AMENDED,** and the regulations issued or to be issued there under, prescribing standards for the design and construction of any building or facility intended to be accessible to the public or which may result in the employment of handicapped persons therein.
14. **THE CLEAN AIR ACT AS AMENDED, 42 USC 1857 ED SEQ.9 THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED, 33 USC 1251 et seq. and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended from time to time.** Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended - Contracts and subgrants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA). In no event shall any amount of the assistance provided under this Agreement be utilized with respect to a facility, which has given rise to a conviction under section 113(c) (1) of the Clean Air Act or section 309(c) of the Federal Water Pollution Control Act.
15. **MINORITY BUSINESS ENTERPRISES** Referenced in Executive Order #11625, OMEB Circular A-102 Attachment 0 Procurement Standards. Grantees are to give priority to Minority Business Enterprises in purchase of supplies, equipment, construction, and services.
16. **SECTION 319 OF PUBLIC LAW 101-121**The grantee shall comply with the requirements of Section 319 of Public Law 101-121 regarding government wide restrictions on lobbying.
17. **Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)** - Contractors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award. See: § 200.323. See § 200.216. See § 200.322. [78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75888, Dec. 19, 2014; 85 FR 49577, Aug. 13, 2020]
18. **Remedial Actions.** In the event of Recipient's noncompliance with section 603 of the Act, other applicable laws, Treasury's implementing regulations, guidance, or any reporting or other program requirements, Treasury may impose additional conditions on the receipt of a subsequent tranche of future award funds, if any, or take other available remedies as set forth in 2 C.F.R. § 200.339. In the case of a violation of section 603(c) of the Act regarding the use of funds, previous payments shall be subject to recoupment as provided in section 603(e) of the Act.

19. **Hatch Act.** Recipient agrees to comply, as applicable, with requirements of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7328), which limit certain political activities of State or local government employees whose principal employment is in connection with an activity financed in whole or in part by this federal assistance.
20. **False Statements.** Recipient understands that making false statements or claims in connection with this award is a violation of federal law and may result in criminal, civil, or administrative sanctions, including fines, imprisonment, civil damages and penalties, debarment from participating in federal awards or contracts, and/or any other remedy available by law.
21. **Publications.** Any publications produced with funds from this award must display the following language: “This project [is being] [was] supported, in whole or in part, by federal award number [enter project FAIN] awarded to [name of Recipient] by the U.S. Department of the Treasury.”
22. **Debts Owed the Federal Government.** Any funds paid to Recipient
 1. in excess of the amount to which Recipient is finally determined to be authorized to retain under the terms of this award;
 2. that are determined by the Treasury Office of Inspector General to have been misused; or
 3. that are determined by Treasury to be subject to a repayment obligation pursuant to section 603(e) of the Act and have not been repaid by Recipient shall constitute a debt to the federal government.
23. **Disclaimer.** The United States expressly disclaims any and all responsibility or liability to Recipient or third persons for the actions of Recipient or third persons resulting in death, bodily injury, property damages, or any other losses resulting in any way from the performance of this award or any other losses resulting in any way from the performance of this award or any contract, or subcontract under this award. The acceptance of this award by Recipient does not in any way establish an agency relationship between the United States and Recipient.
24. **Protections for Whistleblowers.**
 - a. In accordance with 41 U.S.C. § 4712, Recipient may not discharge, demote, or otherwise discriminate against an employee in reprisal for disclosing to any of the list of persons or entities provided below, information that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, an abuse of authority relating to a federal contract or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal contract (including the competition for or negotiation of a contract) or grant.
 - b. The list of persons and entities referenced in the paragraph above includes the following:
 - i. A member of Congress or a representative of a committee of Congress;
 - ii. An Inspector General;
 - iii. The Government Accountability Office;
 - iv. A Treasury employee responsible for contract or grant oversight or management;
 - v. An authorized official of the Department of Justice or other law enforcement agency;
 - vi. A court or grand jury; or
 - vii. A management official or other employee of Recipient, contractor, or subcontractor who has the responsibility to investigate, discover, or address misconduct.
 - c. Recipient shall inform its employees in writing of the rights and remedies provided under this section, in the predominant native language of the workforce.
25. **Increasing Seat Belt Use in the United States.** Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Recipient should encourage its contractors to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented or personally owned vehicles.

26. **Reducing Text Messaging While Driving.** Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Recipient should encourage its employees, subrecipients, and contractors to adopt and enforce policies that ban text messaging while driving, and Recipient should establish workplace safety policies to decrease accidents caused by distracted drivers.

VII

Exhibit A – Required Federal Provision Documents
Exhibit B- Scope of commissioning services for each project.

Exhibit A – Required Federal Provision Documents



***FEDERALLY REQUIRED PROVISIONS PURSUANT TO THE
AMERICAN RESCUE PLAN ACT***

If you have any questions while completing this paperwork

Please contact:

Cumberland County Compliance and Audit Manager
142 Federal Street Room 100
Portland ME, 04101
207-209-4940

warren@cumberlandcounty.org

The American Rescue Plan Act

Each bidder, prospective contractor, or proposed subcontractor shall state as an initial part of the bid or negotiations of any federal award or contract, compliance with PART 200 - Uniform Administrative Requirements, Cost Principles, & Audit Requirements for Federal Awards. **All bidders' submissions** must contain all of the following documents, signed and completed.

Required Document Checklist

1. Certification of the Bidder regarding Disbarment (**Please include a print out from SAMs, showing standings**)
2. Certification of the Bidder regarding conflict of interest
3. Certification of the Bidder regarding EEO and signed EEO Statement
4. Certification of the bidder regarding Federal Provisions

NOTE: BIDDERS MUST READ THE FEDERAL PROVISIONS REQUIREMENTS OF THIS PACKET PRIOR TO BIDDING ON THIS PROJECT

CONTRACTOR DISBARRED OR SUSPENSION
Applicable to bidder

Contractor: _____ Telephone: _____ Ext. _____
Contact Person: _____ Fax: _____
E-mail: _____ Tax ID: _____
BID PRICE: \$ _____ BID DATE: ____ / ____ / ____
PROJECT LOCATION: _____ PROJECT # _____

THIS CERTIFICATION IS REQUIRED BY THE REGULATIONS IMPLEMENTING EXECUTIVE ORDER 12549, DEBARMENT AND SUSPENSION, 29 CFR PART 98, SECTION 98.510, PARTICIPANTS' RESPONSIBILITIES. THE REGULATIONS WERE PUBLISHED AS PART VII OF THE MAY 26, 1988 FEDERAL REGISTER (PAGES 19160-19211).

1. THE PROSPECTIVE PRIMARY PARTICIPANT CERTIFIES TO THE BEST OF ITS KNOWLEDGE AND BELIEF THAT IT AND ITS PRINCIPALS:
 - a) ARE NOT PRESENTLY DEBARRED, SUSPENDED, PROPOSED FOR DEBARMENT, DECLARED INELIGIBLE, OR VOLUNTARILY EXCLUDED FROM COVERED TRANSACTIONS BY ANY FEDERAL DEPARTMENT OR AGENCY;
 - b) HAVE NOT WITHIN A THREE-YEAR PERIOD PRECEDING THIS PROPOSAL BEEN CONVICTED OF OR HAD A CIVIL JUDGMENT RENDERED AGAINST THEM FOR COMMISSION OF FRAUD OR A CRIMINAL OFFENSE IN CONNECTION WITH OBTAINING, ATTEMPTING TO OBTAIN, OR PERFORMING A PUBLIC (FEDERAL, STATE OR LOCAL) TRANSACTION OR CONTRACT UNDER A PUBLIC TRANSACTION, VIOLATION OF FEDERAL OR STATE ANTI-TRUST STATUTES OR COMMISSION OF EMBEZZLEMENT, THEFT, FORGERY, BRIBERY, FALSIFICATION OR DESTRUCTION OF RECORDS, MAKING FALSE STATEMENTS, OR RECEIVING STOLEN PROPERTY;
 - c) ARE NOT PRESENTLY INDICTED FOR OR OTHERWISE CRIMINALLY OR CIVILLY CHARGED BY A GOVERNMENT ENTITY (FEDERAL, STATE OR LOCAL) WITH COMMISSION OF ANY OF THE OFFENSES ENUMERATED IN PARAGRAPH 1.B OF THIS CERTIFICATION; AND
 - d) HAVE NOT WITHIN A THREE-YEAR PERIOD PRECEDING THIS APPLICATION/PROPOSAL HAD ONE OR MORE PUBLIC TRANSACTIONS (FEDERAL, STATE OR LOCAL) TERMINATED FOR CAUSE OR DEFAULT.

2. WHERE THE PROSPECTIVE PRIMARY PARTICIPANT IS UNABLE TO CERTIFY TO ANY OF THE STATEMENTS IN THIS CERTIFICATION, SUCH PROSPECTIVE PARTICIPANT SHALL ATTACH AN EXPLANATION TO THIS PROPOSAL.

NAME AND TITLE, AUTHORIZED REPRESENTATIVE

SIGNATURE & DATE

*****Please attached a print out of good standing from SAM.Gov*****

CONFLICT OF INTEREST

2 CFR 200.112 and 2 CFR 200.318

Conflicts of interest arise when officials or staff stand to benefit either directly themselves or indirectly through business partners or relatives from the awarding or contracting of grant funds. When conflicts of interest arise, ARPA Staff will identify, disclose, and manage them in compliance with Super Circular (2 CFR Part 200.112 Conflict of Interest) and 24 CFR Part 570.611 Conflict of Interest for ARPA.

In the procurement of supplies, equipment, construction, and services by the subrecipients, the conflict of interest provisions in 2 CFR 200.318 shall apply. In all cases not governed by 2 CFR 200.318, this policy will be followed. Such cases include the acquisition and disposition of real property and the provision of assistance by its subrecipients/entities to individuals, businesses, and other private entities under eligible activities that authorize such assistance (e.g., rehabilitation, preservation, and other improvements of private properties or facilities pursuant to §570.202; or grants, loans, and other assistance to businesses, individuals, and other private entities pursuant to §570.203, 570.204, 570.455, or 570.703(i)).

A Conflict of Interest is a real or apparent incompatibility between a person's private interests and his/her public or fiduciary duties. For the purposes of ARPA, the rule is that no persons who are a (n):

- Employee,
- Agent,
- Consultant,
- Officer,
- Elected Official, and/or
- Appointed official

OF THE:

- Town, City or County under the Cumberland County jurisdiction.
- Recipient of ARPA funds (applies to all non-profit agencies)
- Federal Government

WHO:

- Exercise or have exercised any functions or responsibilities with respect to ARPA activities, and/or
- Are in a position to participate in decision making process or gain inside information with regard to such activities,

SHALL NOT:

- Obtain a financial interest or benefit from a ARPA -assisted activity,
- Have a financial interest in any contract, subcontract, or agreement with respect to a ARPA -assisted activity, or with respect to the proceeds of the ARPA -assisted activity.

Either for themselves or those with **whom they have business or immediate family ties**, during their tenure or for one year thereafter.

EXCEPTIONS

Upon the written request of the recipient, Treasury may grant an exception to the provisions of this section on a case-by-case basis when it has satisfactorily met the threshold requirements below:

Treasury will consider an exception only after the recipient has provided the following documentation:

1. A disclosure of the nature of the conflict, accompanied by an assurance that there has been public disclosure of the conflict and description of how the public disclosure was made. AND
2. An opinion from the Cumberland County-Legal Department must be obtained indicating the interest for which the exception is sought would not violate State or local law.

IMPORTANT: *Mere submission of a request for an exception does not authorize a recipient to engage in any activity or enter into any contract that constitute a conflict. An exception is not granted until the subrecipient receives such determination in writing from the County as instructed by Treasury.*

In order to successfully obtain an exception from Treasury, the following points must be addressed:

- Significant cost benefit or essential expertise to the project.

- Opportunity for open competitive bidding or negotiation
- Person affected:
 - Member of low or moderate income class of persons intended to be beneficiaries of the assisted activity.
 - Exception will permit such person to receive same benefits as the class.
- Person affected has withdrawn from his or her functions or responsibilities, or the decision making process with respect to the assisted activity.
- Interest or benefit was present *before* affected person was in the conflicting position.
- Undue hardship to subrecipient or person affected which weighed against public interest served by avoiding the prohibited conflict.
- Any other relevant considerations.

**** CONFLICT OF INTEREST FORMS MUST BE SIGNED BY ADMINISTRATION, STAFF AND BOARD OF DIRECTORS.**

CONFLICT OF INTEREST

2 CFR 200.112 and 2 CFR 200.318

No employee, officer or agent of Cumberland County, or its set a sides communities, sub-grantee or subrecipient shall participate in selection, award or administration of contract or conduct business with a vendor if a conflict of interest, real or apparent would be involved.

- A. the employee, officer or any agent
- B. a member of his/her immediate family
- C. his or her partner
- D. an organization, which employs or is about to employ, any of the above, has financial or other interest in the firm selected for award.

Cumberland County's, sub-grantee or subrecipient, officers, employees or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from contractors, potential

contractors, or parties to sub-agreements, vendors or potential vendors. Depending on gravity, violation of this Conflict of Interest could result in dismissal, probation or suspension of officers, employees or agents involved or termination of contractual agreements with subrecipients.

Non-disclosure Policy any Cumberland County employee, sub-grantee or subrecipient shall make no disclosure of verbal or written price quotations. Violation of the nondisclosure policy shall be subject to disciplinary action as provided by the County or termination of contractual agreements when a subrecipient/sub-grantee employee is involved.

Personal Interest No member of the County Commissioners or any officer or employee of the County, sub-grantee or subrecipient shall have a financial interest, direct or indirect or by reason of ownership of stock in any corporation, in any contract or in the sale to the County of Cumberland, sub-grantee or subrecipient or to a contractor supplying the County of Cumberland, sub-grantee or subrecipient of any land or rights or interest in any land, material, supplies, or services, or in any matter in which he acts for the County of Cumberland. Any willful violation of this section shall constitute malfeasance in office, and any officer or employee of the County of Cumberland, sub-grantee or subrecipient found guilty shall there by forfeit his or her office. Any violation of this section with the knowledge, express or implied, of the person or corporation contracting with the County of Cumberland, sub-grantee or subrecipient shall render the contract void by the Compliance and Audit Director or the County Commissioners.

Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Employee, Subrecipient or

Print or type Name and Position/Title

Agent Acknowledgment

Entity/Organization Name

Date

**CERTIFICATION OF CONTRACTOR REGARDING EQUAL
EMPLOYMENT OPPORTUNITY**

Certification by Bidders

Name of prime contractor: _____

Address of prime contractor: _____

Tax ID # of prime contractor: _____

1. Bidder has participated in a previous contract or subcontract subject to the EEO Clause.
 Yes No

2. Compliance reports were required to be filed in connection with such contract or subcontract.
 Yes No

3. Bidder has filed all compliance reports due under applicable instructions, including SF-100.
 Yes No

4. Have you ever been or are you being considered for sanction due to violation of Executive Order 11246, as amended?
 Yes No

This certification is required pursuant to Executive Order 11246 (30 F.R. 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any other of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause, and if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven (7) calendar days after bid opening. No contract shall be awarded unless such report is submitted.

By signing below, you are certifying your answers to the four questions above were truthful:

Name and Title of Authorized Representative (print or type)

Signature of Authorized Representative

Date of Signature

EQUAL EMPLOYMENT OPPORTUNITY STATEMENT

E.O. 11246 requires covered contractors and subcontractors to refrain from discrimination and to engage in affirmative steps to ensure that applicants and employees receive equal employment opportunity regardless of race, color, religion, sex, sexual orientation, gender identity, and national origin. Additionally, E.O. 11246 prohibits contractors and subcontractors from taking adverse action against employees or applicants for asking about, discussing or disclosing their pay or the pay of their co-workers.

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
4. The contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7. In the event of the contractor's non-compliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
8. The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: *Provided*, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

General Contractor Signature

Date

General Contractor Printed Name

FEDERAL REQUIREMENTS FOR SLFRF

1. TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

(P.L. 88-352), as amended, (42 USC 2000d) and the requirements imposed by the Regulations of the Department of Commerce (15 CFR Part 8) issued pursuant to that Title. In accordance therewith no person in the United States shall, on the grounds of race, handicap, color, sex, national origin or familial status be excluded from participation in, be denied the benefits or be otherwise subjected to discrimination under any program or activity which is paid for with federal funds. The Owner further adds that there shall not be any form of discrimination by any party in any ARPA contract on the basis of familial status, sexual orientation or sex.

2. REHABILITATION ACT OF 1973

29 USC 794, Executive Order 11914, Section 504. No otherwise qualified handicapped individual shall, solely by reason of his/her handicap, be denied the benefits of, be excluded from participation in, or be subjected to discrimination under any program or activity receiving federal financial assistance.

3. SECTION 202 OF EXECUTIVE ORDER 11246 Applicable to Federally assisted construction contracts and related subcontracts. During the performance of this contract, the contractor agrees as follows:

- A. The contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of Compensation; and selection for training, including apprenticeship.
- B. The contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this non-discrimination clause. The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- C. Contractors shall incorporate foregoing requirements in all subcontracts.
- D. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration without regard to race, color, religion, sex, or national origin.
- E. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Contract Compliance Officer advising the said labor union or workers' representative of the contractor's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- F. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- G. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Department and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- H. In the event of the contractor's noncompliance with the non-discrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

- I. The contractor will include the provisions of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Department may direct as a means of enforcing such provision, including sanctions for non-compliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Department the contractor may request the United States to enter into such litigation to protect the interest of the United States.
 - J. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of “federally assisted construction contract” in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, “Equal Employment Opportunity” (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and implementing regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.” The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on -the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:
 - (b) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor; state that all qualified applicants WM receive considerations for employment without regard to race, color, religion, sex, or national origin.
 - (c) The contractor will send to each labor union or representative of workers. With which he has a collective bargaining agreement or other contract.
4. **Disbarment & Suspension.** Debarment and Suspension (Executive Orders 12549 and 12689) - A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.
 5. **CERTIFICATION OF NONSEGREGATED FACILITIES AS REQUIRED BY THE MAY 19, 1967, ORDER (32 F.R. 74390 ON ELIMINATION OF SEGREGATED FACILITIES, BY THE SECRETARY OF LABOR.** Prior to the award of any construction contract or subcontract, the Contractor shall submit signed Certification of Non-segregated Facilities Forms for him/herself and all subcontractors.
 6. **THE AGE DISCRIMINATION ACT OF 1975**

No person in the United States shall, on the basis of age, be excluded from participation or be denied the benefits of, or be subjected to discrimination under, any program or activity undertaken with federal funds.
 7. **LABOR STANDARDS**

Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week.

The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

- A. Specific to ARAP and when it is the sole source of federal funds, Davis Bacon is application **only to Projects over 10 Million dollars For projects over \$10 million:**
 - B. recipient may provide a certification that, for the relevant project, all laborers and mechanics employed by contractors and subcontractors in the performance of such project are paid wages at rates not less than those prevailing, as determined by the U.S. Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code (commonly known as the “Davis-Bacon Act”), for the corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work in the civil subdivision of the State (or the District of Columbia) in which the work is to be performed, or by the appropriate State entity pursuant to a corollary State prevailing-wage-in-construction law (commonly known as “baby Davis-Bacon Acts”). If such certification is not provided, a recipient must provide a project employment and local impact report detailing:
 - (a) The number of employees of contractors and sub-contractors working on the project;
 - (b) The number of employees on the project hired directly and hired through a third party;
 - (c) The wages and benefits of workers on the project by classification; and
 - (d) Whether those wages are at rates less than those prevailing.
 - (e) The County must maintain sufficient records to substantiate this information upon request.
 - (f) A recipient may provide a certification that a project includes a project labor agreement, meaning a pre-hire collective bargaining agreement consistent with section 8(f) of the National Labor Relations Act (29 U.S.C. 158(f)).
8. **Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333).** All laborers and mechanics employed by contractors or subcontractors shall receive overtime compensation in accordance with and subject to the provisions of the Contract Work Hours and Safety Standards Act, and the contractors and subcontractors shall comply with all regulations issued pursuant to these acts and with other applicable Federal laws and regulations pertaining to labor standards. Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
9. **Rights to Inventions Made Under a Contract or Agreement.** If the Federal award meets the definition of “funding agreement” under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made

by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

10. **Copeland Anti-Kickback Act** requires that workers be paid at least once a week, and without any deductions or rebates except permissible deductions. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency

11. SPECIAL CONDITIONS PERTAINING TO HAZARDS, SAFETY STANDARDS AND ACCIDENT PREVENTION TITLE IV OF THE LEAD BASED PAINT POISONING PREVENTION ACT

A. Lead-Based Paint Hazards (Applicable to contracts for construction or rehabilitation of residential structures) The construction or rehabilitation of residential structures is subject to the HUD Lead-Based Paint regulations, 24 CFR Part 35. The contractor and Subcontractors shall comply with the provisions for the elimination of lead-based paint hazards under sub-part B of said regulations. The Owner will be responsible for the inspections and certifications required under Section 35.14(f) thereof.

B. Use of Explosives When the use of explosives is necessary for the prosecution of the work, the Contractor shall observe all local, state and federal laws in purchasing and handling explosives. The Contractor shall take all necessary precautions to protect completed work, neighboring property, water lines, or other underground structures. Where there is danger to structures or property from blasting, the charges shall be reduced and the material shall be covered with suitable timber, steel or rope mats. The Contractor shall notify all owners of public utility property of intention to use explosives at least eight hours before blasting is done, close to such property. Any supervision or direction of use of explosives by the Engineer does not in any way reduce the responsibility of the Contractor or his Surety for damages that may be caused by such use.

C. Danger Signals and Safely Devices The Contractor shall make all necessary precautions to guard against damages to property and injury to persons. They shall put up and maintain in good condition, sufficient red or warning lights at night, suitable barricades and other devices necessary to protect the public. In case the Contractor fails or neglects to take such precautions, the Owner may have such lights and barricades installed and charge the cost of this work to the Contractor. Such action by the Owner does not relieve the Contractor of any liability incurred under these specifications or contract.

12. **THE UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970.** (P.L. 91-646 as amended), 15 CFR Part 916 including amendments thereto and regulations there under, as provided by 1. M.R.S.A 901 et seq. The Contractor and Grantee will ensure that all work performed under this Agreement will be done in accordance with this act.

13. **ARCHITECTURAL BARRIERS ACT (P.L 90-480), 42 USC 4151, AS AMENDED,** and the regulations issued or to be issued there under, prescribing standards for the design and construction of any building or facility intended to be accessible to the public or which may result in the employment of handicapped persons therein.

14. **THE CLEAN AIR ACT AS AMENDED, 42 USC 1857 ED SEQ.9 THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED, 33 USC 1251 et seq.,and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended from time to time.** Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended - Contracts and subgrants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA). In no event shall any amount of the assistance provided under this Agreement be utilized with respect to a facility, which has given rise to a conviction under section 113(c) (1) of the Clean Air Act or section 309(c) of the Federal Water Pollution Control Act.

15. **MINORITY BUSINESS ENTERPRISES** Referenced in Executive Order #11625, OMEB Circular A-102 Attachment 0 Procurement Standards. Grantees are to give priority to Minority Business Enterprises in purchase of supplies, equipment, construction, and services.
16. **SECTION 319 OF PUBLIC LAW 101-121**The grantee shall comply with the requirements of Section 319 of Public Law 101-121 regarding government wide restrictions on lobbying.
17. **Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)** - Contractors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award. See: § 200.323. See § 200.216. See § 200.322. [78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75888, Dec. 19, 2014; 85 FR 49577, Aug. 13, 2020]
18. **Remedial Actions.** In the event of Recipient's noncompliance with section 603 of the Act, other applicable laws, Treasury's implementing regulations, guidance, or any reporting or other program requirements, Treasury may impose additional conditions on the receipt of a subsequent tranche of future award funds, if any, or take other available remedies as set forth in 2 C.F.R. § 200.339. In the case of a violation of section 603(c) of the Act regarding the use of funds, previous payments shall be subject to recoupment as provided in section 603(e) of the Act.
19. **Hatch Act.** Recipient agrees to comply, as applicable, with requirements of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7328), which limit certain political activities of State or local government employees whose principal employment is in connection with an activity financed in whole or in part by this federal assistance.
20. **False Statements.** Recipient understands that making false statements or claims in connection with this award is a violation of federal law and may result in criminal, civil, or administrative sanctions, including fines, imprisonment, civil damages and penalties, debarment from participating in federal awards or contracts, and/or any other remedy available by law.
21. **Publications.** Any publications produced with funds from this award must display the following language: "This project [is being] [was] supported, in whole or in part, by federal award number [enter project FAIN] awarded to [name of Recipient] by the U.S. Department of the Treasury."
22. **Debts Owed the Federal Government.** Any funds paid to Recipient
 1. in excess of the amount to which Recipient is finally determined to be authorized to retain under the terms of this award;
 2. that are determined by the Treasury Office of Inspector General to have been misused; or
 3. that are determined by Treasury to be subject to a repayment obligation pursuant to section 603(e) of the Act and have not been repaid by Recipient shall constitute a debt to the federal government.
23. **Disclaimer.** The United States expressly disclaims any and all responsibility or liability to Recipient or third persons for the actions of Recipient or third persons resulting in death, bodily injury, property damages, or any other losses resulting in any way from the performance of this award or any other losses resulting in any way from the performance of this award or any contract, or subcontract under this award. The acceptance of this award by Recipient does not in any way establish an agency relationship between the United States and Recipient.
24. **Protections for Whistleblowers.**
 - a. In accordance with 41 U.S.C. § 4712, Recipient may not discharge, demote, or otherwise discriminate against an employee in reprisal for disclosing to any of the list of persons or entities provided below, information that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, an abuse of authority relating to a federal contract or

grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal contract (including the competition for or negotiation of a contract) or grant.

- b. The list of persons and entities referenced in the paragraph above includes the following:
- i. A member of Congress or a representative of a committee of Congress;
 - ii. An Inspector General;
 - iii. The Government Accountability Office;
 - iv. A Treasury employee responsible for contract or grant oversight or management;
 - v. An authorized official of the Department of Justice or other law enforcement agency;
 - vi. A court or grand jury; or
 - vii. A management official or other employee of Recipient, contractor, or subcontractor who has the responsibility to investigate, discover, or address misconduct.
- c. Recipient shall inform its employees in writing of the rights and remedies provided under this section, in the predominant native language of the workforce.

25. Increasing Seat Belt Use in the United States. Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Recipient should encourage its contractors to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented or personally owned vehicles.

26. Reducing Text Messaging While Driving. Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Recipient should encourage its employees, subrecipients, and contractors to adopt and enforce policies that ban text messaging while driving, and Recipient should establish workplace safety policies to decrease accidents caused by distracted drivers.

The Bidder hereby agrees, to and will comply with the terms and use of the federal program and its provisions hereto as a condition of the Bid and thereby award. The bidder acknowledges that they have read and understand said provisions hereto.

Insert Name Here:

Authorized Representative:

Title:

Date signed:

Exhibit B- Scope of commissioning services for each project.

SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies project commissioning requirements. Commissioning efforts are intended to verify the successful completion, documentation and performance of the facility's systems.
- B. Systems Commissioned:
 - 1. HVAC/Plumbing & Control systems complete.
 - 2. Life safety systems including fire suppression, fire alarm and emergency egress lighting.
 - 3. Electrical systems including normal power distribution systems, emergency power distribution systems, lighting control systems, low voltage, Telcom systems.
- C. Scope of Commissioning Efforts: The commissioning authority, (CA) will verify completion of start-up and close activities for the equipment and systems listed above. Testing, adjusting and balancing of these systems as well as operation of systems under building management control will be verified.
 - 1. The CA will not necessarily witness and be present for milestones related to every system listed. However, the CA will review documentation for each system.

1.2 RELATED REQUIREMENTS

- A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to;
 - 1. Division 23: Sections for Mechanical systems and equipment being commissioned.
 - 2. Division 22: Sections for Plumbing systems and equipment being commissioned.
 - 3. Division 26: Sections for Electrical system requirements for interface with mechanical equipment being commissioned.
 - 4. Division 28: Sections for Fire Alarm system and equipment being commissioned.

1.3 COMMISSIONING TEAM

- A. General: The Commissioning Team shall consist of the following parties.
 - 1. Architect/Engineer.
 - 2. Owner.
 - 3. Commissioning Authority: (CA)
 - 4. Construction Manager: (CM)
 - 5. Mechanical Contractor (MC)
 - a. Controls Contractor: (CC)
 - b. Testing, Adjusting and Balancing Contractor: (TAB)

6. Plumbing Contractor (PC).
7. Electrical Contractor: (EC)
 - a. Fire Alarm Contractor (FA)

1.4 QUALITY ASSURANCE

- A. BCA: Commissioning procedures shall comply with the Building Commissioning Association's Essential Attributes.
- B. ASHRAE: Commissioning procedures shall comply with the intent of the American Society of Heating, Refrigerating and Air Conditioning's Guideline 0, "The Commissioning Process."
- C. ACG: Commissioning procedures shall comply with the intent of the AABC Commissioning Group (ACG) Commissioning Guideline 2005.

1.5 ROLES, RESPONSIBILITIES AND LINES OF COMMUNICATION

- A. General: The following roles and responsibilities are assigned to each member of the Commissioning Team.
- B. Owner,;
 1. It will be the responsibility of the Owner to provide direction to the AE and CM based on issues raised by the CA, (the CA will courtesy copy the AE and CM on correspondence to expedite communications).
 2. Owner holds the responsibility of authorizing / not authorizing the AE and CM to make document and construction modifications, not the CA.
- C. Architect / Engineer, (AE):
 1. The AE will capture the Owner's Project Requirements, (OPR) in the bid documents. These documents shall include a Basis of Design narrative for systems being commissioned.
 2. The AE will conduct a review of the TAB report against design requirements.
 3. The AE will direct all TAB related correspondence to the MC.
 4. The AE shall courtesy copy the CA on TAB related correspondence.
- D. Commissioning Authority, (CA):
 1. General: The CA does not have the authority to direct design or construction modifications. The CA may identify design and/or construction related issues for consideration. Direction to act on these suggestions lies with the Owner, not the CA.
 2. The CA will direct all correspondence to the Owner.
 3. The CA will courtesy copy correspondence to the AE and CM.
 4. The CA will lead commissioning related meetings and will keep minutes of these meetings.
 5. The CA will generate functional performance documentation for the systems being commissioned. These documents will be based on approved controls sequences, approved submittals, and project design criteria.

6. The CA will collect and review OEM equipment pre-functional documentation provided by the MC, EC, PC, FA, & FP.
7. The CA will perform functional performance verifications on commissioned systems. These efforts will be supported by the MC, CC, EC, FA, and CM as applicable.
8. The CA will review TAB plan, TAB process, & final Tab Report. The CA may provide review comments to the AE for consideration.
9. CA will track commissioning related issues on the Commissioning Issues Log or other reporting means. The Issues log will be the method for tracking all issues raised to completion. If the CM has a suitable issue tracking process, the CM may track commissioning related issues.

E. Construction Manager, (CM):

1. The CM shall include the cost of commissioning efforts in their contract price.
2. The CM will provide timely responses to CA generated Construction Oversight comments.
3. The CM will provide the CA with construction schedules as requested.
4. The CM will provide the CA with the project contact list.
5. The CM will track the status of issued raised by the CA. (if the CA is not tracking issues with the Commissioning Issues Log). The CM will review open commissioning items as part of regular construction meetings.
6. The CM will participate in, and expedite actions required by Construction Phase activities.
7. The CM will participate in, and expedite actions required by Acceptance Phase activities.
8. The CM will make project shop drawings, RFI's, addenda, bulletins, drawing revisions and similar documentation available to the CA at the field construction office, via e-mail, or preferably through a FTP site. The CM will provide copies of select documents as necessary, (if extended off-site review becomes necessary).
9. The CM will provide requested information to the CA for inclusion in the Systems & energy manual & the commissioning record.
10. The CM will direct all commissioning related correspondence to MMQCI, with courtesy copies to the CA and AE.

F. Mechanical Contractor, (MC): (May contain responsibilities outlined under PC)

1. The MC shall include the cost of commissioning efforts in their contract price.
2. The MC will direct all commissioning related correspondence to the CM.
3. The MC will insure that start-up, training, warranty, Extra Materials and O&M requirements of this project are included in each equipment purchase order or service sub-contract. The MC is responsible for compiling and presenting this data in a form consistent with the requirements of this project.
4. The MC will create or coordinate with equipment suppliers to provide pre-functional / basic start-up checklists (System Component Verifications, SCV's) for equipment being commissioned.
5. The MC will expedite actions required by Construction Oversight activities.
6. The MC will hold the TAB and CC contracts.
7. The MC will provide all required documentation prior to the Acceptance Phase commissioning activities.
8. The MC will participate in, and expedite actions required by Acceptance Phase activities.
9. The MC will support CA efforts with functional performance verifications.
10. The MC will participate in integrated testing efforts.

G. Controls Contractor, (CC):

1. The CC shall include the cost of commissioning efforts in their contract price.
2. The CC will be a sub-contract to the MC. As such, the CC will direct all commissioning related correspondence to the MC.
3. The CC will coordinate efforts with the MC, EC, CA and TAB.
4. The CC will provide necessary software and cabling to the TAB for use in balancing efforts.
5. The CC will insure that start-up, training and O&M requirements of this project are included in each equipment purchase order or service sub-contract. The CC is responsible for compiling and presenting this data in a form consistent with the requirements of this project.
6. The CC will demonstrate performance and adherence to sequences of operation for equipment and systems being commissioned in the presence of, and participating with the CA and TAB.
7. The CC will provide all required documentation prior to the Acceptance Phase commissioning activities.
8. The CC will participate in, and expedite actions required by Acceptance Phase activities.
9. The CC will support CA efforts with functional performance verifications.
 - a. The CC will establish appropriate trending data for a minimum of a 30 day period for performance evaluation.
10. The CC will participate in integrated testing efforts.

H. Testing, Adjusting and Balancing Contractor, (TAB):

1. The TAB shall include the cost of commissioning efforts in their contract price.
2. The TAB will be a sub-contract to the MC. As such, the TAB will direct all correspondence to the MC.
3. The TAB will coordinate efforts with the MC, EC, CC and CA.
4. Upon completion of the TAB work, the TAB will coordinate with the CC to demonstrate performance of equipment and systems to the CA.
5. The TAB will repeat any measurement contained in the TAB report, where required by the AE or the CA for verification purposes.
6. The TAB will provide all required documentation prior to the Acceptance Phase commissioning activities.
7. The TAB will participate in, and provide timely responses to Acceptance Phase activities.
8. The TAB will participate in integrated testing efforts as directed.

I. Electrical Contractor, (EC):

1. The EC shall include the cost of commissioning efforts in their contract price.
2. The EC will direct all commissioning related correspondence to the CM.
3. The EC will provide expedite actions required by Construction Phase activities.
4. The EC will provide all required documentation prior to the Acceptance Phase commissioning activities.
5. The EC will participate in, and expedite actions required by Acceptance Phase activities.
 - a. The EC will notify the CA times of acceptance testing for standby power.
6. The EC will assist in emergency power drop tests during acceptance phase commissioning and integrated testing.

J. Fire Alarm Contractor, (FA):

1. The FA shall include the cost of commissioning efforts in their contract price.
2. The FA will direct all commissioning related correspondence to the EC.
3. The FA will provide expedite actions required by Construction Phase activities.
4. The FA will provide all required documentation prior to the Acceptance Phase commissioning activities.
5. The FA will participate in, and expedite actions required by Acceptance Phase activities.
6. The FA will participate in integrated testing efforts as directed.

1.6 SUBMITTALS

- A. General: The following actions shall be made part of project submittal and close out activities, in support of the commissioning process.
- B. Pre-Construction Submittals: At the time of initial equipment submittal, each submittal shall include pre-functional / basic start-up checklists or system component verifications (SCV's). These checklists shall be developed by the contractors or provided by the original equipment manufacturers, (OEM).
- C. Submittals During Construction: As project close out milestones are reached, each activity shall be documented and signed off by the appropriate parties. Copies of documents shall be made available to the CA.
 1. Pre-Start Up: The contractor shall prepare and complete pre-start up reports based on project manual requirements, (pressure tests, AHJ inspections, etc.).
 2. Pre-Functional / Basic Start-Up / System Component Verifications (SCV's): The contractor shall complete or work in conjunction with the equipment suppliers and representatives to complete manufacturer's standard pre-operational checks and checks of equipment operation under manual control. This included factory required start-up of equipment. These reports shall be submitted to the CA.
 3. Functional Performance: The CM shall provide an approved copy of the controls submittal to the CA for use in preparing functional performance verifications documents.
 4. The FA contractor shall provide the record of completion.
 5. The CC shall provide the final point-to-point check out to the CA.
 6. The TAB contractor shall provide the final TAB report (at least a preliminary TAB report) prior to acceptance phase commissioning efforts.
- D. Project Close Out Submittals:
 1. All team members must respond to the CA in writing regarding commissioning related deficiencies.

1.7 FUNCTIONAL VERIFICATION DOCUMENTATION

- A. Installing contractors will provide the CA with start-up documentation for every piece of installed equipment. CA recommends factory pre-start forms found within IOM manuals be utilized. All factory start-up forms are to be submitted to the CA. Reports required under NFPA for fire alarm and sprinkler systems will serve as start-up forms for these systems.

- B. The CA will generate project specific functional performance Documents. These forms will be based on approved controls sequences, submittals, and design intent.
- C. The CC, MC, and TAB will work with the CA to demonstrate the performance of commissioned HVAC systems under building management control. Successful demonstration as well as deficiencies (action items) will be recorded by the CA. The CA and CC will sign the completed forms. Completed Functional verifications will become part of the commissioning record.
- D. The EC will work with the CA to demonstrate the performance of commissioned electrical systems. Successful demonstration as well as deficiencies (action items) will be recorded by the CA. The CA and PC will sign the completed forms.
- E. The FA will work with the CA to demonstrate the performance of commissioned Fire Alarm systems. Successful demonstration as well as deficiencies (action items) will be recorded by the CA. The CA and PC will sign the completed forms.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION

3.1 COMMISSIONING APPROACH

- A. General: The commissioning process is structured around three general phases.
 - 1. Construction.
 - 2. Acceptance.
 - 3. Post Occupancy.
- B. Construction Phase:
 - 1. This specification sections defines contractor requirements in support of the commissioning process.
 - 2. Commissioning plan - when provided, will supplement this specification.
 - 3. The CA may periodically visit the construction site to confirm compliance with the construction documents, good industry practices and manufacturer's requirements.
 - a. This oversight will not be in-place of AE construction administration responsibilities. Rather, CA oversight will augment AE responsibilities with a focus on system operation and performance.
 - b. The CA will document each visit and distribute reports.
- C. Acceptance Phase:
 - 1. The CA will verify the completion and documentation of pre-start up and basic operational activities.
 - 2. The CA will verify the functional performance of systems under building management control. The CA will document these activities.

- a. Complete testing of some systems may be deferred until more appropriate seasonal conditions.

D. Integrated Testing:

1. Once acceptance phase commissioning is complete and deficiencies have been addressed by installing contractors, integrated testing will be conducted on systems pertaining to the Clean Area Only.
 - a. Normal power loss – HVAC operation will be verified as operational under emergency power conditions. All essential HVAC equipment will be confirmed as operational. Pressure relationships will be confirmed as being maintained under emergency power conditions.
 - b. HVAC operation / shutdown will be verified under various fire alarm conditions to assure life safety requirements have been met.

END OF SECTION 019113

SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies project commissioning requirements. Commissioning efforts are intended to verify the successful completion, documentation and performance of the facility's systems.
- B. Systems Commissioned:
 - 1. HVAC/Plumbing & Control systems complete.
 - 2. Life safety systems including fire suppression, and fire alarm.
 - 3. Electrical systems including normal power distribution systems, and low voltage.
- C. Scope of Commissioning Efforts: The commissioning authority, (CA) will verify completion of start-up and close activities for the equipment and systems listed above. Testing, adjusting and balancing of these systems as well as operation of systems under building management control will be verified.
 - 1. The CA will not necessarily witness and be present for milestones related to every system listed. However, the CA will review documentation for each system.

1.2 RELATED REQUIREMENTS

- A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to;
 - 1. Division 23: Sections for Mechanical systems and equipment being commissioned.
 - 2. Division 22: Sections for Plumbing systems and equipment being commissioned.
 - 3. Division 26: Sections for Electrical system requirements for interface with mechanical equipment being commissioned.
 - 4. Division 28: Sections for Fire Alarm system and equipment being commissioned.

1.3 COMMISSIONING TEAM

- A. General: The Commissioning Team shall consist of the following parties.
 - 1. Architect/Engineer.
 - 2. Owner.
 - 3. Commissioning Authority: (CA)
 - 4. Construction Manager: (CM)
 - 5. Mechanical Contractor (MC)
 - a. Controls Contractor: (CC)
 - b. Testing, Adjusting and Balancing Contractor: (TAB)

6. Plumbing Contractor (PC).
7. Electrical Contractor: (EC)
 - a. Fire Alarm Contractor (FA)

1.4 QUALITY ASSURANCE

- A. BCA: Commissioning procedures shall comply with the Building Commissioning Association's Essential Attributes.
- B. ASHRAE: Commissioning procedures shall comply with the intent of the American Society of Heating, Refrigerating and Air Conditioning's Guideline 0, "The Commissioning Process."
- C. ACG: Commissioning procedures shall comply with the intent of the AABC Commissioning Group (ACG) Commissioning Guideline 2005.

1.5 ROLES, RESPONSIBILITIES AND LINES OF COMMUNICATION

- A. General: The following roles and responsibilities are assigned to each member of the Commissioning Team.
- B. Owner,;
 1. It will be the responsibility of the Owner to provide direction to the AE and CM based on issues raised by the CA, (the CA will courtesy copy the AE and CM on correspondence to expedite communications).
 2. Owner holds the responsibility of authorizing / not authorizing the AE and CM to make document and construction modifications, not the CA.
- C. Architect / Engineer, (AE):
 1. The AE will capture the Owner's Project Requirements, (OPR) in the bid documents. These documents shall include a Basis of Design narrative for systems being commissioned.
 2. The AE will conduct a review of the TAB report against design requirements.
 3. The AE will direct all TAB related correspondence to the MC.
 4. The AE shall courtesy copy the CA on TAB related correspondence.
- D. Commissioning Authority, (CA):
 1. General: The CA does not have the authority to direct design or construction modifications. The CA may identify design and/or construction related issues for consideration. Direction to act on these suggestions lies with the Owner, not the CA.
 2. The CA will direct all correspondence to the Owner.
 3. The CA will courtesy copy correspondence to the AE and CM.
 4. The CA will lead commissioning related meetings and will keep minutes of these meetings.
 5. The CA will generate functional performance documentation for the systems being commissioned. These documents will be based on approved controls sequences, approved submittals, and project design criteria.

6. The CA will collect and review OEM equipment pre-functional documentation provided by the MC, EC, PC, FA, & FP.
7. The CA will perform functional performance verifications on commissioned systems. These efforts will be supported by the MC, CC, EC, FA, and CM as applicable.
8. The CA will review TAB plan, TAB process, & final Tab Report. The CA may provide review comments to the AE for consideration.
9. CA will track commissioning related issues on the Commissioning Issues Log or other reporting means. The Issues log will be the method for tracking all issues raised to completion. If the CM has a suitable issue tracking process, the CM may track commissioning related issues.

E. Construction Manager, (CM):

1. The CM shall include the cost of commissioning efforts in their contract price.
2. The CM will provide timely responses to CA generated Construction Oversight comments.
3. The CM will provide the CA with construction schedules as requested.
4. The CM will provide the CA with the project contact list.
5. The CM will track the status of issued raised by the CA. (if the CA is not tracking issues with the Commissioning Issues Log). The CM will review open commissioning items as part of regular construction meetings.
6. The CM will participate in, and expedite actions required by Construction Phase activities.
7. The CM will participate in, and expedite actions required by Acceptance Phase activities.
8. The CM will make project shop drawings, RFI's, addenda, bulletins, drawing revisions and similar documentation available to the CA at the field construction office, via e-mail, or preferably through a FTP site. The CM will provide copies of select documents as necessary, (if extended off-site review becomes necessary).
9. The CM will provide requested information to the CA for inclusion in the Systems & energy manual & the commissioning record.
10. The CM will direct all commissioning related correspondence to MMQCI, with courtesy copies to the CA and AE.

F. Mechanical Contractor, (MC): (May contain responsibilities outlined under PC)

1. The MC shall include the cost of commissioning efforts in their contract price.
2. The MC will direct all commissioning related correspondence to the CM.
3. The MC will insure that start-up, training, warranty, Extra Materials and O&M requirements of this project are included in each equipment purchase order or service sub-contract. The MC is responsible for compiling and presenting this data in a form consistent with the requirements of this project.
4. The MC will create or coordinate with equipment suppliers to provide pre-functional / basic start-up checklists (System Component Verifications, SCV's) for equipment being commissioned.
5. The MC will expedite actions required by Construction Oversight activities.
6. The MC will hold the TAB and CC contracts.
7. The MC will provide all required documentation prior to the Acceptance Phase commissioning activities.
8. The MC will participate in, and expedite actions required by Acceptance Phase activities.
9. The MC will support CA efforts with functional performance verifications.
10. The MC will participate in integrated testing efforts.

G. Controls Contractor, (CC):

1. The CC shall include the cost of commissioning efforts in their contract price.
2. The CC will be a sub-contract to the MC. As such, the CC will direct all commissioning related correspondence to the MC.
3. The CC will coordinate efforts with the MC, EC, CA and TAB.
4. The CC will provide necessary software and cabling to the TAB for use in balancing efforts.
5. The CC will insure that start-up, training and O&M requirements of this project are included in each equipment purchase order or service sub-contract. The CC is responsible for compiling and presenting this data in a form consistent with the requirements of this project.
6. The CC will demonstrate performance and adherence to sequences of operation for equipment and systems being commissioned in the presence of, and participating with the CA and TAB.
7. The CC will provide all required documentation prior to the Acceptance Phase commissioning activities.
8. The CC will participate in, and expedite actions required by Acceptance Phase activities.
9. The CC will support CA efforts with functional performance verifications.
 - a. The CC will establish appropriate trending data for a minimum of a 30 day period for performance evaluation.
10. The CC will participate in integrated testing efforts.

H. Testing, Adjusting and Balancing Contractor, (TAB):

1. The TAB shall include the cost of commissioning efforts in their contract price.
2. The TAB will be a sub-contract to the MC. As such, the TAB will direct all correspondence to the MC.
3. The TAB will coordinate efforts with the MC, EC, CC and CA.
4. Upon completion of the TAB work, the TAB will coordinate with the CC to demonstrate performance of equipment and systems to the CA.
5. The TAB will repeat any measurement contained in the TAB report, where required by the AE or the CA for verification purposes.
6. The TAB will provide all required documentation prior to the Acceptance Phase commissioning activities.
7. The TAB will participate in, and provide timely responses to Acceptance Phase activities.
8. The TAB will participate in integrated testing efforts as directed.

I. Electrical Contractor, (EC):

1. The EC shall include the cost of commissioning efforts in their contract price.
2. The EC will direct all commissioning related correspondence to the CM.
3. The EC will provide expedite actions required by Construction Phase activities.
4. The EC will provide all required documentation prior to the Acceptance Phase commissioning activities.

J. Fire Alarm Contractor, (FA):

1. The FA shall include the cost of commissioning efforts in their contract price.
2. The FA will direct all commissioning related correspondence to the EC.

3. The FA will provide expedite actions required by Construction Phase activities.
4. The FA will provide all required documentation prior to the Acceptance Phase commissioning activities.
5. The FA will participate in, and expedite actions required by Acceptance Phase activities.
6. The FA will participate in integrated testing efforts as directed.

1.6 SUBMITTALS

- A. General: The following actions shall be made part of project submittal and close out activities, in support of the commissioning process.
- B. Pre-Construction Submittals: At the time of initial equipment submittal, each submittal shall include pre-functional / basic start-up checklists or system component verifications (SCV's). These checklists shall be developed by the contractors or provided by the original equipment manufacturers, (OEM).
- C. Submittals During Construction: As project close out milestones are reached, each activity shall be documented and signed off by the appropriate parties. Copies of documents shall be made available to the CA.
 1. Pre-Start Up: The contractor shall prepare and complete pre-start up reports based on project manual requirements, (pressure tests, AHJ inspections, etc.).
 2. Pre-Functional / Basic Start-Up / System Component Verifications (SCV's): The contractor shall complete or work in conjunction with the equipment suppliers and representatives to complete manufacturer's standard pre-operational checks and checks of equipment operation under manual control. This included factory required start-up of equipment. These reports shall be submitted to the CA.
 3. Functional Performance: The CM shall provide an approved copy of the controls submittal to the CA for use in preparing functional performance verifications documents.
 4. The FA contractor shall provide the record of completion.
 5. The CC shall provide the final point-to-point check out to the CA.
 6. The TAB contractor shall provide the final TAB report (at least a preliminary TAB report) prior to acceptance phase commissioning efforts.
- D. Project Close Out Submittals:
 1. All team members must respond to the CA in writing regarding commissioning related deficiencies.

1.7 FUNCTIONAL VERIFICATION DOCUMENTATION

- A. Installing contractors will provide the CA with start-up documentation for every piece of installed equipment. CA recommends factory pre-start forms found within IOM manuals be utilized. All factory start-up forms are to be submitted to the CA. Reports required under NFPA for fire alarm and sprinkler systems will serve as start-up forms for these systems.
- B. The CA will generate project specific functional performance Documents. These forms will be based on approved controls sequences, submittals, and design intent.

- C. The CC, MC, and TAB will work with the CA to demonstrate the performance of commissioned HVAC systems under building management control. Successful demonstration as well as deficiencies (action items) will be recorded by the CA. The CA and CC will sign the completed forms. Completed Functional verifications will become part of the commissioning record.
- D. The EC will work with the CA to demonstrate the performance of commissioned electrical systems. Successful demonstration as well as deficiencies (action items) will be recorded by the CA. The CA and PC will sign the completed forms.
- E. The FA will work with the CA to demonstrate the performance of commissioned Fire Alarm systems. Successful demonstration as well as deficiencies (action items) will be recorded by the CA. The CA and PC will sign the completed forms.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION

3.1 COMMISSIONING APPROACH

- A. General: The commissioning process is structured around three general phases.
 - 1. Construction.
 - 2. Acceptance.
 - 3. Post Occupancy.
- B. Construction Phase:
 - 1. This specification sections defines contractor requirements in support of the commissioning process.
 - 2. Commissioning plan - when provided, will supplement this specification.
 - 3. The CA may periodically visit the construction site to confirm compliance with the construction documents, good industry practices and manufacturer's requirements.
 - a. This oversight will not be in-place of AE construction administration responsibilities. Rather, CA oversight will augment AE responsibilities with a focus on system operation and performance.
 - b. The CA will document each visit and distribute reports.
- C. Acceptance Phase:
 - 1. The CA will verify the completion and documentation of pre-start up and basic operational activities.
 - 2. The CA will verify the functional performance of systems under building management control. The CA will document these activities.
 - a. Complete testing of some systems may be deferred until more appropriate seasonable conditions.
- D. Integrated Testing:

1. Once acceptance phase commissioning is complete and deficiencies have been addressed by installing contractors, integrated testing will be conducted on systems pertaining to the Clean Area Only.
 - a. HVAC operation / shutdown will be verified under various fire alarm conditions to assure life safety requirements have been met.

END OF SECTION 019113

SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for coordinating and scheduling commissioning activities.
2. Commissioning meetings.
3. Commissioning reports.
4. Use of commissioning process test equipment, instrumentation, and tools.
5. Construction checklists, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
6. Commissioning tests and commissioning test demonstration.
7. Adjusting, verifying, and documenting identified systems and assemblies.

B. Related Requirements:

1. Section 011000 "Summary" for Commissioning Authority responsibilities.
2. Section 013300 "Submittal Procedures" for submittal procedure requirements for commissioning process.
3. Section 017700 "Closeout Procedures" for Certificate of Construction-Phase Commissioning Process Completion submittal requirements.
4. Section 017823 "Operation and Maintenance Data" for preliminary operation and maintenance data submittal requirements.
5. Section 230800 "Commissioning of HVAC" for technical commissioning requirements for HVAC.
6. Section 260800 "Commissioning of Electrical Systems" for technical commissioning requirements for electrical systems.

1.2 DEFINITIONS

- A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity, including, but not limited to, construction checklists, performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.
- B. Commissioning Authority: An entity engaged by Owner, and identified in Section 011000 "Summary," to evaluate Commissioning-Process Work.
- C. Commissioning Plan: A document, prepared by Commissioning Authority, that outlines the organization, schedule, allocation of resources, and documentation of commissioning requirements.
- D. Commissioning: A quality-focused process for verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, and

tested to comply with Owner's Project Requirements. The requirements specified here are limited to the construction phase commissioning activities. The scope of the commissioning process is defined in Section 011000 "Summary."

- E. Construction-Phase Commissioning-Process Completion: The stage of completion and acceptance of commissioning process when resolution of deficient conditions and issues discovered during commissioning process and retesting until acceptable results are obtained has been accomplished. Owner will establish in writing the date construction-phase commissioning-process completion is achieved. See Section 017700 "Closeout Procedures" for Certificate of Construction-Phase Commissioning Process Completion submittal requirements.
 - 1. Commissioning process is complete when the Work specified of this Section and related Sections has been completed and accepted, including, but not limited to, the following:
 - a. Completion of tests and acceptance of test results.
 - b. Resolution of issues, as verified by retests performed and documented with acceptance of retest results.
 - c. Comply with requirements in Section 017900 "Demonstration and Training."
 - d. Completion and acceptance of submittals and reports.
- F. Owner's Project Requirements: A document that details the functional requirements of a project and the expectations of how it will be used and operated, including Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. This document is prepared either by the Owner or for the Owner by the Architect or Commissioning Authority.
- G. Owner's Witness: Commissioning Authority, Owner's Project Manager, or Architect-designated witness authorized to authenticate test demonstration data and to sign completed test data forms.
- H. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, assemblies, subsystems, equipment, and components.
- I. Test: Performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.
- J. Sampling Procedures and Tables for Inspection by Attributes: As defined in ASQ Z1.4.

1.3 COMPENSATION

- A. If Architect, Commissioning Authority, other Owner's witness, or Owner's staff perform additional services or incur additional expenses due to actions of Contractor listed below, compensate Owner for such additional services and expenses.
 - 1. Failure to provide timely notice of commissioning activities schedule changes.
 - 2. Failure to meet acceptance criteria for test demonstrations.

1.4 COMMISSIONING TEAM

A. Members Appointed by Contractor(s):

1. Commissioning Coordinator: A person or entity employed by Contractor to manage, schedule, and coordinate commissioning process.
2. Project superintendent and other employees that Contractor may deem appropriate for a particular portion of the commissioning process.
3. Subcontractors, installers, suppliers, and specialists that Contractor may deem appropriate for a particular portion of the commissioning process.
4. Appointed team members shall have the authority to act on behalf of the entity they represent.

B. Members Appointed by Owner:

1. Commissioning Authority, plus consultants that Commissioning Authority may deem appropriate for a particular portion of the commissioning process.
2. Owner representative(s), facility operations and maintenance personnel, plus other employees, separate contractors, and consultants that Owner may deem appropriate for a particular portion of the commissioning process.
3. Architect, plus employees and consultants that Architect may deem appropriate for a particular portion of the commissioning process.

1.5 INFORMATIONAL SUBMITTALS

A. Comply with requirements in Section 013300 "Submittal Procedures" for submittal procedure general requirements for commissioning process.

B. Commissioning Plan Information:

1. List of Contractor-appointed commissioning team members to include specific personnel and subcontractors performing the various commissioning requirements.
2. Schedule of commissioning activities, integrated with the Construction Schedule. Comply with requirements in Section 013200 "Construction Progress Documentation" for the Construction Schedule general requirements for commissioning process.
3. Contractor personnel and subcontractors participating in each test.
4. List of instrumentation required for each test to include identification of parties that will provide instrumentation for each test.

C. Commissioning schedule.

D. Two-week look-ahead schedules.

E. Commissioning Coordinator Letter of Authority:

1. Within 10 days after approval of Commissioning Coordinator qualifications, submit a letter of authority for Commissioning Coordinator, signed by a principal

of Contractor's firm. Letter shall authorize Commissioning Coordinator to do the following:

- a. Make inspections required for commissioning process.
 - b. Coordinate, schedule, and manage commissioning process of Contractor, subcontractors, and suppliers.
 - c. Obtain documentation required for commissioning process from Contractor, subcontractors, and suppliers.
 - d. Report issues, delayed resolution of issues, schedule conflicts, and lack of cooperation or expertise on the part of members of the commissioning team.
- F. List test instrumentation, equipment, and monitoring devices. Include the following information:
1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.
 2. Brief description of intended use.
 3. Calibration record showing the following:
 - a. Calibration agency, including name and contact information.
 - b. Last date of calibration.
 - c. Range of values for which calibration is valid.
 - d. Certification of accuracy.
 - e. Certification for calibration equipment traceable to NIST.
 - f. Due date of the next calibration.
- G. Test Reports:
1. Pre-Startup Report: Prior to startup of equipment or a system, submit signed, completed construction checklists.
 2. Test Data Reports: At the end of each day in which tests are conducted, submit test data for tests performed.
 3. Commissioning Issue Reports: Daily, at the end of each day in which tests are conducted, submit commissioning issue reports for tests for which acceptable results were not achieved.
 4. Weekly Progress Report: Weekly, at the end of each week in which tests are conducted, submit a progress report.
 5. Data Trend Logs: Submit data trend logs at the end of the trend log period.
 6. System Alarm Logs: Daily, at the start of days following a day in which tests were performed, submit printout of log of alarms that occurred since the last log was printed.
- H. Construction Checklists:
1. Material checks.
 2. Installation checks.
 3. Startup procedures, where required.

1.6 CLOSEOUT SUBMITTALS

A. Commissioning Report:

1. At Construction-Phase Commissioning Completion, include the following:
 - a. Pre-startup reports.
 - b. Approved test procedures.
 - c. Test data forms, completed and signed.
 - d. Progress reports.
 - e. Commissioning issue report log.
 - f. Commissioning issue reports showing resolution of issues.
 - g. Correspondence or other documents related to resolution of issues.
 - h. Other reports required by commissioning process.
 - i. List unresolved issues and reasons they remain unresolved and should be exempted from the requirements for Construction-Phase Commissioning Completion.
 - j. Report shall include commissioning work of Contractor.

B. Request for Certificate of Construction-Phase Commissioning Process Completion.

C. Operation and Maintenance Data: For proprietary test equipment, instrumentation, and tools to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Commissioning Coordinator Qualifications:

1. Documented experience commissioning systems of similar complexity to those contained in these documents on other projects of similar scope and complexity.
2. Certification of commissioning-process expertise. The following certifications are acceptable. Owner reserves the right to accept or reject certifications as evidence of qualification.
 - a. Certified Commissioning Authority, by AABC Commissioning Group (ACG).
 - b. Commissioning-Process Management Professional, by American Society of Heating, Refrigerating and Air-Conditioning Engineers.
 - c. Certified Commissioning Professional, by Building Commissioning Association.

B. Calibration Agency Qualifications: Certified by The American Association for Laboratory Accreditation that the calibration agency complies with minimum requirements of ISO/IEC 17025.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

- A. Test equipment and instrumentation required to perform the commissioning process shall remain the property of Contractor unless otherwise indicated.
- B. Test equipment and instrumentation required to perform commissioning process shall comply with the following criteria:
 - 1. Be manufactured for the purpose of testing and measuring tests for which they are being used and have an accuracy to test and measure system performance within the tolerances required to determine acceptable performance.
 - 2. Calibrated and certified.
 - a. Calibration performed and documented by a qualified calibration agency according to national standards applicable to the tools and instrumentation being calibrated. Calibration shall be current according to national standards or within test equipment and instrumentation manufacturer's recommended intervals, whichever is more frequent, but not less than within six months of initial use on Project. Calibration tags shall be permanently affixed.
 - b. Repair and recalibrate test equipment and instrumentation if dismantled, dropped, or damaged since last calibrated.
 - 3. Maintain test equipment and instrumentation.
 - 4. Use test equipment and instrumentation only for testing or monitoring Work for which they are designed.

2.2 PROPRIETARY TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

- A. Proprietary test equipment, instrumentation, and tools are those manufactured or prescribed by tested equipment manufacturer and required for work on its equipment as a condition of equipment warranty, or as otherwise required to service, repair, adjust, calibrate, or perform work on its equipment.
 - 1. Identify proprietary test equipment, instrumentation, and tools required in the test equipment identification list submittal.
 - 2. Proprietary test equipment, instrumentation, and tools shall become the property of Owner at Substantial Completion.

2.3 REPORT FORMAT AND ORGANIZATION

- A. General Format and Organization:
 - 1. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.

B. Commissioning Report:

1. Include a table of contents and an index to each test.
2. Include major tabs for each Specification Section.
3. Include minor tabs for each test.
4. Within each minor tab, include the following:
 - a. Test specification.
 - b. Pre-startup reports.
 - c. Approved test procedures.
 - d. Test data forms, completed and signed.
 - e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within the minor tab, in reverse chronological order (most recent on top).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Review preliminary construction checklists and preliminary test procedures and data forms.

3.2 CONSTRUCTION CHECKLISTS

- A. Construction checklists cannot modify or conflict with the Contract Documents.
- B. Create construction checklists based on actual systems and equipment to be included in Project.
- C. Material Checks: Compare specified characteristics and approved submittals with materials as received. Include factory tests and other evaluations, adjustments, and tests performed prior to shipment if applicable.
1. Service connection requirements, including configuration, size, location, and other pertinent characteristics.
 2. Included optional features.
 3. Delivery Receipt Check: Inspect and record physical condition of materials and equipment on delivery to Project site, including agreement with approved submittals, cleanliness, and lack of damage.
 4. Installation Checks:
 - a. Location according to Drawings and approved Shop Drawings.
 - b. Configuration.
 - c. Compliance with manufacturers' written installation instructions.
 - d. Attachment to structure.

- e. Access clearance to allow for maintenance, service, repair, removal, and replacement without the need to disassemble or remove other equipment or building elements. Access coordinated with other building elements and equipment, including, but not limited to, ceiling and wall access panels, in a manner consistent with OSHA fall-protection regulations and safe work practices.
 - f. Utility connections are of the correct characteristics, as applicable.
 - g. Correct labeling and identification.
 - h. Startup Checks: Verify readiness of equipment to be energized. Include manufacturer's standard startup procedures and forms.
- D. Startup: Perform and document initial operation of equipment to prove that it is installed properly and operates as intended according to manufacturer's standard startup procedures, at minimum.
- E. Performance Tests:
- 1. Static Tests: As specified elsewhere, including, but not limited to, duct and pipe leakage tests, insulation-resistance tests, and water-penetration tests.
 - 2. Component Performance Tests: Tests evaluate the performance of an input or output of components under a full range of operating conditions.
 - 3. Equipment and Assembly Performance Tests: Test and evaluate performance of equipment and assemblies under a full range of operating conditions and loads.
 - 4. System Performance Tests: Test and evaluate performance of systems under a full range of operating conditions and loads.
 - 5. Intersystem Performance Tests: Test and evaluate the interface of different systems under a full range of operating conditions and loads.

3.3 GENERAL EXECUTION REQUIREMENTS

- A. Schedule and coordinate commissioning process with the Construction Schedule.
- B. Perform activities identified in construction checklists, including tests, and document results of actions as construction proceeds.
- C. Perform test demonstrations for Owner's witness. Unless otherwise indicated, demonstrate tests for 100 percent of work to which the test applies.
- D. Report test data and commissioning issue resolutions.
- E. Schedule personnel to participate in and perform Commissioning-Process Work.
- F. Installing contractors' commissioning responsibilities include, but are not limited to, the following:
 - 1. Operating the equipment and systems they install during tests.
 - 2. In addition, installing contractors may be required to assist in tests of equipment and systems with which their work interfaces.

3.4 COMMISSIONING COORDINATOR RESPONSIBILITIES

- A. Management and Coordination: Manage, schedule, and coordinate commissioning process, including, but not limited to, the following:
1. Coordinate with subcontractors on their commissioning responsibilities and activities.
 2. Obtain, assemble, and submit commissioning documentation.
 3. Attend periodic on-site commissioning meetings. Comply with requirements in Section 013100 "Project Management and Coordination."
 4. Develop and maintain the commissioning schedule. Integrate commissioning schedule into the Construction Schedule. Update Construction Schedule at specified intervals.
 5. Review and comment on preliminary test procedures and data forms.
 6. Report inconsistencies and issues in system operations.
 7. Verify that tests have been completed and results comply with acceptance criteria, and that equipment and systems are ready before scheduling test demonstrations.
 8. Direct and coordinate test demonstrations.
 9. Coordinate witnessing of test demonstrations by Owner's witness.
 10. Prepare and submit specified commissioning reports.
 11. Track commissioning issues until resolution and retesting is successfully completed.
 12. Retain original records of Commissioning-Process Work, organized as required for the commissioning report. Provide Owner's representative access to these records on request.
 13. Assemble and submit commissioning report.

3.5 COMMISSIONING TESTING

- A. Quality Control: Construction checklists, including tests, are quality-control tools designed to improve the functional quality of Project. Test demonstrations evaluate the effectiveness of Contractor's quality-control process.
- B. Owner's witness will be present to witness commissioning work requiring the signature of an owner's witness, including, but not limited to, test demonstrations. Owner's project manager will coordinate attendance by Owner's witness with Contractor's published Commissioning Schedule. Owner's witness will provide no labor or materials in the commissioning work. The only function of Owner's witness will be to observe and comment on the progress and results of commissioning process.
- C. Construction Checklists:
1. Complete construction checklists as Work is completed.
 2. Distribute construction checklists to installing contractors before they start work.
 3. Installers:
 - a. Verify installation using approved construction checklists as Work proceeds.

2. Perform and complete each step of the approved test procedures in the order listed.
3. Record data observed during performance of tests on approved data forms at the time of test performance and when the results are observed.
4. Record test results that are not within the range of acceptable results on commissioning issue report forms in addition to recording the results on approved test procedures and data forms according to the "Commissioning Compliance Issues" Paragraph in this Article.
5. On completion of a test, sign the completed test procedure and data form. Tests for which test procedures and data forms are incomplete, not signed, or which indicate performance that does not comply with acceptance criteria will be rejected. Tests for which test procedures and data forms are rejected shall be repeated and results resubmitted.

H. Performance of Test Demonstration:

1. Notify Owner's witness at least three days in advance of each test demonstration.
2. Perform and complete each step of the approved test procedures in the order listed.
3. Record data observed during performance of test demonstrations on approved data forms at the time of demonstration and when the results are observed.
4. Provide full access to Owner's witness to directly observe the performance of all aspects of system response during the test demonstration. On completion of a test demonstration, sign the completed data form and obtain signature of Owner's witness at the time of the test to authenticate the reported results.
5. Test demonstration data forms not signed by Contractor and Owner's witness at the time of the completion of the procedure will be rejected. Test demonstrations for which data forms are rejected shall be repeated and results shall be resubmitted.
 - a. Exception for Failure of Owner's Witness to Attend: Failure of Owner's witness to be present for agreed-on schedule of test demonstration shall not delay Contractor. If Owner's witness fails to attend a scheduled test, Contractor shall proceed with the scheduled test. On completion, Contractor shall sign the data form for Contractor and for Owner's witness, and shall note the absence of Owner's witness at the scheduled time and place.
6. False load test requirements are specified in related sections.
 - a. Where false load testing is specified, provide temporary equipment, power, controls, wiring, piping, valves, and other necessary equipment and connections required to apply the specified load to the system. False load system shall be capable of steady-state operation and modulation at the level of load specified. Equipment and systems permanently installed in this work shall not be used to create the false load without Architect's written approval.

I. Deferred Tests:

1. Deferred Test List: Identify, in the request for Certificate of Construction-Phase Commissioning Process Completion, proposed deferred tests or other tests approved for deferral until specified seasonal or other conditions are available. When approved, deferred tests may be completed after the date of Construction-Phase Commissioning Completion. Identify proposed deferred tests in the request for Certificate of Construction-Phase Commissioning Process Completion as follows:
 - a. Identify deferred tests by number and title.
 - b. Provide a target schedule for completion of deferred tests.
2. Schedule and coordinate deferred tests. Schedule deferred tests when specified conditions are available. Notify Architect and Commissioning Authority at least three working days (minimum) in advance of tests.
3. Where deferred tests are specified, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule deferred tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

J. Delayed Tests:

1. Delayed Test List: Identify, in the request for Certificate of Construction-Phase Commissioning Process Completion, proposed delayed tests. Obtain Owner approval of proposed delayed tests, including proposed schedule of completion of each delayed test, before submitting request for Certificate of Construction-Phase Commissioning Process Completion. Include the following in the request for Certificate of Construction-Phase Commissioning Process Completion:
 - a. Identify delayed tests by test number and title.
 - b. Written approval of proposed delayed tests, including approved schedule of completion of delayed tests.
2. Schedule and coordinate delayed tests. Schedule delayed tests when conditions that caused the delay have been rectified. Notify Architect and Commissioning Authority at least three working days (minimum) in advance of tests.
3. Where delayed tests are approved, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule delayed tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

K. Commissioning Compliance Issues:

1. Test results that are not within the range of acceptable results are commissioning compliance issues.
2. Track and report commissioning compliance issues until resolution and retesting are successfully completed.
3. If a test demonstration fails, determine the cause of failure. Direct timely resolution of issue and then repeat the demonstration. If a test demonstration must be repeated due to failure caused by Contractor work or materials, reimburse Owner for billed costs for the participation in the repeated demonstration.

4. Test Results: If a test demonstration fails to meet the acceptance criteria, perform the following:
 - a. Complete a commissioning compliance issue report form promptly on discovery of test results that do not comply with acceptance criteria.
 - b. Submit commissioning compliance issue report form within 24 hours of the test.
 - c. Determine the cause of the failure.
 - d. Establish responsibility for corrective action if the failure is due to conditions found to be Contractor's responsibility.

5. Commissioning Compliance Issue Report: Provide a commissioning compliance issue report for each issue. Do not report multiple issues on the same commissioning compliance issue report.
 - a. Exception: If an entire class of devices is determined to exhibit the identical issue, they may be reported on a single commissioning compliance issue report. (For example, if all return-air damper actuators that are specified to fail to the open position are found to fail to the closed position, they may be reported on a single commissioning issue report. If a single commissioning issue report is used for multiple commissioning compliance issues, each device shall be identified in the report, and the total number of devices at issue shall be identified.
 - b. Complete and submit Part 1 of the commissioning compliance issue report immediately when the condition is observed.
 - c. Record the commissioning compliance issue report number and describe the deficient condition on the data form.
 - d. Resolve commissioning compliance issues promptly. Complete and submit Part 2 of the commissioning compliance issue report when issues are resolved.

6. Diagnose and correct failed test demonstrations as follows:
 - a. Perform diagnostic tests and activities required to determine the fundamental cause of issues observed.
 - b. Record each step of the diagnostic procedure prior to performing the procedure. Update written procedure as changes become necessary.
 - c. Record the results of each step of the diagnostic procedure.
 - d. Record the conclusion of the diagnostic procedure on the fundamental cause of the issue.
 - e. Determine and record corrective measures.
 - f. Include diagnosis of fundamental cause of issues in commissioning compliance issue report.

7. Retest:
 - a. Schedule and repeat the complete test procedure for each test demonstration for which acceptable results are not achieved. Obtain signature of Owner's witness on retest data forms. Repeat test demonstration until acceptable results are achieved. Except for issues that are determined to result from design errors or omissions, or other

conditions beyond Contractor's responsibility, compensate Owner for direct costs incurred as the result of repeated test demonstrations to achieve acceptable results.

- b. For each repeated test demonstration, submit a new test data form, marked "Retest."
8. Do not correct commissioning compliance issues during test demonstrations.
- a. Exceptions will be allowed if the cause of the issue is obvious and resolution can be completed in less than five minutes. If corrections are made under this exception, note the deficient conditions on the test data form and issue a commissioning compliance issue report. A new test data form, marked "Retest," shall be initiated after the resolution has been completed.

3.6 COMMISSIONING MEETINGS

- A. Commissioning Authority will schedule and conduct commissioning meetings. Comply with requirements in Section 013100 "Project Management and Coordination."

3.7 SEQUENCING

- A. Sequencing of Commissioning Verification Activities: For a particular material, item of equipment, assembly, or system, perform the following in the order listed unless otherwise indicated:

1. Construction Checklists:

- a. Material checks.
- b. Installation checks.
- c. Startup, as appropriate. Some startup may depend on component performance. Such startup may follow component performance tests on which the startup depends.
- d. Performance Tests:
 - 1) Static tests, as appropriate.
 - 2) Component performance tests. Some component performance tests may depend on completion of startup. Such component performance tests may follow startup.
 - 3) Equipment and assembly performance tests.
 - 4) System performance tests.
 - 5) Intersystem performance tests.

2. Commissioning tests.

- B. Before performing commissioning tests, verify that materials, equipment, assemblies, and systems are delivered, installed, started, and adjusted to perform according to construction checklists.

- C. Verify readiness of materials, equipment, assemblies, and systems by performing tests prior to performing test demonstrations. Notify Architect if acceptable results cannot be achieved due to conditions beyond Contractor's control or responsibility.
- D. Commence tests as soon as installation checks for materials, equipment, assemblies, or systems are satisfactorily completed. Tests of a particular system may proceed prior to completion of other systems, provided the incomplete work does not interfere with successful execution of test.

3.8 SCHEDULING

- A. Commence commissioning process as early in the construction period as possible.
- B. Commissioning Schedule: Integrate commissioning activities into Construction Schedule. See Section 013200 "Construction Progress Documentation."
 - 1. Include detailed commissioning activities in monthly updated Construction Schedule and short-interval schedule submittals.
 - 2. Schedule the start date and duration for the following commissioning activities:
 - a. Submittals.
 - b. Preliminary operation and maintenance manual submittals.
 - c. Installation checks.
 - d. Startup, where required.
 - e. Performance tests.
 - f. Performance test demonstrations.
 - g. Commissioning tests.
 - h. Commissioning test demonstrations.
 - 3. Schedule shall include a line item for each installation check, startup, and test activity specific to the equipment or systems involved.
 - 4. Determine milestones and prerequisites for commissioning process. Show commissioning milestones, prerequisites, and dependencies in monthly updated critical-path-method construction schedule and short-interval schedule submittals.
- C. Two-Week Look-Ahead Commissioning Schedule:
 - 1. Two weeks prior to the beginning of tests, submit a detailed two-week look-ahead schedule. Thereafter, submit updated two-week look-ahead schedules weekly for the duration of commissioning process.
 - 2. Two-week look-ahead schedules shall identify the date, time, beginning location, Contractor personnel required, and anticipated duration for each startup or test activity.
 - 3. Use two-week look-ahead schedules to notify and coordinate participation of Owner's witnesses.
- D. Owner's Witness Coordination:
 - 1. Coordinate Owner's witness participation via Architect.

2. Notify Architect of commissioning schedule changes at least two work days in advance for activities requiring the participation of Owner's witness.

3.9 COMMISSIONING REPORTS

A. Test Reports:

1. Pre-startup reports include observations of the conditions of installation, organized into the following sections:
 - a. Equipment Model Verification: Compare contract requirements, approved submittals, and provided equipment. Note inconsistencies.
 - b. Preinstallation Physical Condition Checks: Observe physical condition of equipment prior to installation. Note conditions including, but not limited to, physical damage, corrosion, water damage, or other contamination or dirt.
 - c. Preinstallation Component Verification Checks: Verify components supplied with the equipment, preinstalled or field installed, are correctly installed and functional. Verify external components required for proper operation of equipment correctly installed and functional. Note missing, improperly configured, improperly installed, or nonfunctional components.
 - d. Summary of Installation Compliance Issues and Corrective Actions: Identify installation compliance issues and the corrective actions for each. Verify that issues noted have been corrected.
 - e. Evaluation of System Readiness for Startup: For each item of equipment for each system for which startup is anticipated, document in summary form acceptable to Owner completion of equipment model verification, preinstallation physical condition checks, preinstallation component verification checks, and completion of corrective actions for installation compliance issues.
2. Test data reports include the following:
 - a. "As-tested" system configuration. Complete record of conditions under which the test was performed, including, but not limited to, the status of equipment, systems, and assemblies; temporary adjustments and settings; and ambient conditions.
 - b. Data and observations, including, but not limited to, data trend logs, recorded during the tests.
 - c. Signatures of individuals performing and witnessing tests.
 - d. Data trend logs accumulated overnight from the previous day of testing.
3. Commissioning Compliance Issue Reports: Report as commissioning compliance issues results of tests and test demonstrations that do not comply with acceptance criteria. Report only one issue per commissioning compliance issue report. Use sequentially numbered facsimiles of commissioning compliance issue report form included in this Section, or other form approved by Owner. Distribute commissioning compliance issue reports to parties responsible for taking corrective action. Identify the following:

- a. Commissioning compliance issue report number. Assign unique, sequential numbers to individual commissioning compliance issue reports when they are created, to be used for tracking.
 - b. Action distribution list.
 - c. Report date.
 - d. Test number and description.
 - e. Equipment identification and location.
 - f. Briefly describe observations about the performance associated with failure to achieve acceptable results. Identify the cause of failure if apparent.
 - g. Diagnostic procedure or plan to determine the cause (include in initial submittal)
 - h. Diagnosis of fundamental cause of issues as specified below (include in resubmittal).
 - i. Fundamental cause of unacceptable performance as determined by diagnostic tests and activities.
 - j. When issues have been resolved, update and resubmit the commissioning issue report forms by completing Part 2. Identify resolution taken and the dates and initials of the persons making the entries.
 - k. Schedule for retesting.
4. Weekly progress reports include information for tests conducted since the preceding report and the following:
- a. Completed data forms.
 - b. Equipment or system tested, including test number, system or equipment tag number and location, and notation about the apparent acceptability of results.
 - c. Activities scheduled but not conducted per schedule.
 - d. Commissioning compliance issue report log.
 - e. Schedule changes for remaining Commissioning-Process Work, if any.
5. Data trend logs shall be initiated and running prior to the time scheduled for the test demonstration.
- a. Trend log data format shall be multiple data series graphs. Where multiple data series are trend logged concurrently, present the data on a common horizontal time axis. Individual data series may be presented on a segmented vertical axis to avoid interference of one data series with another, and to accommodate different axis scale values. Graphs shall be sufficiently clear to interpret data within the accuracy required by the acceptance criteria.
 - b. Attach to the data form printed trend log data collected during the test or test demonstration.
 - c. Record, print out, and attach to the data form operator activity during the time the trend log is running. During the time the trend log is running, operator intervention not directed by the test procedure invalidates the test results.
6. System Alarm Logs: Record and print out a log of alarms that occurred since the last log was printed. Evaluate alarms to determine if the previous day's work resulted in any conditions that are not considered "normal operation."

- a. Conditions that are not considered "normal operation" shall be reported on a commissioning issue report attached to the alarm log. Resolve as necessary. The intent of this requirement is to discover control system points or sequences left in manual or disabled conditions, equipment left disconnected, set points left with abnormal values, or similar conditions that may have resulted from failure to fully restore systems to normal, automatic control after test completion.

3.10 CERTIFICATE OF CONSTRUCTION-PHASE COMMISSIONING PROCESS COMPLETION

- A. When Contractor considers that construction-phase commissioning process, or a portion thereof which Owner agrees to accept separately, is complete, Contractor shall prepare and submit to Owner and Commissioning Authority through Architect a comprehensive list of items to be completed or corrected. Failure to include an item on such list does not alter Contractor's responsibility to complete commissioning process.
- B. On receipt of Contractor's list, Commissioning Authority will make an inspection to determine whether the construction-phase commissioning process or designated portion thereof is complete. If Commissioning Authority's inspection discloses items, whether included on Contractor's list, which is not sufficiently complete as defined in "Construction-Phase Commissioning Process Completion" Paragraph in the "Definitions" Article, Contractor shall, before issuance of the Certificate of Construction-Phase Commissioning Process Completion, complete or correct such items on notification by Commissioning Authority. In such case, Contractor shall then submit a request for another inspection by Commissioning Authority to determine construction-phase commissioning process completion.
- C. Contractor shall promptly correct deficient conditions and issues discovered during commissioning process. Costs of correcting such deficient conditions and issues, including additional testing and inspections, the cost of uncovering and replacement, and compensation for Architect's and Commissioning Authority's services and expenses made necessary thereby, shall be at Contractor's expense.
- D. When construction-phase commissioning process or designated portion is complete, Commissioning Authority will prepare a Certificate of Construction-Phase Commissioning Process Completion that shall establish the date of completion of construction-phase commissioning process. Certificate of Construction-Phase Commissioning Process Completion shall be submitted prior to requesting inspection for determining date of Substantial Completion.

END OF SECTION 019113

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final Completion procedures.
 - 3. List of incomplete items.
 - 4. Submittal of Project warranties.
 - 5. Final cleaning.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
 - 2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.2 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest-control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's or Owner's signature for receipt of submittals.
 - 5. Submit testing, adjusting, and balancing records.
 - 6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.
 - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.

5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
 6. Advise Owner of changeover in utility services.
 7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 9. Complete final cleaning requirements.
 10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report.
 5. Submit Final Completion photographic documentation.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
 2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 4. Submit list of incomplete items in the following format:
 - a. Web-Based Project Software Upload: Utilize software feature for creating and updating list of incomplete items (punch list).

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
1. Submit on digital media acceptable to Architect.
- E. Warranties in Paper Form:
1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.

- f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
- g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
- h. Clean flooring, removing debris, dirt, and staining; clean in accordance with manufacturer's instructions.
- i. Vacuum and mop concrete.
- j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean in accordance with manufacturer's instructions if visible soil or stains remain.
- k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
- l. Remove labels that are not permanent.
- m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
- q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
- r. Clean strainers.
- s. Leave Project clean and ready for occupancy.

- C. Construction Waste Disposal: Comply with waste-disposal requirements in other sections.

3.2 CORRECTION OF THE WORK

- A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Section 019113 "General Commissioning Requirements" for verification and compilation of data into operation and maintenance manuals.
 - 3. Section 260010 "Supplemental Requirements for Electrical" for requirements for Electrical Preventative Maintenance (EPM) Program binders that form part of the operation and maintenance data of this Section and include additional requirements for operation, maintenance, and emergency procedures, for electrical systems and equipment.

1.2 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect and Commissioning Authority will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:

1. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.
 1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.
- E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.4 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

- b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.5 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual to contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Architect.
 7. Name and contact information for Commissioning Authority.
 8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 9. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation in accordance with ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.6 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
 1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
 2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
 3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.7 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
 1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 1. Fire.
 2. Flood.
 3. Gas leak.

4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

1.8 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

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

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

1.9 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

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

- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.
- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of maintenance manuals.

1.10 PRODUCT MAINTENANCE MANUALS

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 230800 - COMMISSIONING OF HVAC

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes Cx process requirements for the following HVAC systems, assemblies, and equipment:
 - 1. Cooling generation systems.
 - 2. Air-handling systems.
 - 3. Air distribution systems.
 - 4. Heating and cooling terminal and unitary equipment.
 - 5. HVAC controls.
 - 6. TAB verification.

- B. Related Requirements:
 - 1. Section 019113 "General Commissioning Requirements" for general Cx process requirements and CxA responsibilities.
 - 2. For construction checklists, comply with requirements in various Division 23 Sections specifying HVAC systems, system components, equipment, and products.

1.2 DEFINITIONS

- A. BAS: Building automation system.

- B. Cx: Commissioning, as defined in Section 019113 "General Commissioning Requirements."

- C. CxA: Commissioning Authority, as defined in Section 019113 "General Commissioning Requirements."

- D. IgCC: International Green Construction Code.

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

- F. TAB: Testing, adjusting, and balancing.

1.3 INFORMATIONAL SUBMITTALS

- A. Construction Checklists:

1. Draft Cx plan, including draft construction checklists to be prepared by CxA under Section 019113 "General Commissioning Requirements." Div. 23 Subcontractor is to review Construction Checklist in accordance with requirements in Section 019113 "General Commissioning Requirements" and ASHRAE 202 and to resolve any issues with the CxA.
 2. Cx plan, including material, installation, and performance construction checklists for systems, assemblies, subsystems, equipment, and components relating to BAS and HVAC to be part of the Cx process and in accordance with requirements in Section 019113 "General Commissioning Requirements and ASHRAE 202."
- B. Test Equipment and Instruments: For all test equipment and instruments to be used in conducting Cx tests by Div. 23 Subcontractor, provide the following:
1. Equipment/instrument identification number.
 2. Planned Cx application or use.
 3. Manufacturer, make, model, and serial number.
 4. Calibration history, including certificates from agencies that calibrate the equipment and instrumentation.
 5. Equipment manufacturers' proprietary instrumentation and tools. For each instrument or tool, identify the following:
 - a. Instrument or tool identification number.
 - b. Equipment schedule designation of equipment for which the instrument or tool is required.
 - c. Manufacturer, make, model, and serial number.
 - d. Calibration history, including certificates from agencies that calibrate the instrument or tool, where appropriate.

1.4 QUALITY ASSURANCE

- A. BAS Testing Technician Qualifications: Technicians performing BAS Construction Checklist verification tests, Construction Checklist verification test demonstrations, Cx tests, and Cx test demonstrations are to have the following minimum qualifications:
1. Journey level or equivalent skill level with knowledge of BAS, HVAC, electrical concepts, and building operations.
 2. Minimum five years' experience installing, servicing, and operating systems manufactured by approved manufacturer.
 3. International Society of Automation (ISA)-Certified Control Systems Technician (CCST) Level I.
- B. HVAC Testing Technician Qualifications: Technicians to perform HVAC Construction Checklist verification tests, Construction Checklist verification test demonstrations, Cx tests, and Cx test demonstrations shall have the following minimum qualifications:
1. Journey level or equivalent skill level; vocational school four-year-program graduate or an Associate's degree in mechanical systems, air conditioning, or similar field. Degree may be offset by three years' experience in servicing mechanical systems in the HVAC industry. Generally, required knowledge

includes HVAC systems, electrical concepts, building operations, and application and use of tools and instrumentation to measure performance of HVAC equipment, assemblies, and systems.

2. Minimum five years' experience that is to include installing, servicing, and operating systems manufactured by approved manufacturer.

C. Testing Equipment and Instrumentation Quality and Calibration:

1. Capable of testing and measuring performance within the specified acceptance criteria.
2. Be calibrated at manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used.
3. Be maintained in good repair and operating condition throughout duration of use on Project.
4. Be recalibrated/repared if dropped or damaged in any way since last calibrated.

D. Proprietary Test Instrumentation and Tools:

1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the Cx process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate, adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, shall comply with the following:
 - a. Be calibrated by manufacturer with current calibration tags permanently affixed.
 - b. Include a separate list of proprietary test instrumentation and tools in operation and maintenance manuals.
2. HVAC proprietary test instrumentation and tools become property of Owner at the time of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 Cx PROCESS:

- A. Perform Cx process in accordance with Section 019113 "General Commissioning Requirements" for BAS and HVAC and in accordance with the following:
 1. ASHRAE 202.
 2. Commissioning standards acceptable to the authority having jurisdiction.

3.2 CONSTRUCTION CHECKLISTS

- A. Preliminary detailed construction checklists are to be prepared under Section 019113 "General Commissioning Requirements" for each BAS and HVAC system, assembly,

subsystem, equipment, and component required to be commissioned, as detailed in ASHRAE 202. Contractor performs the following:

1. Review BAS and HVAC preliminary construction checklists and provide written comments on checklist items where appropriate.
 2. Return preliminary Construction Checklist with review comments within 10 days of receipt.
 3. When review comments have been resolved, the CxA will provide final construction checklists marked "Approved for Use, (date)."
 4. Use only construction checklists marked "Approved for Use, (date)" When performing tests. Mark construction checklists in the appropriate place as indicated Project events are completed, and provide pertinent details and other information.
- B. Prepare preliminary detailed construction checklists for each BAS and HVAC system, assembly, subsystem, equipment, and component required to be commissioned, as detailed in ASHRAE 202.
1. Submit preliminary construction checklists to CxA and Designer for review.
 2. When review comments have been resolved, the CxA will provide final construction checklists marked "Approved for Use, (date)."
 3. Use only construction checklists, marked "Approved for Use, (date)" when performing tests. Mark construction checklists in the appropriate place, as indicated Project events are completed and provide pertinent details and other information.
- C. Additional systems required to be commissioned:
1. Cooling generation systems, including the following:
 - a. Direct-expansion refrigeration systems.
 2. Air-handling systems, including the following:
 - a. Supply, return, and exhaust air fans, motors, and drives.
 - b. Automatic and gravity dampers.
 - c. Heating and cooling devices.
 - d. Air filters.
 - e. Hangers and supports.
 - f. Interlock between air-handling system and fire/smoke alarm system.
 3. Air duct systems, including the following:
 - a. Duct systems.
 - b. Air-duct accessories, including volume dampers, fire and smoke dampers, turning vanes, sound attenuators, and flexible connectors.
 - c. Duct-mounted access doors and panels.
 - d. Hangers and supports.
 4. Refrigerant piping, including the following:

- a. Refrigerant piping, fittings, and specialties.
 - b. Refrigerant charge.
 - c. Sleeves and sleeve seals.
 - d. Meters and gauges.
 - e. General-duty and specialty valves.
 - f. Hangers and supports.
5. Heating and cooling terminal and unitary equipment, including the following:
- a. Unit heaters.
 - b. Unitary heating and cooling equipment.
6. Vibration isolation systems.
7. Controls and instrumentation, including the following:
- a. Controllers and sensors.
8. TAB Verification:
- a. Airflow.
 - b. Space pressurization.
9. Documentation:
- a. Mechanical systems manuals.
 - b. Documentation of required commissioning.
10. Mechanical insulation, including the following:
- a. Duct and plenum insulation.
 - b. HVAC piping insulation.

3.3 Cx TESTING PREPARATION

- A. Certify that HVAC systems, subsystems, and equipment have been installed, calibrated, and started and that they are operating in accordance with the Contract Documents and approved submittals.
- B. Certify that HVAC instrumentation and control systems have been completed and calibrated, point-to-point checkout has been successfully completed, and systems are operating in accordance with their design sequence of operation, Contract Documents, and approved submittals. Certify that all sensors are operating within specified accuracy and all systems are set to and maintaining set points as required by the design documents.
- C. Certify that TAB procedures have been completed and that TAB reports have been submitted, discrepancies corrected, and corrective work approved.
- D. Set systems, subsystems, and equipment into operating mode to be tested in accordance with approved test procedures (e.g., normal shutdown, normal auto

position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

3.4 Cx TEST CONDITIONS

- A. Perform tests using design conditions, whenever possible.
 - 1. Simulated conditions may, with approval of Architect, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by CxA, and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.
 - 2. Cx test procedures may direct that set points be altered when simulating conditions is impractical.
 - 3. Cx test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.
- B. If tests cannot be completed because of a deficiency outside the scope of the HVAC system, document the deficiency and report it to Architect. After deficiencies are resolved, reschedule tests.
- C. If seasonal testing is specified, complete appropriate initial performance tests and documentation, and schedule seasonal tests.

3.5 Cx TESTS COMMON TO HVAC SYSTEMS

- A. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions, to verify compliance with acceptance criteria.
- B. Test systems, assemblies, subsystems, equipment, and components for operating modes, interlocks, control responses, responses to abnormal or emergency conditions, and response in accordance with acceptance criteria.
- C. Coordinate schedule with, and perform Cx activities at the direction of, CxA.
- D. Comply with Construction Checklist requirements, including material verification, installation checks, startup, and performance test requirements specified in Division 23 Sections specifying HVAC systems and equipment.
- E. Provide technicians, instrumentation, tools, and equipment to perform and document the following:
 - 1. Cx Construction Checklist verification tests.
 - 2. Cx Construction Checklist verification test demonstrations.

3.6 CONSTRUCTION CHECKLIST EXAMPLES

A. Vibration Isolation in HVAC Systems:

1. Prerequisites: Acceptance of results of construction checklists for vibration control devices specified in Section 230548.13 "Vibration Controls for HVAC Piping and Equipment".
2. Components to Be Tested:
 - a. Vibration isolation control devices in HVAC systems.
 - b. Support systems.
3. Test Purpose: Evaluate effectiveness of vibration isolation control devices.
4. Test Conditions, Constant Speed Equipment: Measure vibration of the facility structure at three locations designated by Owner's witness while the isolated equipment operates.
5. Test Conditions, Variable Speed Equipment: Measure vibration of the facility structure at three locations designated by Owner's witness at the following operating conditions:
 - a. Maximum speed.
 - b. Minimum speed.
 - c. Critical speed.
6. Acceptance Criteria: Structure-borne vibration not to exceed specified performance.

3.7 TAB VERIFICATION

- A. Prerequisites: Completion of "Examination" Article requirements and correction of deficiencies, as specified in Section 230593 "Testing, Adjusting, and Balancing for HVAC."
- B. Completion of "Preparation" Article requirements for preparation of a TAB plan that includes strategies and step-by-step procedures, and system-readiness checks and reports, as specified in Section 230593 "Testing, Adjusting, and Balancing for HVAC."
- C. Scope: HVAC air systems piping systems.
- D. Purpose: Differential flow relationships intended to maintain air pressurization differentials between the various areas of Project.
- E. Conditions of the Test:
 1. Cx Test Demonstration Sampling Rate: As specified in "Inspections" Article in Section 230593 "Testing, Adjusting, and Balancing for HVAC."
 2. Systems operating in full heating mode.
 3. Systems operating in full cooling mode.
 4. For measurements at air-handling units with economizer controls; systems operating in economizer mode with 100 percent outside air.

F. Acceptance Criteria:

1. Under all conditions, rechecked measurements comply with "Inspections" Article in Section 230593 "Testing, Adjusting, and Balancing for HVAC."
2. Additionally, no rechecked measurement shall differ from measurements documented in the final report by more than the tolerances allowed.
3. Under all conditions, where the Contract Documents indicate a differential in airflow between supply and exhaust and/or return in a space, the differential relationship shall be maintained.

3.8 TERMINAL UNIT EQUIPMENT Cx TESTS

A. VAV Terminal Air Units with Coils:

1. Prerequisites: Installation verification of the following:
 - a. Occupancy Input Device: Occupancy sensor.
 - b. Occupancy Output Device: DDC system binary output.
 - c. Room Temperature Input Device: Room thermostat.
 - d. Room Temperature Output Device: Electronic damper.
 - e. Display the following at the operator's workstation:
 - 1) Room/area served.
 - 2) Room occupied/unoccupied.
 - 3) Room temperature indication.
 - 4) Room temperature set point.
 - 5) Room temperature set point, occupied.
 - 6) Room temperature set point, unoccupied.
 - 7) Air-damper position as percentage open.
2. Scope: VAV terminal air units in supply-air systems, and associated controls.
3. Purpose:
 - a. Occupancy-dependent room temperature set-point reset.
 - b. Room temperature control.
4. Conditions of the Test:
 - a. Cx Test Demonstration Sampling Rate: 10 percent of each model/size unit.
 - b. Temperature Control - Occupied: Start with the room unoccupied. Occupy the room and observe the change to occupied status. Observe temperature control until room temperature is stable at occupied set point, plus or minus 1.0 deg F.
 - c. Temperature Control - Unoccupied: Start with the room occupied. Vacate the room and observe the change to unoccupied status. Observe temperature control until room temperature is stable at unoccupied set point, plus or minus 1.0 deg F.
5. Acceptance Criteria:

- a. Temperature Control - Occupied:
 - 1) Control system status changes from "occupied" to "unoccupied" after the specified time.
 - 2) Room temperature is stable at occupied set point, plus or minus 1.0 deg F within 10 minutes of occupancy. Room temperature does not overshoot or undershoot set point by more than 2.0 deg F during transition.
- b. Temperature Control - Unoccupied:
 - 1) Control system status changes from "unoccupied" to "occupied" immediately.
 - 2) Room temperature is stable at unoccupied set point, plus or minus 1.0 deg F within 30 minutes of occupancy.

3.9 AIR-HANDLING SYSTEM Cx TESTS

A. Supply Fan(s) Variable-Volume Control:

1. Prerequisites: Installation verification of the following:
 - a. Volume-Control Input Device: Static-pressure transmitter or Differential-pressure switch sensing supply-duct static pressure referenced to conditioned-space static pressure.
 - b. Volume-Control Output Device: DDC system analog output to modulating damper actuator.
 - c. Volume-Control Input Device: Static-pressure transmitter or Differential-pressure switch sensing supply-duct static pressure referenced to conditioned-space static pressure.
 - d. Volume-Control Output Device: DDC system analog output to motor speed controller. Set variable-speed drive to minimum speed when fan is stopped.
 - e. High-Pressure Input Device: Static-pressure transmitter sensing supply-duct static pressure referenced to static pressure outside the duct.
 - f. High-Pressure Output Device: DDC system binary output to alarm panel and motor starter.
 - g. Display the following at the operator's workstation:
 - 1) Supply-fan-discharge static-pressure indication.
 - 2) Supply-fan-discharge static-pressure set point.
 - 3) Supply-fan airflow rate.
 - 4) Supply-fan speed.
2. Scope: VAV supply fan units and associated controls.
3. Purpose:
 - a. Supply-air discharge static pressure control.
 - b. Response to excess supply-air discharge static pressure condition.
4. Conditions of the Test:

- a. Minimum supply-air flow.
 - b. Midrange Supply-Air Flow: 50 to 60 percent of maximum.
 - c. Maximum supply-air flow.
 - d. Excess supply-air discharge static pressure.
5. Acceptance Criteria:
- a. At all supply-air flow rates, and during changes in supply-air flow, discharge air static pressure is at set point plus or minus 2 percent.
 - b. Fan stops and an alarm is initiated at the operator's workstation when supply-air discharge static pressure is at the excess static pressure, plus or minus 2 percent.
- B. Air-Handler Mixed-Air Control:
1. Prerequisites: Installation verification of the following:
 - a. Minimum Position Input Device: DDC system time schedule .
 - b. Output Device: DDC system analog output modulating damper actuator(s).
 - c. Heating Reset Input Device: DDC system software .
 - d. Supply-Air Temperature Input Device: Electronic temperature sensor.
 - e. Cooling Reset Input Device: Outdoor- and return-air, duct-mounted electronic temperature sensors.
 - f. Display the following at the operator's workstation:
 - 1) Mixed-air-temperature indication.
 - 2) Mixed-air-temperature set point.
 - 3) Mixed-air damper position.
 2. Scope: Air handler with mixed-air control and associated controls.
 3. Purpose:
 - a. Occupied time control.
 - b. Minimum damper position control.
 - c. Heating reset control.
 - d. Supply-air temperature control.
 - e. Cooling reset control.
 - f. Unoccupied time control.
 4. Conditions of the Test:
 - a. Occupied Time Control: Start in unoccupied schedule. Advance to occupied schedule time.
 - b. Minimum Damper Position Control: Command system to mode in which minimum damper position is required.
 - c. Heating Reset Control: Create a call for heating.
 - d. Supply-Air Temperature Control: Override mixed-air temperature set point to a value 2.0 deg F above current supply-air temperature.
 - e. Cooling Reset Control: Override outdoor-air enthalpy to a value that exceeds return-air enthalpy.
 - f. Unoccupied Time Control: Advance to unoccupied schedule time.

- g. Control Data Trend Log: Set up a data trend log of the following input device values and output device commands. Record data at hourly intervals. Submit trend data for 24-hour periods in which natural conditions require heating reset control, supply-air temperature control, and cooling reset control.
 - 1) Minimum position input device.
 - 2) Heating reset input device.
 - 3) Supply-air temperature input device.
 - 4) Cooling reset input device.

- 5. Acceptance Criteria:
 - a. Occupied Time Control: Mixed-air control is active in occupied mode.
 - b. Minimum Damper Position Control: Controller positions outdoor-air dampers to minimum position.
 - c. Heating Reset Control: Controller sets outdoor-air dampers to minimum position.
 - d. Supply-Air Temperature Control: Controller modulates outdoor-, return-, and relief-air dampers to maintain temporary supply-air temperature set point, plus or minus 1.0 deg F.
 - e. Cooling Reset Control: Controller sets outdoor-air dampers to minimum position when outdoor-air enthalpy exceeds return-air enthalpy.
 - f. Unoccupied Time Control: Controller positions outdoor- and relief-air dampers closed and return-air dampers open.
 - g. Control Data Trend Log: Data verify control in accordance with sequence of control.

END OF SECTION 230800

SECTION 260800 - COMMISSIONING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Electrical equipment connected to Normal electrical systems, including the following:
 - a. Secondary service electrical systems.
 - b. Distribution and branch-circuit panelboards.
2. Electrical equipment connected to Essential electrical systems that provide an alternative source of power in the absence of power from the Normal electrical system, including the following:
 - a. Secondary service electrical systems.
 - b. Distribution and branch-circuit panelboards.
 - c. Generators.
3. Controls and instrumentation, including the following:
 - a. Equipment monitoring systems.
 - b. Energy monitoring and control systems.
 - c. Electrical metering and metering system.
 - d. Lighting control systems.
 - e. Security systems.
 - f. Fire-alarm systems.
4. Systems testing and verification, including Normal and Standby electrical systems, and transitions from Normal to Standby electrical systems and back.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 DEFINITIONS

- A. BoD: Basis-of-Design Document, as defined in Section 019113 "General Commissioning Requirements."
- B. Cx: Commissioning, as defined in Section 019113 "General Commissioning Requirements."

- C. CxA: Commissioning Authority, as defined in Section 019113 "General Commissioning Requirements."
- D. OPR: Owner's Project Requirements, as defined in Section 019113 "General Commissioning Requirements."
- E. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they mean "as-built" systems, assemblies, subsystems, equipment, and components.

1.3 INFORMATIONAL SUBMITTALS

- A. Construction Checklists by CxA: Draft construction checklists will be created by CxA for Contractor review.
- B. Construction Checklists by Contractor: Include the following and comply with requirements in Section 019113 "General Commissioning Requirements" for construction checklists:
 - 1. Instrumentation and control for electrical systems.
 - 2. Instrumentation and control for lighting control systems.
 - 3. Low-voltage power cables.
 - 4. Control voltage power cables.
 - 5. Electrical feeders and branch circuits.
 - 6. Low-voltage surge protective devices.
 - 7. Metering devices.
 - 8. Molded-case circuit breakers.
 - 9. Low-voltage power circuit breakers.
 - 10. Panelboards.
 - 11. Receptacles and devices.
 - 12. Automatic transfer switches.
 - 13. Variable-frequency drives.
 - 14. AC synchronous motors and generators.
 - 15. AC induction motors and generators.
 - 16. Battery systems.
 - 17. Battery chargers.
 - 18. Lighting.
 - 19. Vehicle charging equipment.

1.4 QUALITY ASSURANCE

- A. Testing Equipment and Instrumentation Quality and Calibration: For test equipment and instrumentation required to perform electrical Cx work, perform the following:
 - 1. Submit test equipment and instrumentation list. For each equipment or instrument, identify the following:
 - a. Equipment/instrument identification number.
 - b. Planned Cx application or use.

- c. Manufacturer, make, model, and serial number.
 - d. Calibration history, including certificates from agencies that calibrate the equipment and instrumentation.
- 2. Test equipment and instrumentation must meet the following criteria:
 - a. Capable of testing and measuring performance within the specified acceptance criteria.
 - b. Be calibrated at manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used.
 - c. Be maintained in good repair and operating condition throughout duration of use on Project.
 - d. Be recalibrated/repared if dropped or damaged in any way since last calibrated.
- B. Proprietary Test Instrumentation and Tools:
 - 1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the Cx process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate, adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, perform the following:
 - a. Submit proprietary instrumentation and tools list. For each instrument or tool, identify the following:
 - 1) Instrument or tool identification number.
 - 2) Equipment schedule designation of equipment for which the instrument or tool is required.
 - 3) Manufacturer, make, model, and serial number.
 - 4) Calibration history, including certificates from agencies that calibrate the instrument or tool, where appropriate.
 - b. Include a separate list of proprietary test instrumentation and tools in operation and maintenance manuals.
 - c. Electrical proprietary test instrumentation and tools become property of Owner at the time of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION CHECKLISTS

- A. Prepare detailed construction checklists for electrical systems, subsystems, equipment, and components. Complete and submit construction checklists.

3.2 CONSTRUCTION CHECKLIST REVIEW

- A. Review and provide written comments on draft construction checklists. CxA will create required draft construction checklists and provide them to Contractor.
- B. Return draft Construction Checklist review comments within 10 days of receipt.
- C. When review comments have been resolved, CxA will provide final construction checklists, marked "Approved for Use, (date)."
- D. Use only construction checklists, marked "Approved for Use, (date)."

3.3 GENERAL TESTING REQUIREMENTS

- A. Certify that electrical systems, subsystems, and equipment have been installed, calibrated, and started and that they are operating according to the Contract Documents and approved Shop Drawings and submittals.
- B. Certify that electrical instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents and approved Shop Drawings and submittals, and that pretest set points have been recorded.
- C. Set systems, subsystems, and equipment into operating mode to be tested according to approved test procedures (for example, normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).
- D. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions to verify compliance with acceptance criteria.
- E. Test systems, assemblies, subsystems, equipment, and components operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and response according to acceptance criteria.
- F. Construction Checklists: Prepare and submit detailed construction checklists for electrical systems, subsystems, equipment, and components.
 - 1. Contributors to development of construction checklists must include, but are not limited to, the following:
 - a. Electrical systems and equipment installers.
 - b. Electrical instrumentation and controls installers.
- G. Perform tests using design conditions, whenever possible.
 - 1. Simulated conditions may, with approval of Architect, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by CxA, and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.

2. Cx test procedures may direct that set points be altered when simulating conditions is impractical.
 3. Cx test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.
- H. If tests cannot be completed because of a deficiency outside the scope of the electrical system, document the deficiency and report it to Owner. After deficiencies are resolved, reschedule tests.
- I. If seasonal testing is specified, complete appropriate initial performance tests and documentation and schedule seasonal tests.
- J. Coordinate schedule with, and perform Cx activities at the direction of the CxA.
- K. Comply with Construction Checklist requirements, including material verification, installation checks, startup, and performance tests requirements specified in Sections specifying electrical systems and equipment.
- L. Provide qualified testing and inspecting agency personnel in accordance with Section 260010 "Supplemental Requirements for Electrical," instrumentation, tools, and equipment to complete and document the following:
1. Performance tests.
 2. Demonstration of a sample of performance tests.
 3. Cx tests.
 4. Cx test demonstrations.

3.4 Cx TESTS FOR ELECTRICAL SYSTEMS

- A. Verification of Normal Electrical System Operation:
1. Prerequisites: Acceptance of results for construction checklists for Division 26 electrical components associated with Normal electrical system.
 2. Equipment and Systems to Be Tested: Division 26 electrical equipment.
 3. Test Purpose: Verify operation of Normal electrical system.
 4. Test Conditions: Energize components of Normal electrical system, one at a time.
 5. Acceptance Criteria: Proper operation of Normal electrical system over a 48-hour period.
- B. Verification of Essential Electrical System Operation:
1. Prerequisites:
 - a. Acceptance of results for construction checklists for Division 26 electrical components associated with Essential electrical system.
 - b. Completion of "Verification of Normal Electrical System Operation" tests.
 2. Equipment and Systems to Be Tested: Division 26 electrical equipment.

3. Test Purpose: Verify operation of Essential electrical system.
 4. Test Conditions:
 - a. Energize components of Normal electrical system.
 - b. Simulate a failure of Normal electrical system.
 5. Acceptance Criteria: Transfer of power from Normal to Essential electrical system within OPR.
- C. Verification of Control and Instrumentation:
1. Prerequisites: Acceptance of results for construction checklists.
 - a. Section 260943.23 "Relay-Based Lighting Controls."
- D. Test Purpose: Verify operation of control and monitoring systems for Normal and Essential electrical systems.
- E. Test Conditions:
1. Energize components of Normal electrical system.
 2. Test operation of equipment.
- F. Acceptance Criteria: Operation of equipment according to OPR.

END OF SECTION 260800