

PROJECT MANUAL
SPECIFICATIONS
DRAWINGS

**BUILDING 803 CONVERSION
FORT HARRISON STATE PARK
DEPARTMENT OF NATURAL RESOURCES**

5753 Glenn Rd
INDIANAPOLIS, IN 46216



Owner:

**Indiana Department of Natural Resources
Division of State Parks**
Indiana Government Center South
402 W. Washington Street, Rm. W267
Indianapolis, IN 46204

Designed and Prepared By:

**Indiana Department of Natural Resources
Division of Engineering**

September 5, 2019

IDNR Project ENG1803727638

UNDER \$150,000
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**STATE OF INDIANA SOLICITATION FOR QUOTATION
 WORK ESTIMATED TO BE LESS THAN \$150,000 BY
 THE DEPARTMENT OF ADMINISTRATION
 PUBLIC WORKS DIVISION**

State Form 21234 (R15/9-15) / DAPW 35

SEALED BIDS FOR:

INDIANA DEPARTMENT OF NATURAL RESOURCES
Building 803 Conversion
Fort Harrison State Park
5753 Glenn Road, Indianapolis, IN 46216
Project No: ENG1803727638
Requisition No: 105143

Will be received at the Department of Natural Resources, Division of Engineering, 402 W. Washington St., Room W299, Indianapolis, IN 46204 – Attn: DNR BID CLERK until:

(Indianapolis time) 4:01 PM	(Date) 10/17/2019
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Michael Johnson	317-233-1101	September 5, 2019
4 Contact Person	Phone Number	Date

PLEASE NOTE: ANY PROJECT ESTIMATED UNDER \$150,000 WILL BE PUBLICLY OPENED AT 10:00 A.M. ON THE FRIDAY FOLLOWING THE ABOVE DATE. IN THE EVENT THAT THE FRIDAY IS A STATE HOLIDAY, THE BID WILL BE OPENED AT 10:00 A.M. ON THE FIRST BUSINESS DAY THEREAFTER.

EXCEPTION: ANY PROJECT NUMBERS STARTING WITH "SPW" WILL BE OPENED AT 10:30 AM ON THE DATE BIDS ARE DUE

Bidders are strongly encouraged to attend the PRE-BID MEETING scheduled for 10:00 a.m. local time, Tuesday September 24, 2019, at the project site.

INSTRUCTIONS FOR QUOTATIONS
ESTIMATED TO BE LESS THAN ONE HUNDRED FIFTY THOUSAND DOLLARS

Submit your quotation for furnishing all labor, and materiel to repair, replace and/or install the work called for in accompanying instructions for quotations, general conditions, specifications and/or drawings.

1. GENERAL

a. This work is estimated by the Department of Administration, Public Works Division to be less than \$150,000.00. Bid must comply with the below listed requirements and utilize DAPW Form 35.

b. Prequalification is not required.

2. TITLE AND DEFINITIONS

a. Said building and/or the land upon which it stands are the property of State of Indiana, and the making of the contract for this project is the duty of the Commissioner, Department of Administration, acting with the approval of the Governor and through the Director, Public Works as required by IC 4-13.6. All references to the title owner of said property hereinafter will be by the term "State" and all references to the person, firm, or corporation awarded the contract for the project will be by the term "Contractor".

b. The terms bid and quotation as used in these instructions is synonymous.

3. PRE-QUOTATION, QUOTATION AND POST QUOTATION REQUIREMENTS

a. Prior to preparing and submitting a quotation, the Contractor is encouraged to visit the project and thoroughly familiarize himself with the work to be done and with existing conditions to be met. The successful Contractor will not be allowed any extra compensation for any matter or thing which the Contractor could have observed prior to the preparation and submitting of his quotation.

b. Should any question arise during the preparation of the quotation concerning the true meaning of any part of the plans, specifications or other documents, the Contractor shall, if time permits, submit a written request to the Public Works Division for interpretation. The Public Works Division will make an interpretation and it will be mailed to each interested party. Issuance of all clarifications or addenda shall be by the Designer and/or Public Works Division no later than seven (7) calendar days prior to the scheduled date for quotation.

c. All correspondence pertaining to this contract shall carry both the project description and requisition number.

d. The Contractor shall use the enclosed contract as his quotation form. Quotation form DAPW 35 (Last Page) must be enclosed in a sealed envelope. The sealed envelope must be marked as described in paragraph g.

e. Quotations must have original hand written signatures of authorized representatives of the bidder. The bidder shall print or type his company's name and give his price in words and figures, sign his name, print his name, and print his title and company name on the quotation form. No items involved in the bid may be changed or corrected after the bid opening.

f. Alternate amount(s) shall be listed where indicated. Add Alternates are not to be included in the Base Quotation Scope of Work. Deduct Alternates are to be included in the Base Bid Scope of Work. Unit prices and/or Equipment List shall be included with quotation as required and signed. Note that signing this document is acknowledgment of procurement of all addenda and certification by bidder that the quote recognized all items in all addenda.

g. The quotation form, and any other forms which may be required by the specifications, must be submitted in a single sealed envelope. The envelope must be plainly marked with the name of bidder, project description, requisition number, bid time, and bid date. Quotation shall be rejected if all required documents are not in the single sealed envelope, or if the envelope does not identify the material as a quotation.

h. There will be no purchase order issued for this work until a W-9 Form is completed and returned to Public Works. The W-9 form may be submitted with your bid.

i. If the contractor (bidder) is not currently registered and does not have a Bidder ID number with the Department of Administration, the contractor is to register online at <http://www.in.gov/idoa/2464.htm> to obtain a Bidder ID number.

j. The Contractor shall perform a minimum of 15% of the value of work (measured in dollars of the total contract price) with his own forces, and not more than 85% of the value of work is to be subcontracted.

4. INDIVIDUAL QUOTATIONS SHALL BE REJECTED BY THE DIRECTOR OF PUBLIC WORKS FOR THE FOLLOWING REASONS (IC 4-13.6-5-2; IC 4-13.6-6-1; 25 IAC 2-6-5)

- a. If the envelope is not sealed at the time of submission; if the envelope does not clearly identify the requisition number and description of work; if the name of the bidder is not clearly indicated on the outside of the envelope and/or if the envelope is not date and time stamped by Public Works Division prior to the stated time for receipt of bids.
- b. If the bidding contractor is under suspension by the Director of Public Works or by the Public Works Certification Board.
- c. If the bidding contractor is a trust and does not identify all beneficiaries and empowered settlors of the trust.

5. INDIVIDUAL QUOTATIONS MAY BE REJECTED BY THE DIRECTOR OF PUBLIC WORKS FOR THE FOLLOWING REASONS (25 IAC 2-6-5)

- a. If the Contractor's Bid/Contract (DAPW 35 Last Page) is not signed as required by these instructions.
- b. If all required bid or alternate(s) amounts, or unit prices are not submitted with the bid when specifically called for by the specifications issued for the project.
- c. When the bidder adds any provision reserving the right to accept or reject the award, or if the bidder adds conditions or alternates to his bid not requested (voluntary alternates), or if there are unauthorized additions or irregularities of any kind which tend to make the proposal incomplete, indefinite or ambiguous as to its meaning or amount.
- d. When no bids received are under or within funds that can be appropriated, or when situations develop which make it impossible or not practical to proceed with the proposed work.
- e. If, subsequent to the opening of the bids, facts exist which would disqualify the bidder, or that such bidder is not deemed by the Director of Public Works to be responsive or responsible.

6. NOTICE OF AWARD

- a. Prior to execution of the Contract, the State of Indiana will issue to the successful Bidder a letter stating that his bid was the lowest responsible and responsive bid and that the enclosed contract document is submitted to him for his consideration. If he finds it in accordance with the bid documents, it is to be returned to Public Works Division by certified mail or in person within ten (10) calendar days after receipt for further execution and with the caution that a contract will not exist until it is signed by all signatories required.

GENERAL CONDITIONS
FOR CONTRACTS ESTIMATED AT LESS THAN \$150,000
AND BASED UPON QUOTATIONS

1. General Conditions.

A. Control and possession of the premises shall remain with the Owner (State) and the Contractor shall respect the State's rights therein. The Contractor shall be responsible for and make good any and all damage to the Owner's property due directly or indirectly to his operations.

B. The Contractor shall be required to conform to the rules and regulations of the Owner, pertaining to receiving materials, equipment, and the conduct of its employees while on the premises. The Contractor shall be held responsible for the actions of its employees, together with their conformance with the rules and regulations of the Owner.

C. The premises shall be kept in a clean and orderly condition by the Contractor. At no time shall any great accumulation of debris be allowed on the site. The Contractor shall keep all debris hauled away from the site and properly dispose of same. At no time shall any material, equipment or tools be placed in such manner as to prevent the usual usage of the premises by the Owner. At the conclusion of the work, the premises shall be restored as originally found by the Contractor.

D. All building construction work, alterations, repairs, mechanical installations, electrical installations, and appliances connected therewith shall comply with all State Building Rules and Regulations, Local ordinances and Federal laws or other statutory provisions, as if they are a part of these contract conditions.

E. The Contractor shall employ only competent employees skilled in the work and shall enforce good order among them. The Contractor shall be called upon to dismiss any employee when, in the opinion of the Owner, the employee is disobedient, incompetent, unfaithful, disrespectful, or otherwise exhibits conduct inappropriate to this state property.

F. Any item not specifically described, but necessary for a complete and satisfactory installation shall be considered as implied and it shall be required. The plans and specifications are incorporated into these documents by reference.

G. All excavation creating a trench of five (5) or more feet in depth shall strictly adhere to the shoring and other safety requirements called for and described under OSHA Regulation 29 CFR- J.1926, subpart 'P': for trench safety systems.

H. The Contractor shall guarantee that all materials are new and that all work, workmanship and materials shall be free of defects for one year from date of acceptance by Director, Public Works. Any such defects that appear within said one year guarantee period shall be repaired or replaced by the Contractor as quickly as practicable at no charge to the Owner.

I. The contract amount and the term of the contract can be adjusted only by written change orders signed by Director, Public Works. Verbal authorizations are not binding upon the State.

J. The State may retain ten percent (10%) of the partial payments requested by the Contractor until the work is complete.

K. The Contractor shall do everything required by this agreement, the General Conditions of the contract, specifications and/or the drawings attached as Appendix "A".

L. The Contractor must perform at least fifteen (15) percent of the total Contract Sum of the Work with his own forces.

2. Conflict of Interest. As used in this section:

"Immediate family" means the spouse, partner, housemate or the unemancipated children of an individual, as defined by 42 Indiana Administrative Code 1-3-13.

"Interested party," means:

1. The individual executing this Contract;
2. An individual who has an ownership interest of three percent (3%) or more of the Contractor, if the Contractor is not an individual; or
3. Any member of the immediate family of an individual specified under Subdivision 1 or 2.

"State" means the Indiana Department of Administration.

"State employee" means a state employee, a special state appointee or a state officer, as defined by IC 4-2-6-1(a) (9), (a) (18) and (a) (19), respectively.

A. The Contractor covenants that it neither has, nor will it have, a direct or indirect financial interest by way of an interested party in any other contract connected or associated with this Contract. The Contractor further represents and warrants that no state employee, who is an interested party of the Contractor as sole proprietor, or who serves as an officer, director, trustee, partner or employee of the Contractor as a legal business entity, participated in any decision or vote of any kind in the award of this Contract. As such and by the execution of this Contract, the Contractor represents and warrants that the result of this Contract does not and will not create a conflict of interest under IC 4-2-6-9 or IC 4-2-6-10.5.

B. The State may cancel this Contract, without recourse by the Contractor, if an interested party is a state employee and a violation of IC 4-2-6-9 or IC 4-2-6-10.5 has occurred.

C. The State will not exercise its right of cancellation under Section B above, if the Contractor provides the State an opinion from the State Ethics Commission indicating that the existence of this Contract and the employment by the State of the interested party does not violate any statute or rule relating to ethical conduct of state employees. The State may take action, including cancellation of this Contract, consistent with an opinion of the State Ethics Commission obtained under this Section.

D. The Contractor has an affirmative obligation under this Contract to disclose to the State when an interested party is or becomes a state employee. The obligation under this section extends only to those facts that the Contractor knows or reasonably should know.

3. Licensing Standards. The Contractor and its employees and subcontractors shall comply with all applicable licensing standards, certification standards, accrediting standards and any other laws, rules or regulations governing services to be provided by the Contractor pursuant to this Contract. The State shall not be required to pay the Contractor for any services performed when the Contractor, its employees or subcontractors are not in compliance with such applicable standards, laws, rules or regulations. If licensure, certification or accreditation expires or is revoked, or if disciplinary action is taken against the applicable licensure, certification or accreditation, the Contractor shall notify the State immediately and the State, at its option, may immediately terminate this Contract.

4. Contractor's Certification. The Contractor certifies that all information and documentation submitted by it in its Application for Prequalification Certification, the Contractor's Proposal and submitted in response to the Project, is true, accurate and complete as of the date of this Contract's effectiveness. The Contractor shall immediately notify the State of any material change to such information. The Contractor shall immediately notify the State if, during the course of performance of this Contract, it or any of its principals are proposed for debarment or ineligibility, or become debarred or declared ineligible, from entering into contracts with the federal government or any department, agency or political subdivision of the State.

5. Contractor Employee Drug Testing. Pursuant to IC 4-13-18, the Contractor shall implement the employee drug testing program submitted as part of its Contractor's Proposal. The State may cancel this Contract if it determines that the Contractor:

- A. Has failed to implement its employee drug testing program during the term of this Contract;
- B. Has failed to provide information regarding implementation of the Contractor's employee drug testing program at the request of the State; or
- C. Has provided to the State false information regarding the Contractor's employee drug testing program.

6. Access to Records. The Contractor and its subcontractors, if any, shall maintain all books, documents, papers, accounting records, and other evidence pertaining to all costs incurred under this Contract. They shall make such materials available at their respective offices at all reasonable times during this Contract, and for three (3) years from the date of final payment under this Contract, for inspection by the State or its authorized designees. Copies shall be furnished at no cost to the State if requested.

7. Assignment; Successors. The Contractor binds its successors and assignees to all the terms and conditions of this Contract. The Contractor shall not assign or subcontract the whole or any part of this Contract without the State's prior written consent. The Contractor may assign its right to receive payments to such third parties as the Contractor may desire without the prior written consent of the State, provided that the Contractor gives written notice (including evidence of such assignment) to the State thirty (30) days in advance of any payment so assigned. The assignment shall cover all unpaid amounts under this Contract and shall not be made to more than one party.

8. Assignment of Antitrust Claims. As part of the consideration for the award of this Contract, the Contractor assigns to the State all right, title and interest in and to any claims the Contractor now has, or may acquire, under state or federal antitrust laws relating to the products or services which are the subject of this Contract.

9. Audits. The Contractor acknowledges that it may be required to submit to an audit of funds paid through this Contract. Any such audit shall be conducted in accordance with IC 5-11-1, et. seq. and audit guidelines specified by the State.

Following the expiration of this Contract, the Contractor shall arrange for a financial and compliance audit of funds provided by State pursuant to this Contract. Such audit is to be conducted by an independent public or certified public accountant (or as applicable, the Indiana State Board of Accounts), and performed in accordance with Indiana State Board of Accounts publication entitled "Uniform Compliance Guidelines for Examination of Entities Receiving Financial Assistance from Governmental Sources," and applicable provisions of the Office of Management and Budget Circulars A-133 (Audits of States, Local Governments, and Non-Profit Organizations). The Contractor is responsible for ensuring that the audit and any management letters are completed and forwarded to the State in accordance with the terms of this Contract. Audits conducted pursuant to this paragraph must be submitted no later than nine (9) months following the close of the Contractor's fiscal year. Contractor agrees to provide the Indiana State Board of Accounts and the State an original of all financial and compliance audits. The audit shall be an audit of the actual entity, or distinct portion thereof that is the Contractor, and not of a parent, member, or subsidiary corporation of the Contractor, except to the extent such an expanded audit may be determined by the Indiana State Board of Accounts or the State to be in the best interests of the State. The audit shall include a statement from the Auditor that the Auditor has reviewed this Contract and that the Contractor is not out of compliance with the financial aspects of this Contract.

If there are Federal funds involved in this contract, the State also considers the Contractor to be a "Contractor" under 2 C.F.R. 200.330 for purposes of this Contract. However, if required by applicable provisions of 2 C.F.R. 200 (Uniform Administrative Requirements, Cost Principles, and Audit Requirements), Contractor shall arrange for a financial and compliance audit, which complies with 2 C.F.R. 200.500 et seq.

10. Authority to Bind Contractor. The signatory for the Contractor represents that he/she has been duly authorized to execute this Contract on behalf of the Contractor and has obtained all necessary or applicable approvals to make this Contract fully binding upon the Contractor when his/her signature is affixed, and accepted by the State.

11. Changes in Work. The Contractor shall not commence any additional work or change the scope of the work until authorized in writing by the State. Contractor shall make no claim for additional compensation in the absence of a prior written approval and amendment executed by all signatories hereto. This Contract may only be amended, supplemented or modified by a written document executed in the same manner as this Contract.

12. Compliance with Laws.

A. The Contractor shall comply with all applicable federal, state, and local laws, rules, regulations, and ordinances, and all provisions required thereby to be included herein are hereby incorporated by reference. The enactment or modification of any applicable state or federal statute or the promulgation of rules or regulations thereunder after execution of this Contract shall be reviewed by the State and the Contractor to determine whether the provisions of this Contract require formal modification.

B. The Contractor and its agents shall abide by all ethical requirements that apply to persons who have a business relationship with the State as set forth in IC §4-2-6, et seq., IC §4-2-7, et seq., the regulations promulgated thereunder, and Executive Order 04-08, dated April 27, 2004. If the Contractor has knowledge, or would have acquired knowledge with reasonable inquiry, that a state officer, employee, or special state appointee, as those terms are defined in IC 4-2-6-1, has a financial interest in the Contract, the Contractor shall ensure compliance with the disclosure requirements in IC 4-2-6 10.5 prior to the execution

of this contract. If the Contractor is not familiar with these ethical requirements, the Contractor should refer any questions to the Indiana State Ethics Commission, or visit the Inspector General's website at <http://www.in.gov/ig/>. If the Contractor or its agents violate any applicable ethical standards, the State may, in its sole discretion, terminate this Contract immediately upon notice to the Contractor. In addition, the Contractor may be subject to penalties under IC §§4-2-6, 4-2-7, 35-44-1-3, and under any other applicable laws.

C. The Contractor certifies by entering into this Contract that neither it nor its principal(s) is presently in arrears in payment of taxes, permit fees or other statutory, regulatory or judicially required payments to the State of Indiana. The Contractor agrees that any payments currently due to the State of Indiana may be withheld from payments due to the Contractor. Additionally, further work or payments may be withheld, delayed, or denied and/or this Contract suspended until the Contractor is current in its payments and has submitted proof of such payment to the State.

D. The Contractor warrants that it has no current, pending or outstanding criminal, civil, or enforcement actions initiated by the State, and agrees that it will immediately notify the State of any such actions. During the term of such actions, the Contractor agrees that the State may delay, withhold, or deny work under any supplement, amendment, change order or other contractual device issued pursuant to this Contract.

E. If a valid dispute exists as to the Contractor's liability or guilt in any action initiated by the State or its agencies, and the State decides to delay, withhold, or deny work to the Contractor, the Contractor may request that it be allowed to continue, or receive work, without delay. The Contractor must submit, in writing, a request for review to the Indiana Department of Administration (IDOA) following the procedures for disputes outlined herein. A determination by IDOA shall be binding on the parties. Any payments that the State may delay, withhold, deny, or apply under this section shall not be subject to penalty or interest, except as permitted by IC §5-17-5.

F. The Contractor warrants that the Contractor and its subcontractors, if any, shall obtain and maintain all required permits, licenses, registrations, and approvals, and shall comply with all health, safety, and environmental statutes, rules, or regulations in the performance of work activities for the State. Failure to do so may be deemed a material breach of this Contract and grounds for immediate termination and denial of further work with the State.

G. The Contractor affirms that, if it is an entity described in IC Title 23, it is properly registered and owes no outstanding reports to the Indiana Secretary of State.

H. As required by IC §5-22-3-7:

(1) The Contractor and any principals of the Contractor certify that:

(A) The Contractor, except for de minimis and nonsystematic violations, has not violated the terms of:

- (i) IC §24-4.7 [Telephone Solicitation Of Consumers];
- (ii) IC §24-5-12 [Telephone Solicitations]; or
- (iii) IC §24-5-14 [Regulation of Automatic Dialing Machines];

in the previous three hundred sixty-five (365) days, even if IC §24-4.7 is preempted by federal law; and

(B) The Contractor will not violate the terms of IC §24-4.7 for the duration of the Contract, even if IC §24-4.7 is preempted by federal law.

(2) The Contractor and any principals of the Contractor certify that an affiliate or principal of the Contractor and any agent acting on behalf of the Contractor or on behalf of an affiliate or principal of the Contractor, except for de minimis and nonsystematic violations,

(A) Has not violated the terms of IC §24-4.7 in the previous three hundred sixty-five (365) days, even if IC §24-4.7 is preempted by federal law; and

(B) Will not violate the terms of IC §24-4.7 for the duration of the Contract, even if IC §24-4.7 is preempted by federal law.

13. Condition of Payment. All services provided by the Contractor under this Contract must be performed to the State's reasonable satisfaction, as determined at the discretion of the undersigned State representative and in accordance with all applicable federal, state, local laws, ordinances, rules and regulations. The State shall not be required to pay for work found to be unsatisfactory, inconsistent with this Contract or performed in violation of and federal, state or local statute, ordinance, rule or regulation.

14. Confidentiality of State Information. The Contractor understands and agrees that data, materials, and information disclosed to the Contractor may contain confidential and protected information. The Contractor covenants that data, material and information gathered, based upon or disclosed to the Contractor for the purpose of this Contract, will not be disclosed to or discussed with third parties without the prior written consent of the State.

The parties acknowledge that the services to be performed by Contractor for the State under this contract may require or allow access to data, materials, and information containing Social Security numbers maintained by the State in its computer system or other records. In addition to the covenant made above in this section and pursuant to 10 IAC 5-3-1(4), the Contractor and the State agree to comply with the provisions of IC 4-1-10 and IC 4-1-11. If any Social Security number(s) is/are disclosed by Contractor, Contractor agrees to pay the cost of the notice of disclosure of a breach of the security of the system in addition to any other claims and expenses for which it is liable under the terms of this contract.

15. Continuity of Services.

- A. The Contractor recognizes that the service(s) to be performed under this Contract are vital to the State and must be continued without interruption and that, upon Contract expiration, a successor, either the State or another contractor, may continue them. The Contractor agrees to:
 - 1. Furnish phase-in training; and
 - 2. Exercise its best efforts and cooperation to effect an orderly and efficient transition to a successor.

- B. The Contractor shall, upon the State's written notice:
 - 1. Furnish phase-in, phase-out services for up to sixty (60) days after this Contract expires; and
 - 2. Negotiate in good faith a plan with a successor to determine the nature and extent of phase-in, phase-out services required. The plan shall specify a training program and a date for transferring responsibilities for each division of work described in the plan, and shall be subject to the State's approval. The Contractor shall provide sufficient experienced personnel during the phase-in, phase-out period to ensure that the services called for by this Contract are maintained at the required level of proficiency.

- C. The Contractor shall allow as many personnel as practicable to remain on the job to help the successor maintain the continuity and consistency of the services required by this Contract. The Contractor also shall disclose necessary personnel records and allow the successor to conduct on-site interviews with these employees. If selected employees are agreeable to the change, the Contractor shall release them at a mutually agreeable date and negotiate transfer of their earned fringe benefits to the successor.

- D. The Contractor shall be reimbursed for all reasonable phase-in, phase-out costs (i.e., costs incurred within the agreed period after contract expiration that result from phase-in, phase-out operations).

16. Debarment and Suspension.

- A. The Contractor certifies by entering into this Contract that neither it nor its principals nor any of its subcontractors are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from entering into this Contract by any federal agency or by any department, agency or political subdivision of the State of Indiana. The term "principal" for purposes of this Contract means an officer, director, owner, partner, key employee or other person with primary management or supervisory responsibilities, or a person who has a critical influence on or substantive control over the operations of the Contractor.

- B. The Contractor certifies that it has verified the state and federal suspension and debarment status for all subcontractors receiving funds under this Contract and shall be solely responsible for any recoupment, penalties or costs that might arise from use of a suspended or debarred subcontractor. The Contractor shall immediately notify the State if any subcontractor becomes

debarred or suspended, and shall, at the State's request, take all steps required by the State to terminate its contractual relationship with the subcontractor for work to be performed under this Contract.

17. Default by State. If the State, sixty (60) days after receipt of written notice, fails to correct or cure any material breach of this Contract, the Contractor may cancel and terminate this Contract and institute the appropriate measures to collect monies due up to and including the date of termination.

18. Disputes.

- A. Should any disputes arise with respect to this Contract, the Contractor and the State agree to act immediately to resolve such disputes. Time is of the essence in the resolution of disputes.
- B. The Contractor agrees that, the existence of a dispute notwithstanding, it will continue without delay to carry out all of its responsibilities under this Contract that are not affected by the dispute. Should the Contractor fail to continue to perform its responsibilities regarding all non-disputed work, without delay, any additional costs incurred by the State or the Contractor as a result of such failure to proceed shall be borne by the Contractor, and the Contractor shall make no claim against the State for such costs.
- C. If the parties are unable to resolve a contract dispute between them after good faith attempts to do so, a dissatisfied party shall submit the dispute to the Commissioner of the Indiana Department of Administration for resolution. The dissatisfied party shall give written notice to the Commissioner and the other party. The notice shall include (1) a description of the disputed issues, (2) the efforts made to resolve the dispute, and (3) a proposed resolution. The Commissioner shall promptly issue a Notice setting out documents and materials to be submitted to the Commissioner in order to resolve the dispute; the Notice may also afford the parties the opportunity to make presentations and enter into further negotiations. Within 30 business days of the conclusion of the final presentations, the Commissioner shall issue a written decision and furnish it to both parties. The Commissioner's decision shall be the final and conclusive administrative decision unless either party serves on the Commissioner and the other party, within ten business days after receipt of the Commissioner's decision, a written request for reconsideration and modification of the written decision. If the Commissioner does not modify the written decision within 30 business days, either party may take such other action helpful to resolving the dispute, including submitting the dispute to an Indiana court of competent jurisdiction. If the parties accept the Commissioner's decision, it may be memorialized as a written Amendment to this Contract if appropriate.
- D. The State may withhold payments on disputed items pending resolution of the dispute. The unintentional nonpayment by the State to the Contractor of one or more invoices not in dispute in accordance with the terms of this Contract will not be cause for the Contractor to terminate this Contract, and the Contractor may bring suit to collect these amounts without following the disputes procedure contained herein.
- E. With the written approval of the Commissioner of the Indiana Department of Administration, the parties may agree to forego the process described in subdivision C. relating to submission of the dispute to the Commissioner.
- F. This paragraph shall not be construed to abrogate provisions of Ind. Code 4-6-2-11 in situations where dispute resolution efforts lead to a compromise of claims in favor of the State as described in that statute. In particular, releases or settlement agreements involving releases of legal claims or potential legal claims of the state should be processed consistent with Ind. Code 4-6-2-11, which requires approval of the Governor and Attorney General.

19. Drug-Free Workplace Certification. As required by Executive Order No. 90-5 dated April 12, 1990, issued by the Governor of Indiana, the Contractor hereby covenants and agrees to make a good faith effort to provide and maintain a drug-free workplace. The Contractor will give written notice to the State within ten (10) days after receiving actual notice that the Contractor, or an employee of the Contractor in the State of Indiana, has been convicted of a criminal drug violation occurring in the workplace. False certification or violation of this certification may result in sanctions including, but not limited to, suspension of contract payments, termination of this Contract and/or debarment of contracting opportunities with the State for up to three (3) years.

In addition to the provisions of the above paragraph, if the total amount set forth in this Contract is in excess of \$25,000.00, the Contractor certifies and agrees that it will provide a drug-free workplace by:

- A. Publishing and providing to all of its employees a statement notifying them that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the Contractor's workplace, and specifying the actions that will be taken against employees for violations of such prohibition;
- B. Establishing a drug-free awareness program to inform its employees of (1) the dangers of drug abuse in the workplace; (2) the Contractor's policy of maintaining a drug-free workplace; (3) any available drug counseling, rehabilitation and employee assistance programs; and (4) the penalties that may be imposed upon an employee for drug abuse violations occurring in the workplace;
- C. Notifying all employees in the statement required by subparagraph (A) above that as a condition of continued employment, the employee will (1) abide by the terms of the statement; and (2) notify the Contractor of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction;
- D. Notifying the State in writing within ten (10) days after receiving notice from an employee under subdivision (C)(2) above, or otherwise receiving actual notice of such conviction;
- E. Within thirty (30) days after receiving notice under subdivision (C)(2) above of a conviction, imposing the following sanctions or remedial measures on any employee who is convicted of drug abuse violations occurring in the workplace: (1) taking appropriate personnel action against the employee, up to and including termination; or (2) requiring such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state or local health, law enforcement, or other appropriate agency; and
- F. Making a good faith effort to maintain a drug-free workplace through the implementation of subparagraphs (A) through (E) above.

20. Employment Eligibility Verification. As required by IC §22-5-1.7, the Contractor swears or affirms under the penalties of perjury that:

- A. The Contractor does not knowingly employ an unauthorized alien.
- B. The Contractor shall enroll in and verify the work eligibility status of all his/her/its newly hired employees through the E-Verify program as defined in IC §22-5-1.7-3. The Contractor is not required to participate should the E-Verify program cease to exist. Additionally, the Contractor is not required to participate if the Contractor is self-employed and does not employ any employees.
- C. The Contractor shall not knowingly employ or contract with an unauthorized alien. The Contractor shall not retain an employee or contract with a person that the Contractor subsequently learns is an unauthorized alien.
- D. The Contractor shall require his/her/its subcontractors who perform work under this Contract to certify to the Contractor that the subcontractor does not knowingly employ or contract with an unauthorized alien and that the subcontractor has enrolled and is participating in the E-Verify program. The Contractor agrees to maintain this certification throughout the duration of the term of a contract with a subcontractor.

The State may terminate for default if the Contractor fails to cure a breach of this provision no later than thirty (30) days after being notified by the State.

Pursuant to IC 5-16-13: The contractor shall submit, before work begins the E-Verify case verification number for each individual who is required to be verified under IC 22-5-1.7. An individual who is required to be verified under IC 22-5-1.7 whose final case result is final nonconfirmation may not be employed on the public works project.

A contractor may not pay cash to any individual employed by the contractor for work done by the individual on the public works project.

A contractor must be in compliance with the federal Fair Labor Standards Act of 1938, as amended (29 U.S.C.201-209) and IC 22-2-2-1 through IC 22-2-2-8. A contractor must be in compliance with IC 22-3-5-1 and IC 22-3-7-34. A contractor must be in compliance with IC 22-4-1 through IC 22-4-39.5. A contractor must be in compliance with IC 4-13-18-1 through IC 4-13-18-7.

21. Employment Option. If the State determines that it would be in the State's best interest to hire an employee of the Contractor, the Contractor will release the selected employee from any non-compete agreements that may be in effect. This release will be at no cost to the State or the employee.

22. Force Majeure. In the event that either party is unable to perform any of its obligations under this Contract or to enjoy any of its benefits because of natural disaster or decrees of governmental bodies not the fault of the affected party (hereinafter referred to as a "Force Majeure Event"), the party who has been so affected shall immediately give notice to the other party and shall do everything possible to resume performance. Upon receipt of such notice, all obligations under this Contract shall be immediately suspended. If the period of nonperformance exceeds thirty (30) days from the receipt of notice of the Force Majeure Event, the party whose ability to perform has not been so affected may, by giving written notice, terminate this Contract.

23. Funding Cancellation. When the Director of the State Budget Agency makes a written determination that funds are not appropriated or otherwise available to support continuation of performance of this Contract, this Contract shall be canceled. A determination by the Director of SBA that funds are not appropriated or otherwise available to support continuation of performance shall be final and conclusive.

24. Governing Laws. This Contract shall be construed in accordance with and governed by the laws of the State of Indiana and suit, if any, must be brought in the State of Indiana.

25. HIPAA Compliance. If this Contract involves services, activities or products subject to the Health Insurance Portability and Accountability Act of 1996 (HIPAA), the Contractor covenants that it will appropriately safeguard Protected Health Information (defined in 45 CFR 160.103), and agrees that it is subject to, and shall comply with, the provisions of 45 CFR 164 Subpart E regarding use and disclosure of Protected Health Information.

26. Indemnification. The Contractor agrees to indemnify, defend, and hold harmless the State, its agents, officials, and employees from all claims and suits including court costs, attorney's fees, and other expenses caused by any act or omission of the Contractor and/or its subcontractors, if any, in the performance of this Contract. The State shall not provide such indemnification to the Contractor.

27. Independent Contractor. Both parties hereto, in the performance of this Contract, shall act in an individual capacity and not as agents, employees, partners, joint ventures or associates of one another. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purposes whatsoever. Neither party will assume liability for any injury (including death) to any persons, or damage to any property, arising out of the acts or omissions of the agents, employees or subcontractors of the other party. The Contractor shall be responsible for providing all necessary unemployment and workers' compensation insurance for the Contractor's employees.

28. Information Technology Enterprise Architecture Requirements. If the Contractor provides any information technology related products or services to the State, the Contractor shall comply with all IOT standards, policies and guidelines, which are online at <http://iot.in.gov/architecture/>. The Contractor specifically agrees that all hardware, software and services provided to or purchased by the State shall be compatible with the principles and goals contained in the electronic and information technology accessibility standards adopted under Section 508 of the Federal Rehabilitation Act of 1973 (29 U.S.C. 794d) and IC 4-13.1-3. Any deviation from these architecture requirements must be approved in writing by IOT in advance. The State may terminate this Contract for default if the Contractor fails to cure a breach of this provision within a reasonable time.

29. Insurance.

A. The Contractor and their subcontractors (if any) shall secure and keep in force during the term of this Contract the following insurance coverage's (if applicable) covering the Contractor for any and all claims of any nature which may in any manner arise out of or result from Contractor's performance under this Contract:

1. Commercial general liability, including contractual coverage, and products or completed operations coverage (if applicable), with minimum liability limits not less than \$500,000 per person and \$2,000,000 per occurrence unless additional coverage is required by the State. The State is to be named as an additional insured on a primary, non-contributory basis for any liability arising directly or indirectly under or in connection with this Contract.
2. Automobile liability for owned, non-owned and hired autos with minimum liability limits of \$500,000 per person and \$2,000,000 per occurrence. The State is to be named as an additional insured on a primary, non-contributory basis.
3. The Contractor shall provide proof of such insurance coverage by tendering to the undersigned State representative a certificate of insurance prior to the commencement of this Contract and proof of workers' compensation coverage meeting all statutory requirements of IC §22-3-2. In addition, proof of an "all states endorsement" covering claims occurring outside the State is required if any of the services provided under this Contract involve work outside of Indiana.

- B. The Contractor's insurance coverage must meet the following additional requirements:
 1. The insurer must have a certificate of authority or other appropriate authorization to operate in the state in which the policy was issued.
 2. Any deductible or self-insured retention amount or other similar obligation under the insurance policies shall be the sole obligation of the Contractor.
 3. The State will be defended, indemnified and held harmless to the full extent of any coverage actually secured by the Contractor in excess of the minimum requirements set forth above. The duty to indemnify the State under this Contract shall not be limited by the insurance required in this Contract.
 4. The insurance required in this Contract, through a policy or endorsement(s), shall include a provision that the policy and endorsements may not be canceled or modified without thirty (30) days' prior written notice to the undersigned State agency.
 5. The Contractor waives and agrees to require their insurer to waive their rights of subrogation against the State of Indiana.
- C. Failure to provide insurance as required in this Contract may be deemed a material breach of contract entitling the State to immediately terminate this Contract. The Contractor shall furnish a certificate of insurance and all endorsements to the State before the commencement of this Contract.
- D. After June 30, 2015, this entire Article will apply to any contractor that will be on the construction site pursuant to IC 5-16-13 and an acceptable certificate of insurance will be provided by each and every contractor.

30. Key Person(s).

- A. If both parties have designated that certain individual(s) are essential to the services offered, the parties agree that should such individual(s) leave their employment during the term of this Contract for whatever reason, the State shall have the right to terminate this Contract upon thirty (30) days' prior written notice.
- B. In the event that the Contractor is an individual, that individual shall be considered a key person and, as such, essential to this Contract. Substitution of another for the Contractor shall not be permitted without express written consent of the State.

Nothing in Sections A and B, above shall be construed to prevent the Contractor from using the services of others to perform tasks ancillary to those tasks which directly require the expertise of the key person. Examples of such ancillary tasks include secretarial, clerical, and common labor duties. The Contractor shall, at all times, remain responsible for the performance of all necessary tasks, whether performed by a key person or others.

Key person(s) to this Contract is/are: N/A

31. Merger & Modification. This Contract constitutes the entire agreement between the parties. No understandings, agreements, or representations, oral or written, not specified within this Contract will be valid provisions of this Contract. This Contract may not be modified, supplemented or amended, except by written agreement signed by all necessary parties.

32. Minority and Women's Business Enterprises Compliance. Award of this Contract was based, in part, on the Minority and/or Women's Business Enterprise ("MBE" and/or "WBE") participation plan. The following certified MBE or WBE subcontractors will be participating in this Contract:

<u>MBE/WBE</u>	<u>PHONE</u>	<u>COMPANY NAME</u>	<u>SCOPE OF PRODUCTS and/or SERVICES</u>	<u>UTILIZATION DATE</u>	<u>PERCENT</u>
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Terms for participation are as provided in the Contractor's Proposal to the State's request for participation, which are described and captured in the Contract Documents.

A copy of each subcontractor agreement must be submitted to IDOA's MBE/WBE Division within thirty (30) days of the effective date of this Contract. Failure to provide a copy of any subcontractor agreement will be deemed a violation of the rules governing MBE/WBE procurement, and may result in sanctions allowable under 25 IAC 5-7-8. Failure to provide any subcontractor agreement may also be considered a material breach of this Contract. The Contractor must obtain approval from IDOA's MBE/WBE Division before changing the participation plan submitted in connection with this Contract.

The Contractor shall report payments made to MBE/WBE Division subcontractors under this Contract on a monthly basis. Monthly reports shall be made using the online audit tool, commonly referred to as "Pay Audit." MBE/WBE Division subcontractor payments shall also be reported to the Division as reasonably requested and in a format to be determined by Division.

33. Nondiscrimination

Pursuant to the Indiana Civil Rights Law, specifically including IC §22-9-1-10, and in keeping with the purposes of the federal Civil Rights Act of 1964, the Age Discrimination in Employment Act, and the Americans with Disabilities Act, the Contractor covenants that it shall not discriminate against any employee or applicant for employment relating to this Contract with respect to the hire, tenure, terms, conditions or privileges of employment or any matter directly or indirectly related to employment, because of the employee's or applicant's race, color, national origin, religion, sex, age, disability, ancestry, status as a veteran, or any other characteristic protected by federal, state, or local law ("Protected Characteristics"). Contractor certifies compliance with applicable federal laws, regulations, and executive orders prohibiting discrimination based on the Protected Characteristics in the provision of services. Breach of this paragraph may be regarded as a material breach of this Contract, but nothing in this paragraph shall be construed to imply or establish an employment relationship between the State and any applicant or employee of the Contractor or any subcontractor.

The State is a recipient of federal funds, and therefore, where applicable, Contractor and any subcontractors shall comply with requisite affirmative action requirements, including reporting, pursuant to 41 CFR Chapter 60, as amended, and Section 202 of Executive Order 11246 as amended by Executive Order 13672.

34. Notice to Parties. Whenever any notice, statement or other communication is required under this Contract, it shall be sent to the following addresses, unless otherwise specifically advised.

- A. Notices to the State shall be sent to: Public Works Divisions, Director
Indiana Department of Administration 402 W
Washington St Room W467
Indianapolis, IN 46204

- B. Notices to the Contractor shall be sent to: **[INSERT CONTRACTOR NAME]**
[INSERT CONTRACTOR ADDRESS]

- C. As required by IC 4-13-2-14.8, payments to the Contractor shall be made via electronic funds transfer in accordance with instructions filed by the Contractor with the Indiana Auditor of State.

35. Order of Precedence; Incorporation by Reference. Any inconsistency or ambiguity in this Contract shall be resolved by giving precedence in the following order: (1) this Contract, (2) the Project Bid Package, (3) attachments prepared by the State; (4) Contractor's Proposal; and (5) attachments prepared by the Contractor. All of the foregoing are incorporated fully by reference. All attachments, and all documents referred to in this paragraph are hereby incorporated fully by reference.

36. Ownership of Documents and Materials. All documents, records, programs, data, film, tape, articles, memoranda, and other materials not developed or licensed by the Contractor prior to execution of this Contract, but specifically developed under this Contract shall be considered "work for hire" and the Contractor transfers any ownership claim to the State and all such materials will be the property of the State. Use of these materials, other than related to contract performance by the Contractor, without the prior written consent of the State, is prohibited. During the performance of this Contract, the Contractor shall be responsible for any loss of or damage to these materials developed for or supplied by the State and used to develop or assist in the services provided while the materials are in the possession of the Contractor. Any loss or damage thereto shall be restored at the Contractor's expense. The Contractor shall provide the State full, immediate, and unrestricted access to the work product during the term of this Contract.

37. Payments.

- A. All payments shall be made 35 days in arrears in conformance with State fiscal policies and procedures and, as required by IC §4-13-2-14.8, by electronic funds transfer to the financial institution designated by the Contractor in writing unless a specific waiver has been obtained from the Indiana Auditor of State. No payments will be made in advance of receipt of the goods or services that are the subject of this Contract except as permitted by IC §4-13-2-20.

- B. The State Budget Agency and the Contractor acknowledge that Contractor is being paid in advance for the maintenance of equipment and / or software. Pursuant to IC §4-13-2-

20(b)(14), Contractor agrees that if it fails to perform the maintenance required under this Contract, upon receipt of written notice from the State, it shall promptly refund the consideration paid, pro-rated through the date of non-performance.

38. Penalties/Interest/Attorney's Fees. The State will in good faith perform its required obligations hereunder and does not agree to pay any penalties, liquidated damages, interest or attorney's fees, except as permitted by Indiana law, in part, IC §5-17-5, IC §34-54-8, IC §34-13-1 and IC § 34-52-2-3.

Notwithstanding the provisions contained in IC §5-17-5, any liability resulting from the State's failure to make prompt payment shall be based solely on the amount of funding originating from the State and shall not be based on funding from federal or other sources.

39. Progress Reports. The Contractor shall submit progress reports to the State upon request. The report shall be oral, unless the State, upon receipt of the oral report, should deem it necessary to have it in written form. The progress reports shall serve the purpose of assuring the State that work is progressing in line with the schedule, and that completion can be reasonably assured on the scheduled date.

40. Public Record. The Contractor acknowledges that the State will not treat this Contract as containing confidential information, and will post this Contract on its website as required by Executive Order 05-07. Use by the public of the information contained in this Contract shall not be considered an act of the State.

41. Renewal Option. This Contract may be renewed under the same terms and conditions, subject to the approval of the Commissioner of the Department of Administration and the State Budget Director in compliance with IC §5-22-17-4. The term of the renewed contract may not be longer than the term of the original contract.

42. Severability. The invalidity of any section, subsection, clause or provision of this Contract shall not affect the validity of the remaining sections, subsections, clauses or provisions of this Contract.

43. Substantial Performance. This Contract shall be deemed to be substantially performed only when fully performed according to its terms and conditions and any written amendments or supplements.

44. Taxes. The State is exempt from most state and local taxes and many federal taxes. The State will not be responsible for any taxes levied on the Contractor as a result of this Contract.

45. Termination for Convenience. This Contract may be terminated, in whole or in part, by the State, which shall include and is not limited to the Indiana Department of Administration and the State Budget Agency whenever, for any reason, the State determines that such termination is in its best interest. Termination of services shall be effected by delivery to the Contractor of a Termination Notice at least thirty (30) days prior to the termination effective date, specifying the extent to which performance of services under such termination becomes effective. The Contractor shall be compensated for services properly rendered prior to the effective date of termination. The State will not be liable for services performed after the effective date of termination. The Contractor shall be compensated for services herein provided but in no case shall total payment made to the Contractor exceed the original contract price or shall any price increase be allowed on individual line items if canceled only in part prior to the original termination date. For the purposes of this paragraph, the parties stipulate and agree that the Indiana Department of Administration shall be deemed to be a party to this agreement with authority to terminate the same for convenience when such termination is determined by the Commissioner of IDOA to be in the best interests of the State.

46. Termination for Default.

- A. With the provision of thirty (30) days notice to the Contractor, the State may terminate this Contract in whole or in part if the Contractor fails to:
 - 1. Correct or cure any breach of this Contract; the time to correct or cure the breach may be extended beyond thirty (30) days if the State determines progress is being made and the extension is agreed to by the parties;
 - 2. Deliver the supplies or perform the services within the time specified in this Contract or any extension;
 - 3. Make progress so as to endanger performance of this Contract; or
 - 4. Perform any of the other provisions of this Contract.

- B. If the State terminates this Contract in whole or in part, it may acquire, under the terms and in the manner the State considers appropriate, supplies or services similar to those terminated, and the Contractor will be liable to the State for any excess costs for those supplies or services. However, the Contractor shall continue the work not terminated.

- C. The State shall pay the contract price for completed supplies delivered and services accepted. The Contractor and the State shall agree on the amount of payment for manufacturing materials delivered and accepted and for the protection and preservation of the property. Failure to agree will be a dispute under the Disputes clause. The State may withhold from these amounts any sum the State determines to be necessary to protect the State against loss because of outstanding liens or claims of former lien holders.
- D. The rights and remedies of the State in this clause are in addition to any other rights and remedies provided by law or equity or under this Contract.

47. Travel. No expenses for travel will be reimbursed unless specifically permitted under the scope of services or consideration provisions. Expenditures made by the Contractor for travel will be reimbursed at the current rate paid by the State and in accordance with the State Travel Policies and Procedures as specified in the current Financial Management Circular. Out-of-state travel requests must be reviewed by the State for availability of funds and for appropriateness per Circular guidelines.

48. Indiana Veteran’s Business Enterprise Compliance. Award of this Contract was based, in part, on the Indiana Veteran’s Business Enterprise (“IVBE”) participation plan. The following IVBE subcontractors will be participating in this Contract:

VBE	PHONE	COMPANY NAME	SCOPE OF PRODUCTS and/orSERVICES UTILIZATION	DATE	PERCENT
N/A					

A copy of each subcontractor agreement must be submitted to IDOA within thirty (30) days of the effective date of this Contract. Failure to provide any subcontractor agreement may also be considered a material breach of this Contract. The Contractor must obtain approval from IDOA’s MBE/WBE Division before changing the participation plan submitted in connection with this Contract.

The Contractor shall report payments made to IVBE subcontractors under this Contract on a monthly basis. Monthly reports shall be made using the online audit tool, commonly referred to as “Pay Audit.” IVBE subcontractor payments shall also be reported to IDOA as reasonably requested and in a format to be determined by IDOA.

49. Waiver of Rights. No right conferred on either party under this Contract shall be deemed waived, and no breach of this Contract excused, unless such waiver is in writing and signed by the party claimed to have waived such right. Neither the State’s review, approval or acceptance of, nor payment for, the services required under this Contract shall be construed to operate as a waiver of any rights under this Contract or of any cause of action arising out of the performance of this Contract, and the Contractor shall be and remain liable to the State in accordance with applicable law for all damages to the State caused by the Contractor’s negligent performance of any of the services furnished under this Contract.

50. Work Standards. The Contractor shall execute its responsibilities by following and applying at all times the highest professional and technical guidelines and standards. If the State becomes dissatisfied with the work product of or the working relationship with those individuals assigned to work on this Contract, the State may request in writing the replacement of any or all such individuals, and the Contractor shall grant such request.

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CONTRACTOR'S BID DOCUMENT
STATE OF INDIANA BID
ON SERVICE/MAINTENANCE OR REPAIRS/ALTERATIONS
ESTIMATED AT LESS THAN \$150,000

Requisition/Project No.: 105143
Title: Fort Harrison State Park Building 803 Conversion
Institution: Indiana Department of Natural Resources

Contractor hereby agrees to furnish all labor and materiel to complete the work described in the bid documents all of which are incorporated herein by reference. The work to be performed under this Contract shall be started within ten (10) days after the last signatory to this Contract. The work shall be completed by **May 15, 2020**.

	Amount In Numbers	Amount In Words	
BASE BID	\$		
Alternate Bid 1 (+/-/none)			
Alternate Bid 2 (+/-/none)			
Alternate Bid 3 (+/-/none)			
Alternate Bid 4 (+/-/none)			
Alternate Bid 5 (+/-/none)			
Alternate Bid 6 (+/-/none)			

By signing this bid the bidder hereby affirms, under penalty of perjury, the acceptance of all terms set out in these bid documents including terms of the Solicitation for Bids, the Instructions for Bidding and the General Conditions including terms of Non-Discrimination, Drug Free Work Place, Employment Eligibility Verification and Non-Collusion.

The undersigned attests, subject to the penalties for perjury, that he/she is the Contractor, or that he/she is the properly authorized representative, agent, member or officer of the Contractor, that he/she has not, nor has any other member, employee, representative, agent or officer of the Contractor, directly or indirectly, to the best of the undersigned's knowledge, entered into or offered to enter into any combination, collusion or agreement to receive or pay, and that he/she has not received or paid any sum of money or other consideration for the execution of this Contract other than that which appears upon the face of this Contract. Furthermore, if the undersigned has knowledge that a state officer, employee, or special state appointee, as those terms are defined in IC 4-2-6-1, has a financial interest in the Contract, the Contractor attests to compliance with the disclosure requirements in IC 4-2-6-10.5.

Firm Name: _____

MBE: _____ YES _____ NO

Address: _____

WBE: _____ YES _____ NO

City/State/Zip: _____

IVBE: _____ YES _____ NO

Signature: _____

Email address: _____

(Contract and Purchase Order will be sent to email address provided)

Printed Name: _____

Telephone: _____

Printed Title: _____

Federal ID Number: _____

Bidder ID Number _____

(If you do not have an Indiana Department of Administration Bidder ID Number, please obtain one online at: <http://www.in.gov/idoa/2464.htm>)

Thank you for supporting the Indiana Department of Natural Resources!

DNR is committed to the wise use of the State's resources *and* our tax dollars. To that end, as directed by State of Indiana laws and Indiana Department of Administration (IDOA) policy, all entities ("vendors") conducting business with DNR must be a registered state vendor before we can create a purchase order or make a payment. The Automated Direct Deposit Authorization Agreement & W9 are NOT required when submitting a bid for a Public Works project, however, if you are the successful low bidder, these forms will be required in order to receive a contract / purchase order for work.

WE GET IT: Doing business with the State can seem overwhelming! To save you some time, here's a brief outline of what's required to become a registered state vendor:

REQUIREMENT	DETAIL
<p>1 AUDITOR OF STATE (AOS) VENDOR DATABASE</p> <p><i>Required for all direct deposit payments (regardless of amount) to new vendors; former vendors with inactive accounts; or current/active vendors with changes (e.g. address, business name, bank account).</i></p>	<p>AOS Vendor Database Registration is free. COMPLETE THESE TWO FORMS found online at https://www.in.gov/auditor/924.htm</p> <ol style="list-style-type: none"> 1) <i>Request for Taxpayer Identification Number and Certification</i> (IRS W-9, November 2017 version); and 2) <i>Automated Direct Deposit Authorization Agreement</i> (State Form 47551; R7/5-18 version)
<p>2 IDOA BIDDER PROFILE REGISTRATION</p> <p><i>To receive a purchase order (\$500 or more), vendors must have an IDOA Bidder Profile, even if not technically "bidding" on anything.</i></p>	<p>Registration is free and assigns each vendor a unique ID used by DNR to select them for all future purchase orders and payments. Perform your one-time registration online at http://www.in.gov/idoa/2464.htm. <i>(Full disclosure: IDOA's Bidder Registration system can logout after periods of inactivity and be slightly difficult to navigate. Keep your password handy!)</i></p> <p>Detailed information about registration can be viewed at the IDOA Vendor and Supplier Resource Center at http://www.in.gov/idoa/3106.htm.</p>
<p>3 SECRETARY OF STATE (SOS) BUSINESS REGISTRATION</p> <p><i>Except for Sole Proprietorships and General Partnerships, vendors must register per IC 23-1-49-1 to receive a purchase order (\$500 or more).</i></p>	<p>Indiana businesses are likely already registered. Out-of-State vendors may need to register and/or secure an Indiana agent. Initial registration costs \$90, with a \$30 fee every two years to remain current. Contact the SOS for detailed advice.</p> <p>Registration is performed online at https://inbiz.in.gov/BOS/Home/Index. Start by conducting a "Business Search" to see if you are already registered.</p>
<p>4 TAX CLEARANCES</p> <p><i>DNR cannot issue a purchase order (\$500 or more) to any vendor who owes taxes to the State of Indiana.</i></p>	<p>Vendors must be current with all tax payments to the Indiana Department of Revenue and the Indiana Department of Workforce Development. Contact DOR (http://www.in.gov/dor/3325.htm) and DWD (http://www.in.gov/dwd/2328.htm) directly for advice and assistance. DNR cannot provide tax advice or tax-related information.</p>

Detailed information about registration can be viewed at the IDOA Vendor and Supplier Resource Center at <http://www.in.gov/idoa/3106.htm>.

We truly appreciate your partnership with DNR!

SECTION 01010 – SUMMARY OF WORK

Part 1 – GENERAL

1.01 SCOPE

- A. Bidders are strongly encouraged to attend the pre-bid meeting. Request to visit the site on an alternate date shall be coordinated with the Division of Engineering Representative.
- B. This work consists of furnishing all labor, materials, and equipment necessary to complete the following work:
 - 1. Renovation of approximately 1,650 SF within an existing 1-story, 2,800 SF building into a residence. Scope of Work generally includes selective demolition, new exterior doors and windows, new interior walls and doors, wall and attic insulation, interior finishes, a kitchen, and related mechanical, electrical, and plumbing as more fully described in the drawings and specifications.
 - a. Possible Future Work By Others: Coordinate work of this Contract with new roof work by Owner under separate contract.
- C. Remediation Allowance:
 - 1. Contractor shall include an allowance of **\$1,000.00** in the Base Bid for remediation of unforeseen constraints. This amount shall be included as a separate item in the Schedule of Values adding up to the total bid price.
 - 2. Such constraints may include but are not necessarily limited to unforeseen conditions; improperly recorded or unrecorded physical properties and conditions at the site; obstruction of or delays to reasonable work sequences by the Property, or the Owner; uncommon adverse weather or site conditions; and conflict within or omissions from the Contract Documents.
 - 3. All remediation work shall be proposed to and authorized by the Director of Public Works Division, or designee, prior to execution, jointly documented by Contractor and Designer, and recorded in Contractor's as-built drawings.
 - 4. **If any portion of the allowance is not used during the project, that portion will revert to the Owner and will not be included in the Contractor's final payment.**
- D. Alternates:
 - 1. Bids for the Alternates described herein are required to obtain information necessary for setting the scope of the project in its entirety.
 - 2. Add Alternates herein described are not to be included in the Base Bid Scope of Work.
 - 3. Deduct Alternates herein described are to be included in the Base Bid Scope of Work and deducted from the project as described.
 - 4. Bidder shall provide a response to each Alternate specified. The response must indicate the amount to ADD to the Base Bid, DEDUCT from the Base Bid or that there is NO CHANGE. Substitution of materials or methods of work other than as called for in the documents, i.e. "voluntary alternates" shall be cause for rejections of bid as non-conforming.

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5. All requirements of the Specifications shall govern the work of this Section. This Section describes the changes to be made under each Alternate.
6. Voluntary alternate bids will not be accepted.
7. Reference Drawings for list of Alternates and related descriptions.

1.02 SITE

- A. The work shall be performed at Fort Harrison State Park located in Indianapolis, IN 46216.

1.03 SALES TAX

- A. Sales tax shall not be charged on the bid price of this project.

1.04 COMPLETION OF WORK

- A. All work required by the Contract Documents shall be completed as noted within the Instructions to Bidders.

1.05 CODE REQUIREMENTS AND MANUFACTURER'S INSTRUCTIONS

- A. In the case of conflicts between state and local codes or regulations, State Codes or State regulations shall prevail. All required approvals for compliance with Fire and Building Services Division of Homeland Security, health regulations, historic preservation or archaeological clearances, floodway construction or state highway crossing may have been obtained by the owner unless stated otherwise in the contract documents.

The following permits have been obtained:

- 1.
- B. The Contractor shall be required to comply with all OSHA or IOSHA regulations as may be applicable to this project and obtain all permits that may be required for compliance.
- C. If the Contractor observes that any of the contract documents are at variance with the printed application instructions of any Manufacturer in any respect, he/she shall promptly notify the Project Manager in writing.
- D. If the Contractor performs any work contrary to State Building and other Codes, Regulations, Ordinances, or Manufacturer's printed instructions without notice to the Project Manager, the Contractor shall bear the cost arising from such non-conformance.

1.06 NOTIFICATIONS

- A. Upon notice of bid award, the Contractor shall notify the Project Manager to establish communications for the above project(s). The notification may be by mail or email to the Project Manager's following mail or e-mail address:
 1. Division of Engineering: Mike Manion
Telephone: (317) 670-8250
Fax: (317) 233-1205
e-mail: mmanion@dnr.in.gov
Department of Natural Resources
Engineering Division

402 W. Washington St. Room W299
Indianapolis, IN 46204

1.07 WORKING HOURS

- A. The Contractor shall perform all related activities on Monday through Friday excluding State holidays, between the hours of 7:00 a.m. and 6:00 p.m. local time, unless alternate arrangements are made and approved by the Property Manager or his representative.
- B. All work performed at other times shall only by the approval of the Property Manager or his representative, confirmed in writing, and shall not constitute a change in the contract amount.
- C. The Contractor shall plan all material deliveries during normal working hours, shall be responsible for receiving and deliveries, and shall properly protect delivered materials while being stored on the property. The Property Manager or his representative will not sign for any deliveries.

1.08 PRE-CONSTRUCTION / SERVICE MEETING

- A. The Contractor and his/her Subcontractor (if any) shall attend a pre-construction/pre-service meeting with the Property Manager and/or his representative at the work site. The date for this meeting shall be scheduled by the Property Manager within 14 days after the contract is awarded unless Property Manager has approved alternate arrangements.

1.09 SITE CONDITIONS

- A. Preliminary to the bidding, bidders are strongly encouraged to visit the site of the proposed work and thoroughly familiarize him/herself as to the nature and location of the work, general conditions, and the kind of equipment needed during the execution of the work. Failure to visit the site before bidding does not relieve the Contractor of responsibilities for anything that he/she would be been made aware had he/she visited.

1.10 PROTECTION OF FACILITIES AND PREMISES

- A. **The Contractor SHALL** be responsible for the protection of all facilities during the entire period of service. Any damages to the existing facilities, roads, lawns, driveways, or other State owned property caused by the contractor SHALL be repaired by the Contractor at his/her expense and in a manner and schedule approved by the Property Manager.
- B. **The Contractor SHALL** confine his/her operations and the storage of materials and equipment within an area approved by the Property Manager or his representative.
- C. **The Contractor SHALL**, at all times, keep the premises free from accumulation of waste materials or rubbish caused by his/her employees or work and prevent the spread of this debris during windy conditions. At the completion of the work, the Contractor SHALL leave the premises in a neat, clean, and orderly fashion.
- D. **The Contractor SHALL power wash any mechanical equipment or vehicle to be used on the job site to remove all mud and debris prior to unloading on the site.** This is necessary to prevent contamination by invasive species seeds that may be attached to the equipment. The Contractor SHALL NOT unload the equipment on site without prior visual inspection by the Property Manager. No other vehicles/machines shall be permitted in the project area. All other equipment or project related vehicles must be parked in specified parking areas.

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1.11 SAFETY AND HEALTH PLAN

- A. **The Contractor SHALL** be required to comply with all OSHA or IOSHA regulations as may be applicable to this project and obtain all permits that may be required for compliance.
- B. **The Contractor SHALL** prepare a safety and health plan that identifies the safety requirements of the project, procedures to follow in case of an emergency, accident, injury, or illness and make this plan available to all employees, and sub-contractors complete with persons and/or phone numbers to call for all who are working at this site. This plan **SHALL** be given to the Project Manager or his representative prior to the start of work and posted at the job site.
- C. **The Contractor SHALL** understand that the Property, DNR Engineering, nor the State of Indiana DOES NOT bare any responsibility for the cost of injuries to Contractor or Sub-Contractor, or their employees injured during the course of the contract. The **Contractor SHALL** be responsible for the transport of injured employees needing medical or other attention.

1.12 SUBSTITUTIONS

- A. Materials and methods specified herein are known to meet the requirements of the project. Anyone wanting to use substitute materials or methods shall submit a written request, accompanied by necessary supporting information at least 10 days prior to the bid. If the Designer determines that the proposed substitution is acceptable, an addendum to the specifications will be issued to all prospective bidders.

1.13 ARCHAEOLOGY

- A. Comply with requirements established by the Indiana Department of Natural Resources Division of Historic Preservation and Archaeology.

1.14 SITE ACCESS PRIOR TO BIDDING:

- A. Bidders may obtain access to the construction site, for on-site inspection prior to bidding. Contact Personnel are:

Property Manager:	Brady Givens, bgivens@dnr.in.gov
Assistant Property Manager:	Kaitlin Carroll, kcarroll@dnr.in.gov
Telephone:	(317) 591-0904
Mailing Address:	5753 Glenn Road Indianapolis, IN 46216
Website:	https://www.in.gov/dnr/parklake/2982.htm

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION 01010

SECTION 085200 - ALL WOOD WINDOWS

PART 1 1. GENERAL

1.1 SECTION INCLUDES

- A. All Wood Windows: Manufacturer's standard double-hung and awning windows.

1.2 REFERENCES

- A. Window and Door Manufacturers Association (WDMA):
 - 1. AAMA/WDMA/CSA 101/I.S.2/A440 – North American Fenestration Standard/Specification for windows, doors, and skylights (NAFS).
 - 2. WDMA I.S.4; Water Repellent Preservative Non-Pressure treatment for Millwork
- B. National Fenestration Rating Council (NFRC):
 - 1. NFRC 100 - Procedure for Determining Fenestration Product U-Factors.
 - 2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- B. Shop Drawings: Submit shop drawings indicating details of construction, flashings, anchorage, and relationship with adjacent construction.
- C. Verification Samples: For each factory-finished product specified, two samples, minimum size 6 inches (150 mm) square, representing actual finishes.
- D. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 2 years installing similar assemblies.
- B. Pre-installation Meeting: Conduct pre-installation meeting on-site as directed by Owner's Inspector / Code Administrator, prior to commencement of installation.
- C. Special Project Requirements:
 - 1. Window Size Tolerance: Blocking/filler dimensions, perimeter gaps, and window dimensions shall conform to the tolerances indicated on drawings and not reduce the overall size of the window beyond the limits indicated.
 - a. Anticipated Standard Window Frame Sizes: Field verify each masonry opening.
 - Window Elevation A: 27 3/4" W x 26 3/4" H
 - Window Elevation B, C, & E: 31 3/8" W x 56" H
 - Window Elevation D: 37 3/8" W x 56" H

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2. Emergency Egress: Both sashes shall be removable without the use of a key or tool in compliance with Indiana Amendment Section R310.1.5.3 to facilitate emergency egress.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.
- B. Deliver and store assembly materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact. Protect from damage.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.7 WARRANTY

- A. Manufacturer's Standard Warranty: Assemblies will be free from defects in materials and workmanship from the date of Manufacture for the time periods indicated below:
 1. Basic Product Coverage - Window Units: 20 years.
 2. AuraLast Protection for wood products: 20 years.
 - a. Coverage is for wood decay and/or termite damage in pine wood components.
 3. Glazing:
 - a. Insulated Glass: 20 years.
 - b. Special Glazing: 5 years.
 4. Warranty shall include IDNR Owner / Staff Occupied residence.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers
 1. JELD-WEN, Inc.; 2645 Silver Crescent Drive, Charlotte, NC 28273; Toll Free Tel: 800-535-3936; Tel: 541-850-2606; Fax: 541-851-4333; Email: mailto:architectural_inquiries@jeld-wen.com; Web: <http://www.jeld-wen.com>.
 2. Or Equal
- B. Subject to compliance with requirements, requests for substitutions shall be submitted at least ten (10) business days prior to the bid due date.

2.2 ALL WOOD WINDOWS - GENERAL

- A. Design Requirements:
 1. Compliance: Provide assemblies capable of complying with requirements indicated, based on testing manufacturer's units that are representative of those specified.
 2. Test Size: In compliance with requirements of AAMA/WDMA/CSA 101/I.S2/A440.
 3. Structural Requirements: Provide assemblies complying with code requirements.
 4. NFRC Requirements: Provide assemblies complying with the following total window ratings:
 - a. Min. U-Factor: 0.35 in accordance with NFRC 100.
 - b. Solar Heat Gain Coefficient (SHGC): 0.40 in accordance with NFRC 200.

- c. Visible Transmittance (VT): Manufacturer's standard in accordance with NFRC 200.

- B. Installation Accessories:
 - 1. Flashing: Refer to Sheet G-2, Division 7 specification notes
 - 2. Sealants: Refer to Sheet G-2, Division 7 specification notes

- C. Materials:
 - 1. Exterior Wood: Western Pine, preservative treated with AuraLast® by JELD-WEN, Inc. in accordance with WDMA I.S.4.
 - 2. Interior Wood:
 - a. Material: AuraLast Pine – Factory fabricated

- D. Factory Finishes:
 - 1. Exterior Finishes for Windows:
 - a. Finish: Primed and with optional pre-finished paint
 - 1) Color: Brilliant White.
 - 2. Interior Finishes for Windows:
 - a. Finish: Primed and with optional pre-finished paint
 - 1) Color: Brilliant White.
 - 3. Exterior Finishes for Window Trim:
 - a. Finish: Primed and with optional pre-finished paint
 - 1) Color: Brilliant White.
 - 4. Interior Finishes for Window Trim:
 - a. Finish: Primed and with optional pre-finished paint
 - 1) Color: Brilliant White.

- E. Factory and Field Finishes at Contractor's Option:
 - 1. Exterior Finishes for Windows: Factory Finish as noted above
 - 2. Interior Finishes for Windows: Factory Finish as noted above
 - 3. Exterior Finishes for Window Trim: Refer to Sheet G-2, Division 9 specification notes
 - 4. Interior Finishes for Window Trim: Refer to Sheet G-2, Division 9 specification notes

2.3 ALL WOOD WINDOW ASSEMBLIES

- A. Basis of Design: Sitaline Series Wood window assemblies as manufactured by JELD-WEN, Inc.
 - 1. Window Types:
 - a. Double-hung windows
 - 1) Tilt-in sashes
 - b. Awning windows.

- B. Window Fabrication:
 - 1. Window Type: Double-hung windows.
 - a. Frame: Corner joints mechanically fastened.
 - b. Sash: Corner joints slot-and-tenoned, and mechanically fastened.
 - c. Glass: Mounted using silicone glazing compound and secured with interior applied profiled wood stops.
Glazing Bead: Traditional Beveled.

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- d. Sash Bottom Rail: 2-1/4 inches
2. Window Type: Awning
 - a. Frame: Corner joints mechanically fastened.
 - b. Sash: Corner joints slot-and-tenoned, and mechanically fastened.
 - c. Glass: Mounted using silicone glazing compound and secured with interior applied profiled wood stops.
Glazing Bead: Traditional Beveled.
- C. Frames:
 1. Material: Select kiln-dried pine AuraLast treated wood.
 2. Awning Windows Base Frame: 3-3/4 inch (95 mm).
 3. Double-hung Windows Base Frame: 4-9/16 inch (115 mm).
 4. Jamb Width: 4-9/16 inches (116 mm).
- D. Sash: Select kiln-dried pine AuraLast treated wood.
 1. Sash Thickness: 1-7/16 inches (36.5 mm).
- E. Exterior Trim: 2 inch Flat Casing
 1. Sill Angle: 14 degrees
 2. Sill Nosing: 2 inches
- F. Factory Applied Extension Jambs:
 1. Configuration: On 3 sides of frame interior (head, jamb, and sill) in preparation for stool by others.
 2. Material: Manufacturer's standard
 3. Size: As indicated.
 - a. Double Hung: Reference drawings
 - b. Awning: Reference drawings
- G. Field Applied Extension Jambs at Contractor's Option:
 1. Configuration: On 3 sides of frame interior (head, jamb, and sill) in preparation for stool by others.
 2. Material: Pine
 3. Size: As indicated.
 - a. Double Hung: Reference drawings
 - b. Awning: Reference drawings
- H. Weatherstripping:
 1. Double-hung Windows: Dual bulb at head and sill, thermoplastic rubber bulb at check rail, rigid vinyl water stops at sill.
 - a. Concealed Jamb Track Color: White.
 2. Awning Windows: Flexible hinged leaf applied to sash and foam filled bulb at full perimeter of frame.
- I. Window Hardware:
 1. Double-Hung Windows:
 - a. Balance: Dual block and tackle
 - b. Lock: Recessed cam action
 - 1) Finish: White

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- c. Tilt Mechanism: Manufacturer's standard
 - 2. Awning Windows:
 - a. Hinges: Sliding steel reinforced nylon shoe in stainless steel track.
 - b. Operator: Roto type, with single pull scissor arm and hardened steel worm gears.
 - c. Handle: Nesting Crank Handle
 - d. Finish: White

- J. Glazing for Windows:
 - 1. Strength: Annealed and Tempered as required by code
 - 2. Glazing Type: Insulated glass
 - a. Description: Two panes of glass utilizing continuous roll formed stainless steel spacer and dual seal sealants
 - b. Overall Nominal Thickness: 3/4 inch (19 mm)
 - c. Glass Coating: Low-E 366
 - d. Glass Protection: Plastic preserve film on interior and exterior of glass
 - e. Air Space: Argon
 - f. Special Finish: "Matte Frost" on interior glass only where indicated

- K. Exterior Insect Screens:
 - 1. Material: Charcoal fiberglass screen cloth (18 by 16 mesh) set in painted roll formed aluminum frame.
 - 2. Frame Color: Brilliant White

- L. Grilles:
 - 1. Type: Simulated Divided Lites (SDL).
 - a. Exterior Muntins:
 - Material: Extruded aluminum permanently applied to exterior of insulating glass unit.
 - 1) Profile: Beaded
 - (a) Width: 7/8 inch
 - (b) Finish: Brilliant White
 - 2) Pattern: As scheduled and indicated on Drawings
 - b. Internal Shadow Bar: Silver
 - c. Interior Spacer Bars: Silver
 - d. Interior Muntins:
 - 1) Material: Clear pine permanently bonded to interior of insulating glass unit.
 - 2) Profile: Beaded
 - e. Finish: Brilliant White

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Inspect and prepare openings and substrates using the methods recommended by the manufacturer for achieving best result for the substrates under project conditions.
 - 1. Inspect assembly components prior to installation.
 - 2. Verify rough opening conditions are within recommended tolerances.
 - 3. Form sheet metal sill pan in accordance with manufacturer's recommendations.

4. Prepare assembly components for installation in accordance with manufacturer's recommendations.
- B. Do not proceed with installation until openings and substrates have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.
- C. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

3.2 INSTALLATION

- A. Install assemblies in accordance with manufacturer's installation guidelines and recommendations including the following.
- B. Installation of Windows: Insert windows into rough opening.
 1. Shim side jambs straight.
 2. Inspect window for square, level and plumb.
 3. Fasten windows in place with screws and as recommended by window manufacturer.
 4. Test and adjust for smooth operation of window.
 5. Countersink screws below wood surface and fill.
 6. Reference drawings for additional information.

3.3 FIELD QUALITY CONTROL

- A. Manufacturers' Field Services: Perform field inspections as recommended by manufacturer.

3.4 CLEANING AND PROTECTION

- A. Clean the exterior surface and glass with mild soap and water.
- B. Protect installed windows from damage.
- C. Remove and dispose of protective film from glass; touch-up, repair or replace damaged components and assemblies before Substantial Completion.

END OF SECTION

SECTION 087100 - HARDWARE SPECIFICATIONS AND SCHEDULE

- Hardware types listed shall meet the requirements of the applicable provisions of the following Federal Specifications: Locks and Door Trim (FF-H-00106c/gen), Door stops and bumpers (FF-H-111a).
- Hardware of other manufacturers may be substituted upon written approval of the Architect with the following exceptions: **All keyed locks shall have cores manufactured by Stanley Security Solutions Best Lock Corporation, Indianapolis, Indiana, or Marshall Best Security Corporation.**
- Provide construction and permanent cores and temporary and permanent keys for all locks.
- Construction cores will remain the property of the Stanley Security Solution Best Lock Corporation, (or Marshall Best Security Corporation) and will be exchanged by the Owner for permanent cores master-keyed to the Owners system.
- Control key and operating keys for construction shall not be part of Owner's permanent master-key system. Control key and one (1) operating key shall be furnished to Owner prior to occupancy.
- Contractor shall, at no additional charge, furnish credit to the Owner direct from Best Lock Corporation factory or sales representative the following items:
 - a. One (1) permanent core keyed lock.
 - b. Two (2) keys per permanent core.
- All keyed locks shall be furnished with construction cores. All exterior locks shall be furnished with brass construction cores.
- Submit product data and shop drawings for approval
- Finish for hardware: As noted
- Drawings and Specifications indicate the Basis-of-Design Products. Subject to compliance with requirements, provide specified product or Equal as approved by Architect ten (10) business days prior to the bid due date. Reference drawings and specifications for Model #'s. SKU #'s, where listed, may be used to search for additional product information at www.menards.com.
- Anchors for thresholds and door stops: lead machine screw anchors. Rawl plugs are not acceptable.
- Threshold Installation:
 - 1. Bedded in synthetic rubber sealant.
 - 2. Fasten with lead machine screw anchors.
 - 3. Shall not be pre-drilled.
 - 4. Accessible Entrance Thresholds shall meet American's with Disabilities Act of 1990 amended to date.

Hardware Schedule:

Set #1 – Exterior Entrance 01-A

Hardware:

- 1. Temporary Construction Core S. Best
- 2. Return Permanent Core to Owner and reinstall at end of project

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Set #2 – Exterior Entrance 08-B

Door:

1. Mastercraft, similar to Model / SKU # 4149166 (Modify as required).
 - a. Minus Deadbolt Bore.
 - b. Provide Right Outswing Door as indicated on plan (Not Inswing).
2. Primed 24 gage Steel, 15-Lite Exterior, Prehung Door System with primed wood frame and 1-inch clear insulated glass with grilles-in-airspace.
3. SHGC: 0.09, U-Value: 0.22
4. Satin Nickel Hinges.

Hardware:

- | | |
|---|-------------------------|
| 1. 1 set Weather-stripping | Manufacturer's standard |
| 2. 1 set Sill Sweep | Manufacturer's standard |
| 3. 1 ea. Threshold - ½" H max for ADA | Manufacturer's standard |
| 4. 1 ½ pr. Butt Hinges | Manufacturer's standard |
| 5. 1 ea. Rain Drip Guard 16A | NGP |
| 6. Lockset – Model # CO-100-CY-KP-RHO-626AM | Schlage |
| 7. Exterior Cylinder / Core (7-pin, SFIC) | S. Best |
| 8. Keys | S. Best |

Set #3 – Bathroom 05-A, Bedrooms 06-A, 07-A, 08-A

Door:

1. Mastercraft, similar to Model / SKU # 410066X (X = 4 or 5; Handing to match plan).
2. Primed 5-Panel, Prehung Interior Door with 4 9/16" Primed Frame.
3. Satin Nickel Hinges.

Hardware:

- | | |
|---|-------------------------|
| 1. 1 ½ pr. Butt Hinges | Manufacturer's standard |
| 2. Bed & Bath Lockset – Model # F40VMER619
SKU # 2214011 | Schlage |
| 3. 1 ea. Wall Bumper - 407CCV – US26D | IVES |

Set #4 – Closet 08-C

Door:

1. Colonial Elegance Mission, similar to Model # 04880COL57. SKU # 4132793
2. White 3-Panel, Sliding Bypass Door.
3. Prefinished Top Track Fascia.

Hardware:

- | | |
|-------------------------|-------------------------|
| 1. Bottom Roller System | Manufacturer's standard |
| 2. Bottom & Top Track | Manufacturer's standard |

Set #5 – Closet Doors 05-B, 09-A, 10-A

Door:

1. Mastercraft, similar to Model # 410065X (X = 2 or 3; Size & Handing to match plan).
2. Primed 5-Panel, Prehung Interior Door with 4 9/16" Primed Frame.
3. Satin Nickel Hinges.

Hardware:

- | | |
|--|-------------------------|
| 1. 1 ½ pr. Butt Hinges | Manufacturer's standard |
| 2. Hall & Closet Lockset – Model # F10VMER619
SKU # 2214012 | Schlage |
| 3. 1 ea. Wall Bumper - 407CCV – US26D | IVES |

Set #6 – Closet Door 11-A

Door:

1. Mastercraft, similar to Model # 410066X (X = 0 or 1; Size & Handing to match plan).
2. Primed 5-Panel, Prehung Interior Door with 4 9/16" Primed Frame.
3. Satin Nickel Hinges.

Hardware:

- | | |
|--|-------------------------|
| 1. 1 ½ pr. Butt Hinges | Manufacturer's standard |
| 2. Hall & Closet Lockset – Model # F10VMER619
SKU # 2214012 | Schlage |

Set #7 – Laundry Door 11-B

Door:

1. Mastercraft, similar to Model # 410066X (X = 4 or 5; Size & Handing to match plan).
2. Primed 5-Panel, Prehung Interior Door with 4 9/16" Primed Frame.
3. Satin Nickel Hinges.

Hardware:

- | | |
|--|-------------------------|
| 1. 1 ½ pr. Butt Hinges | Manufacturer's standard |
| 2. Hall & Closet Lockset – Model # F10VMER619
SKU # 2214012 | Schlage |

Set #8 – Exterior Entrance 07-B

Door:

1. Mastercraft, Model / SKU # 4149166 (Modify as required).
 - a. Provide Right Hand Door as indicated on plan.
2. Primed 24 gage Steel, 15-Lite Exterior, Prehung Door System with primed wood frame and 1-inch clear insulated glass with grilles-in-air-space.
3. SHGC: 0.09, U-Value: 0.22
4. Satin Nickel Hinges.

Hardware:

- | | |
|--|-------------------------|
| 1. 1 set Weather-stripping | Manufacturer's standard |
| 2. 1 set Sill Sweep | Manufacturer's standard |
| 3. 1 ea. Threshold - ½" H max for ADA | Manufacturer's standard |
| 4. 1 ½ pr. Butt Hinges | Manufacturer's standard |
| 5. 1 ea. Rain Drip Guard 16A | NGP |
| 6. Lockset - Model # AL53 with cylinder
JUP Lever, 619 Finish | Schlage |
| 7. Deadbolt - Model # B560 with cylinder
619 Finish | Schlage |
| 8. Exterior Cylinder / Core (7-pin, SFIC) | S. Best |
| 9. Keys | S. Best |

SECTION 221116 - DOMESTIC WATER PIPING

PART 1 - GENERAL

PRODUCT DATA SHEET 0 - SUMMARY

- A. Section Includes:
1. Copper tube and fittings.
 2. Galvanized steel pipe and fittings.
 3. CPVC piping.
 4. PEX tube and fittings.
 5. PVC pipe and fittings.
 6. Piping joining materials.
 7. Transition fittings.

PART 2 - PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Avitru. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications. For definitions of terms and requirements for Contractor's product selection, see Section 016000 "Product Requirements."

PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.
- B. Potable-water piping and components shall comply with NSF 14, NSF 61, and NSF 372

COPPER TUBE AND FITTINGS

- C. Hard Copper Tube: [**ASTM B 88, Type L (ASTM B 88M, Type B)**] [**and**] [**ASTM B 88, Type M (ASTM B 88M, Type C)**] water tube, drawn temper.
- D. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.
- E. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
- F. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.
- G. Copper Unions:
1. MSS SP-123.
 2. Cast-copper-alloy, hexagonal-stock body.

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3. Ball-and-socket, metal-to-metal seating surfaces.
 4. Solder-joint or threaded ends.
- H. Copper, Brass, or Bronze Pressure-Seal-Joint Fittings:
1. Fittings: Cast-brass, cast-bronze, or wrought-copper with EPDM O-ring seal in each end. Sizes **NPS 2-1/2 (DN 65) and larger with stainless steel grip ring and EPDM O-ring seal.**
 2. Minimum **200-psig (1379-kPa)** working-pressure rating at **250 deg F (121 deg C).**
- I. Copper Push-on-Joint Fittings:
1. Cast-copper fitting complying with ASME B16.18 or wrought-copper fitting complying with ASME B 16.22.
 2. Stainless-steel teeth and EPDM-rubber, O-ring seal in each end instead of solder-joint ends.

GALVANIZED-STEEL PIPE AND FITTINGS

- J. Galvanized-Steel Pipe:
1. ASTM A 53/A 53M, [**Type E**], [**Grade B**], Standard Weight.
 2. Include ends matching joining method.
- K. Galvanized-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106/A 106M, Standard Weight, seamless steel pipe with threaded ends.
- L. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- M. Malleable-Iron Unions:
1. ASME B16.39, Class 150.
 2. Hexagonal-stock body.
 3. Ball-and-socket, metal-to-metal, bronze seating surface.
 4. Threaded ends.
- N. Flanges: ASME B16.1, Class 125, cast iron, CPVC PIPING
- O. CPVC Pipe: ASTM F 441/F 441M, [**Schedule 40**]
1. CPVC Socket Fittings: [**ASTM F 438 for Schedule 40**].
 2. CPVC Threaded Fittings: ASTM F 437, Schedule 80.
- P. CPVC Piping System: ASTM D 2846/D 2846M, SDR 11, pipe and socket fittings.
- Q. CPVC Tubing System: ASTM D 2846/D 2846M, SDR 11, tube and socket fittings.

PRODUCT DATA SHEET 1 - PEX TUBE AND FITTINGS

- A. Tube Material: PEX plastic according to ASTM F 876[**and ASTM F 877**].
- B. Fittings: [**ASTM F 1807, metal insert and copper crimp rings**] [**ASTM F 1960, cold expansion fittings and reinforcing rings**].

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- C. Fittings: ASSE 1061, push-fit fittings.
- D. Manifold: Multiple-outlet, plastic or corrosion-resistant-metal assembly complying with ASTM F 876; with plastic or corrosion-resistant-metal valve for each outlet.

PRODUCT DATA SHEET 2 - PVC PIPE AND FITTINGS

- A. PVC Pipe: ASTM D 1785, [Schedule 40] [and] [Schedule 80].
- B. PVC Socket Fittings: [ASTM D 2466 for Schedule 40] [and] [ASTM D 2467 for Schedule 80].
- C. PVC Schedule 80 Threaded Fittings: ASTM D 2464.

PRODUCT DATA SHEET 3 - PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials:
 - 1. AWWA C110/A21.10, rubber, flat face, 1/8 inch (3.2 mm) thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
 - 2. Full-face or ring type unless otherwise indicated.
- B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- C. Solder Filler Metals: ASTM B 32, lead-free alloys.
- D. Flux: ASTM B 813, water flushable.
- E. Brazing Filler Metals: AWS A5.8M/A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.
- F. Solvent Cements for Joining CPVC Piping and Tubing: ASTM F 493.
 - 1.
- G. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656. .
 - 1.
- H. Plastic, Pipe-Flange Gaskets, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

PRODUCT DATA SHEET 4 - TRANSITION FITTINGS

- A. General Requirements:
 - 1. Same size as pipes to be joined.
 - 2. Pressure rating at least equal to pipes to be joined.
 - 3. End connections compatible with pipes to be joined.
- B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Plastic-to-Metal Transition Fittings:

1. Description:

- a. [CPVC] [or] [PVC] one-piece fitting with manufacturer's Schedule 80 equivalent dimensions.
- b. One end with threaded brass insert and one solvent-cement-socket[or threaded] end.

D. Plastic-to-Metal Transition Unions:

1. Description:

- a. [CPVC] [or] [PVC] four-part union.
- b. Brass[or stainless-steel] threaded end.
- c. Solvent-cement-joint[or threaded] plastic end.
- d. Rubber O-ring.
- e. Union nut.

PART 3 - EXECUTION

PRODUCT DATA SHEET 0 - PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."
- C. Install ductile-iron piping under building slab with restrained joints according to AWWA C600 and AWWA M41.
- D. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping" and with requirements for drain valves and strainers in Section 221119 "Domestic Water Piping Specialties."
- E. Install shutoff valve immediately upstream of each dielectric fitting.
- F. Install water-pressure-reducing valves downstream from shutoff valves. Comply with requirements for pressure-reducing valves in Section 221119 "Domestic Water Piping Specialties."
- G. Install domestic water piping level [with 0.25 percent slope downward toward drain] and plumb.
- H. Rough-in domestic water piping for water-meter installation according to utility company's requirements.

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- I. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.
- J. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- K. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.
- L. Install piping to permit valve servicing.
- M. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.
- N. Install piping free of sags and bends.
- O. Install fittings for changes in direction and branch connections.
- P. Install PEX tubing with loop at each change of direction of more than 90 degrees.
- Q. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.
- R. Install pressure gages on suction and discharge piping for each plumbing pump and packaged booster pump. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping."
- S. Install thermostats in hot-water circulation piping. Comply with requirements for thermostats in Section 221123 "Domestic Water Pumps."
- T. Install thermometers on[**inlet and**] outlet piping from each water heater. Comply with requirements for thermometers in Section 220519 "Meters and Gages for Plumbing Piping."
- U. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- V. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- W. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

PRODUCT DATA SHEET 1 - JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

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- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Braze Joints" chapter.
- E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."
- F. Pressure-Sealed Joints for Copper Tubing: Join copper tube and pressure-seal fittings with tools recommended by fitting manufacturer.
- G. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.
- H. Joint Construction for Solvent-Cemented Plastic Piping: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements. Apply primer.
 - 2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
 - 3. PVC Piping: Join according to ASTM D 2855.
- I. Joints for PEX Tubing: Join according to ASTM F 1807 for metal insert and copper crimp ring fittings and ASTM F 1960 for cold expansion fittings and reinforcing rings.
- J. Joints for PEX Tubing: Join according to ASSE 1061 for push-fit fittings.
- K. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

PRODUCT DATA SHEET 2 - TRANSITION FITTING INSTALLATION

- A. Install transition couplings at joints of dissimilar piping.
- B. Transition Fittings in Underground Domestic Water Piping:
 - 1. Fittings for **NPS 1-1/2 (DN 40)** and Smaller: Fitting-type coupling.
 - 2. Fittings for **NPS 2 (DN 50)** and Larger: Sleeve-type coupling.
- C. Transition Fittings in Aboveground Domestic Water Piping **NPS 2 (DN 50)** and Smaller: Plastic-to-metal transition [**fittings**] [**or**] [**unions**].

PRODUCT DATA SHEET 3 - INSTALLATION OF HANGERS AND SUPPORTS

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- A. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- B. Comply with requirements for hangers, supports, and anchor devices in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
 - 1. Vertical Piping: MSS Type 8 or 42, clamps.
 - 2. Individual, Straight, Horizontal Piping Runs:
 - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
 - b. Longer than 100 Feet (30 m): MSS Type 43, adjustable roller hangers.
 - c. Longer than 100 Feet (30 m) if indicated: MSS Type 49, spring cushion rolls.
 - 3. Multiple, Straight, Horizontal Piping Runs 100 Feet (30 m) or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
 - 4. Base of Vertical Piping: MSS Type 52, spring hangers.
- C. Install hangers for [copper] [ductile iron] [and] [galvanized steel] [tubing] [and] [piping], with maximum horizontal spacing and minimum rod diameters, to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- D. Install vinyl-coated hangers for [CPVC] [and] [PVC] piping, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- E. Install vinyl-coated hangers for PEX tubing, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- F. Support horizontal piping within [12 inches (300 mm)] of each fitting.
- G. Support vertical runs of [copper] [ductile iron] [galvanized steel] [and] [stainless steel] [tubing] [and] [piping] to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- H. Support vertical runs of [CPVC] [and] [PVC] piping to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- I. Support vertical runs of PEX tubing to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

PRODUCT DATA SHEET 4 - CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.
- C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

- D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:
1. Domestic Water Booster Pumps: Cold-water suction and discharge piping.
 2. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
 3. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
 4. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for **NPS 2-1/2 (DN 65)** and larger.

PRODUCT DATA SHEET 5 - FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
1. Piping Inspections:
 - a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
 - b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
 - 1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
 - 2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.
 - c. Re-inspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for re-inspection.
 - d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
 2. Piping Tests:
 - a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
 - b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
 - c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 - d. Cap and subject piping to static water pressure of **50 psig (345 kPa)** above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
 - e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.

- f. Prepare reports for tests and for corrective action required.
- B. Domestic water piping will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

PRODUCT DATA SHEET 6 - ADJUSTING

- A. Perform the following adjustments before operation:
 - 1. Close drain valves, hydrants, and hose bibbs.
 - 2. Open shutoff valves to fully open position.
 - 3. Open throttling valves to proper setting.
 - 4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.
 - a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
 - b. Adjust calibrated balancing valves to flows indicated.
 - 5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
 - 6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
 - 7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
 - 8. Check plumbing specialties and verify proper settings, adjustments, and operation.

PRODUCT DATA SHEET 7 - CLEANING

- A. Clean and disinfect potable domestic water piping as follows:
 - 1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
 - 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Fill and isolate system according to either of the following:
 - 1) Fill system or part thereof with water/chlorine solution with at least **50 ppm (50 mg/L)** of chlorine. Isolate with valves and allow to stand for 24 hours.
 - 2) Fill system or part thereof with water/chlorine solution with at least **200 ppm (200 mg/L)** of chlorine. Isolate and allow to stand for three hours.
 - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
 - d. Repeat procedures if biological examination shows contamination.
 - e. Submit water samples in sterile bottles to authorities having jurisdiction.

- B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.
- C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

PRODUCT DATA SHEET 8 - PIPING SCHEDULE

- A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
- B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
- C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.
- D. Under-building-slab, domestic water, building-service piping, **[NPS 3 (DN 80) and smaller]** <Insert pipe size range>, shall be **[one of]** the following:
 - 1. Soft copper tube, **[ASTM B 88, Type K (ASTM B 88M, Type A)] [ASTM B 88, Type L (ASTM B 88M, Type B)]**; **[wrought-copper, solder-joint fittings; and brazed] [copper pressure-seal fittings; and pressure-sealed]** joints.
 - 2. PVC, **[Schedule 40] [Schedule 80]**; socket fittings; and solvent-cemented joints.
- E. Aboveground domestic water piping, **[NPS 2 (DN 50) and smaller]** <Insert pipe size range>, shall be **[one of]** the following:
 - 1. Galvanized-steel pipe and nipples; galvanized, gray-iron threaded fittings; and threaded joints.
 - 2. Hard copper tube, **[ASTM B 88, Type L (ASTM B 88M, Type B)] [ASTM B 88, Type M (ASTM B 88M, Type C)]**; **[cast-] [or] [wrought-]copper, solder-joint fittings; and [brazed] [soldered]** joints.
 - 3. Hard copper tube, **[ASTM B 88, Type L (ASTM B 88M, Type B)] [or] [ASTM B 88, Type M (ASTM B 88M, Type C)]**; copper pressure-seal-joint fittings; and pressure-sealed joints.
 - 4. Hard copper tube, **[ASTM B 88, Type L (ASTM B 88M, Type B)] [or] [ASTM B 88, Type M (ASTM B 88M, Type C)]**; copper push-on-joint fittings; and push-on joints.
 - 5. CPVC, **[Schedule 40] [Schedule 80]**; socket fittings; and solvent-cemented joints.
 - 6. CPVC, Schedule 80 pipe; CPVC, Schedule 80 threaded fittings; and threaded joints.
 - 7. CPVC Tubing System: CPVC tube; CPVC socket fittings; and solvent-cemented joints. **[NPS 1-1/2 (DN 40) and NPS 2 (DN 50) CPVC pipe with CPVC socket fittings may be used instead of tubing.]**
 - 8. PEX tube, **NPS 1 (DN 25)** and smaller.
 - a. Fittings for PEX tube:
 - 1) ASTM F 1807, metal insert and copper crimp rings.
 - 2) ASTM F 1960, cold expansion fittings and reinforcing rings.
 - 3) ASSE 1061, push-fit fittings.

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9. PVC, [**Schedule 40**] [**Schedule 80**]; socket fittings; and solvent-cemented joints. Retain " one of" option in first paragraph below to allow Contractor to select piping materials from those retained.

END OF SECTION 221116

SECTION 233113 - METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Single-wall rectangular ducts and fittings.
- 2. Single-wall round ducts and fittings.
- 3. Sheet metal materials.

- B. Related Sections:

- 1. Section 233116 "Nonmetal Ducts" for fibrous-glass ducts, thermoset fiber-reinforced plastic ducts, thermoplastic ducts, PVC ducts, and concrete ducts.

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

- 1. Construct ducts of galvanized sheet steel unless otherwise indicated.

- B. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SINGLE-WALL ROUND DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

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1. Construct ducts of galvanized sheet steel unless otherwise indicated.
2. For ducts exposed to weather, construct of [**Type 304**] stainless steel indicated by manufacturer to be suitable for outdoor installation. Retain manufacturer list to require factory-fabricated, single-wall round and flat-oval ducts and fittings; delete to allow shop-fabricated ducts and fittings.

2.3 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.4 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested in accordance with UL 723; certified by an NRTL.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and coordination drawings.
- B. Install ducts in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install ducts in maximum practical lengths with fewest possible joints.
- D. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- E. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- F. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- G. Install ducts with a clearance of **1 inch (25 mm)**, plus allowance for insulation thickness.
- H. Route ducts to avoid passing through light fixtures and electrical equipment rooms and enclosures.

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- I. Branch Connections: Use lateral or conical branch connections.

3.2 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

3.3 CONNECTIONS

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.4 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:
- B. Branch Configuration:
 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
 - a. Rectangular Main to Rectangular Branch: 45-degree entry.
 - b. Rectangular Main to Round Branch: Conical spin in.
 2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.
 - a. Velocity 1000 fpm (5 m/s) or Lower: 90-degree tap.
 - b. Velocity 1000 to 1500 fpm (5 to 7.6 m/s): Conical tap.
 - c. Velocity 1500 fpm (7.6 m/s) or Higher: 45-degree lateral.

3.5 CONNECTIONS

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

END OF SECTION 233113

SECTION 233346 - FLEXIBLE DUCTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Insulated flexible ducts.

1.2 ACTION SUBMITTALS

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

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

2.2 INSULATED FLEXIBLE DUCTS

- A. Insulated, Flexible Duct: UL 181, Class 1, two-ply vinyl film supported by helically wound, spring-steel wire; fibrous-glass insulation; [**polyethylene**] vapor-barrier film.
 - 1. Pressure Rating: **10-inch wg (2500 Pa)** positive and **1.0-inch wg (250 Pa)** negative.
 - 2. Maximum Air Velocity: **4000 fpm (20 m/s)**.
 - 3. Temperature Range: **Minus 10 to plus 160 deg F (Minus 23 to plus 71 deg C)**.
 - 4. Insulation R-Value: [**Comply with ASHRAE/IES 90.1 [R6]**]

2.3 FLEXIBLE DUCT CONNECTORS

- A. Clamps: [**Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action**] in sizes **3 through 18 inches (75 through 460 mm)**, to suit duct size.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install flexible ducts according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

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- B. Install in indoor applications only. Flexible ductwork should not be exposed to UV lighting.
- C. Connect terminal units to supply ducts[**directly or**] with maximum [**12-inch (300-mm)**] <**Insert dimension**> lengths of flexible duct. Do not use flexible ducts to change directions.
- D. Connect diffusers or light troffer boots to ducts[**directly or**] with maximum [**60-inch (1500-mm)**] <**Insert dimension**> lengths of flexible duct clamped or strapped in place.
- E. Connect flexible ducts to metal ducts with [**draw bands**].
- F. Installation:
 - 1. Install ducts fully extended.
 - 2. Do not bend ducts across sharp corners.
 - 3. Bends of flexible ducting shall not exceed a minimum of one duct diameter.
 - 4. Avoid contact with metal fixtures, water lines, pipes, or conduits.
 - 5. Install flexible ducts in a direct line, without sags, twists, or turns.
- G. Supporting Flexible Ducts:
 - 1. Suspend flexible ducts with bands **1-1/2 inches (38 mm)** wide or wider and spaced a maximum of **48 inches (1200 mm)** apart. Maximum centerline sag between supports shall not exceed **1/2 inch (13 mm)** per **12 inches (300 mm)**.
 - 2. Install extra supports at bends placed approximately one duct diameter from center line of the bend.
 - 3. Ducts may rest on ceiling joists or truss supports. Spacing between supports shall not exceed the maximum spacing per manufacturer's written installation instructions.
 - 4. Vertically installed ducts shall be stabilized by support straps at a maximum of **72 inches (1800 mm)** o.c.

END OF SECTION 233346

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire rated 600 V or less.
2. Metal-clad cable, Type MC, rated 600 V or less.
3. Connectors, splices, and terminations rated 600 V and less.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Conductors: Copper, complying with ASTM B3 for bare annealed copper.

D. Conductor Insulation:

1. Type NM: Comply with UL 83 and UL 719.
2. [Type RHH] [and] [Type RHW-2]: Comply with UL 44.
3. [Type USE-2] [and] [Type SE]: Comply with UL 854.
4. [Type THHN] [and] [Type THWN-2]: Comply with UL 83.
5. [Type THW] [and] [Type THW-2]: Comply with NEMA WC-70/ICEA S-95-658 and UL 83.

2.2 METAL-CLAD CABLE, TYPE MC

A. Description: A factory assembly of one or more current-carrying insulated conductors in an overall metallic sheath.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Comply with UL 1569.
3. RoHS compliant.
4. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Circuits:

1. **[Single circuit] [and] [multi-circuit with color-coded conductors].**

D. Conductors: **[Copper, complying with ASTM B3 for bare annealed copper].**

E. Ground Conductor: **[Insulated].**

F. Conductor Insulation:

1. Type TFN/THHN/THWN-2: Comply with UL 83.

G. Armor: **Steel** interlocked.

H. Jacket: PVC applied over armor.

2.3 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.

C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.

1. Material: **[Copper]**
2. Type: **Two** hole with **standard** barrels.
3. Termination: **Compression.**

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Feeders: Copper for feeders smaller than No. 4 AWG; Conductors shall be solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

- C. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: [**Multi-conductor cable, Type SE**].
- B. Exposed Feeders: [**Metal-clad cable, Type MC**]
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: [**Metal-clad cable, Type MC**] Coordinate "Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground" Paragraph below with "Underground Ducts and Raceways for Electrical Systems."
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: [**Underground feeder cable, Type UF**].
- E. Exposed Branch Circuits, Including in Crawlspace: [**Metal-clad cable, Type MC**].
- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: [**Metal-clad cable, Type MC**].
- G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: [**Underground branch-circuit cable, Type UF**].

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. **Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.**
- B. Complete raceway installation between conductor and cable termination points prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Code: "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material [**and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors**].
- C. Wiring at Outlets: Install conductor at each outlet, with at least [**6 inches (150 mm)**] of slack.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables .
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes grounding and bonding systems and equipment.

1.2 CONDUCTORS

- A. Insulated Conductors: [**Copper**] [**or**] [**tinned-copper**] wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B3.

1.3 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- C. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.

1.4 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel[, **sectional type**]; [**3/4 inch by 10 feet (19 mm by 3 m)**] [**5/8 by 96 inches (16 by 2400 mm)**].

PART 2 - EXECUTION

2.1 GROUNDING AT THE SERVICE

- A. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

2.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.

- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.
 - 2. Lighting circuits.
 - 3. Receptacle circuits.
 - 4. Single-phase motor and appliance branch circuits.
 - 5. Three-phase motor and appliance branch circuits.
 - 6. Flexible raceway runs.
 - 7. Armored and metal-clad cable runs.
- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
- D. Water Heater, Heat-Tracing, and Anti-frost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.
- E. Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

2.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
- C. Ground Rods: Drive rods until tops are **2 inches (50 mm)** below finished floor or final grade unless otherwise indicated.
 - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
- D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

2.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal[, **at ground test wells**][, **and at individual ground rods**]. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

C. Grounding system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

E. Report measured ground resistances that exceed the following values:

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1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: [**10**] < > ohms.
 2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: [**5**] < > ohms.
 3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: [**3**] < ohms.
 4. Power Distribution Units or Panelboards Serving Electronic Equipment: [**1**] [**3**] < ohm(s).
- F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Engineer promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Distribution panelboards.
 - 2. Lighting and appliance branch-circuit panelboards.

1.2 DEFINITIONS

- A. MCCB: Molded-case circuit breaker.
- B. SPD: Surge protective device.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of panelboard.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details.
 - 2. Detail enclosure types including mounting and anchorage, environmental protection, knockouts, corner treatments, covers and doors, gaskets, hinges, and locks.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5.

1.4 INFORMATIONAL SUBMITTALS

- A. Panelboard schedules for installation in panelboards.

1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace panelboards that fail in materials or workmanship within specified warranty period.
 - 1. Panelboard Warranty Period: [18] < months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANELBOARDS COMMON REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.
- C. Enclosures: [**Flush**] [**and**] [**Surface**]-mounted, dead-front cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, [**Type 1**] .
 - b. Outdoor Locations: NEMA 250, [**Type 3R**]
 - 2. Height: **84 inches (2.13 m)** maximum.
 - 3. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box. Trims shall cover all live parts and shall have no exposed hardware.
 - 4. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover. Trims shall cover all live parts and shall have no exposed hardware.
- D. Incoming Mains Location: [**Convertible between top and bottom**].
- E. Phase, Neutral, and Ground Buses: [**Hard-drawn copper, 98 percent conductivity**].
- F. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: [**Hard-drawn copper, 98 percent conductivity**].
 - 2. Main and Neutral Lugs: [**Mechanical**] type, with a lug on the neutral bar for each pole in the panelboard.
 - 3. Ground Lugs and Bus-Configured Terminators: [**Mechanical**] type, with a lug on the bar for each pole in the panelboard.
 - 4. Feed-Through Lugs: **Mechanical**] type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
 - 5. Subfeed (Double) Lugs: [**Mechanical**] type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
 - 6.
- G. NRTL Label: Panelboards shall be labeled by an NRTL acceptable to authority having jurisdiction for use as service equipment with one or more main service disconnecting and overcurrent protective devices. Panelboards shall have meter enclosures, wiring, connections, and other provisions for utility metering. Coordinate with utility company for exact requirements.
- H. Future Devices: Panelboards shall have mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

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- I. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by an NRTL. Include label or manual with size and type of allowable upstream and branch devices listed and labeled by an NRTL for series-connected short-circuit rating.
- J. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals. Assembly listed by an NRTL for 100 percent interrupting capacity.

2.2 PERFORMANCE REQUIREMENTS

- A. Surge Suppression: Factory installed as an integral part of indicated panelboards, complying with UL 1449 SPD [**Type 1**] [**Type 2**].

2.3 POWER PANELBOARDS

- A. Panelboards: NEMA PB 1, distribution type.
- B. Mains: [**Circuit breaker**].
- C. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: [**Plug-in circuit breakers**] [**Bolt-on circuit breakers**].
- D. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: [**Bolt-on circuit breakers**].
- E. Branch Overcurrent Protective Devices: Fused switches.

2.4 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- B. Mains: [200 amp **Circuit breaker**]
- C. Branch Overcurrent Protective Devices: [**Plug-in**] [**Bolt-on**] circuit breakers, replaceable without disturbing adjacent units.
- D. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.
- E. Column-Type Panelboards: Single row of overcurrent devices with narrow gutter extension and overhead junction box equipped with ground and neutral terminal buses.

2.5 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. MCCB: Comply with UL 489, with [**200 amp Main**] to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers:

- a. Inverse time-current element for low-level overloads.
 - b. Instantaneous magnetic trip element for short circuits.
 - c. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
 3. Electronic Trip Circuit Breakers:
 - a. RMS sensing.
 - b. Field-replaceable rating plug or electronic trip.
 - c. Digital display of settings, trip targets, and indicated metering displays.
 - d. Multi-button keypad to access programmable functions and monitored data.
 - e. Ten-event, trip-history log. Each trip event shall be recorded with type, phase, and magnitude of fault that caused the trip.
 - f. Integral test jack for connection to portable test set or laptop computer.
 - g. Field-Adjustable Settings:
 - 1) Instantaneous trip.
 - 2) Long- and short-time pickup levels.
 - 3) Long and short time adjustments.
 - 4) Ground-fault pickup level, time delay, and I squared T response.
 4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
 5. GFCI Circuit Breakers: Single- and double-pole configurations with Class A ground-fault protection (6-mA trip).
 6. GFEP Circuit Breakers: Class B ground-fault protection (30-mA trip).
 7. Arc-Fault Circuit Interrupter Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.
 8. Sub-feed Circuit Breakers: Vertically mounted.
 9. MCCB Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Breaker handle indicates tripped status.
 - c. UL listed for reverse connection without restrictive line or load ratings.
 - d. Lugs:[**Mechanical**] style, suitable for number, size, trip ratings, and conductor materials.
 - e. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and HID lighting circuits.
 - f. Ground-Fault Protection: [**Integrally mounted**] relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 - g. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

2.6 IDENTIFICATION

- A. Panelboard Label: Manufacturer's name and trademark, voltage, amperage, number of phases, and number of poles shall be located on the interior of the panelboard door.

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- B. Breaker Labels: Faceplate shall list current rating, UL and IEC certification standards, and AIC rating.
- C. Circuit Directory: Directory card inside panelboard door, mounted in [**transparent card holder**].

2.7 ACCESSORY COMPONENTS AND FEATURES

- A. Comply with NECA 1.
- B. Install panelboards and accessories according to [**NECA 407**].
- C. Mount top of trim [**90 inches (2286 mm)**] above finished floor unless otherwise indicated.
- D. Mount panelboard cabinet plumb and rigid without distortion of box.
- E. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- F. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- G. Install filler plates in unused spaces.

2.8 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Handwritten directories are not acceptable. Install directory inside panelboard door.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in power panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- E. Install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems" identifying source of remote circuit.

2.9 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:

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1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 2. Test continuity of each circuit.
- C. Tests and Inspections:
1. Perform each visual and mechanical inspection and electrical test for low-voltage air circuit breakers stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results, with comparisons of the two scans. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262416

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Standard-grade receptacles, 125 V, **20** A.
 - 2. USB receptacles.
 - 3. GFCI receptacles, 125 V, 20 A.
 - 4. Toggle switches, 120/277 V, [**20**] A.
 - 5.

1.2 ACTION SUBMITTALS

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

PART 2 - PRODUCTS

2.1 GENERAL WIRING-DEVICE REQUIREMENTS

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Wall Plate Color: For plastic covers, match device color.

2.2 STANDARD-GRADE RECEPTACLES, 125 V, 20 A

- A. Duplex Receptacles, 125 V, 20 A <E-1>:
 - 1. Description: Two pole, three wire, and self-grounding.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Standards: Comply with UL 498 and FS W-C-596.

2.3 USB RECEPTACLES

- A. USB Charging Receptacles <E-1>:
 - 1. Description: Single-piece, nickel-plated, all-brass grounding system. Nickel-plated, brass mounting strap.
 - 2. USB Receptacles: USB Type A, 5 V dc, and 2.1 A per receptacle (minimum).
 - 3. Standards: Comply with UL 1310 and USB 3.0 devices.

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2.4 GFCI RECEPTACLES, 125 V, 20 A

- A. Duplex GFCI Receptacles, 125 V, 20 A <E-1>:
 - 1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.

2.5 TOGGLE SWITCHES, 120/277 V, 20 A

- A. Single-Pole Switches, 120/277 V, 20 A <E-1>:
 - 1. Standards: Comply with UL 20 and FS W-S-896.
- B. Two-Pole Switches, 120/277 V, 20 A <E-1>:
 - 1. Comply with UL 20 and FS W-S-896.
- C. Three-Way Switches, 120/277 V, 20 A <E-1>:
 - 1. Comply with UL 20 and FS W-S-896.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with ADA and NECA 1, including mounting heights listed in that standard, unless otherwise indicated. Top of all electrical switches, receptacles, etc. must be less than 48 inches to the top.
- B. Coordination with Other Trades:
 - 1. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 2. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 - 3. Install wiring devices after all wall preparation, including painting, is complete.
- C. Device Installation:
 - 1. Connect devices to branch circuits using pigtails that are not less than **6 inches (152 mm)** in length.
- D. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- E. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multi-gang wall plates.

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- F. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections.
 - 1. Test Instruments: Use instruments that comply with UL 1436.
 - 2. Test Instrument for Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.
- B. Tests for Receptacles:
 - 1. Line Voltage: Acceptable range is 105 to 132 V.
 - 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
 - 3. Ground Impedance: Values of up to 2 ohms are acceptable.
 - 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 - 5. Using the test plug, verify that the device and its outlet box are securely mounted.
- C. Wiring device will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 262726

SECTION 265119 - LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes the following types of LED luminaires:

1. Cylinder.
2. Downlight.
3. Recessed, linear.
4. Strip light.
5. Surface mount, linear.
6. Surface mount, nonlinear.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
2. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

B. Shop Drawings: For nonstandard or custom luminaires.

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

1.3 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products, and complying with the applicable IES testing standards.

C. Provide luminaires from a single manufacturer for each luminaire type.

1.4 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: **[Five]** year(s) from date of Substantial Completion, unless manufacturer's standard warranty is longer.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
 - 1. Label shall include the following lamp characteristics:
 - a. "USE ONLY" and include specific lamp type.
 - b. Lamp diameter, shape, size, wattage, and coating.
 - c. CCT and CRI.
- C. Recessed luminaires shall comply with NEMA LE 4.

2.2 FIXTURES

- A. Manufacturer's:
 - 1. Reference drawings.
 - 2. Or Equal.
- B. Nominal Operating Voltage: **[120 V ac]**.
- C. Lamp:
 - 1. Lumens: As indicated.
 - 2. Minimum allowable efficacy: As indicated
 - 3. CRI: As indicated. CCT: As indicated.
 - 4. Rated lamp life hours to L70: As indicated.
 - 5. Dimmable from 100 percent to 0 percent of maximum light output.
 - 6. Internal driver.
 - 7. User-Replaceable Lamps:
 - a. Bulb shape complying with ANSI C78.79.
 - b. Lamp base complying with **[ANSI C81.61]** **[or]** **[IEC 60061-1]**.
 - 8. Lens Thickness: At least **0.125-inch (3.175-mm)** minimum unless otherwise indicated.

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- D. Housings:
 - 1. Material: As indicated
 - 2. Finish: As indicated.
 - 3. Universal mounting bracket.
- E. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Components are designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- F. Diffusers and Globes:
 - 1. Acrylic Diffusers: One hundred percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - 2. Glass: Annealed crystal glass unless otherwise indicated.
 - 3. Lens Thickness: At least 0.125-inch (3.175-mm) minimum unless otherwise indicated.
- G. With integral mounting provisions.
- H. Standards:
 - 1. ENERGY STAR certified.
 - 2. RoHS compliant.
 - 3. UL Listing: Listed for damp location.
 - 4. Recessed luminaires shall comply with NEMA LE 4.
 - 5. Provide IC (Insulation Contact) rated fixtures

2.3 MATERIALS

- A. Metal Parts:
 - 1. Free of burrs and sharp corners and edges.
 - 2. Sheet metal components shall be steel unless otherwise indicated.
 - 3. Form and support to prevent warping and sagging.
- B. Steel:
 - 1. ASTM A36/A36M for carbon structural steel.
 - 2. ASTM A568/A568M for sheet steel.
- C. Stainless Steel:
 - 1. 1. Manufacturer's standard grade.
 - 2. 2. Manufacturer's standard type, ASTM A240/240M.
- D. Galvanized Steel: ASTM A653/A653M.
- E. Aluminum: ASTM B209.

2.4 METAL FINISHES

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.5 LUMINAIRE SUPPORT

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: **1/2-inch (13-mm)** steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- C. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, [**12 gage (2.68 mm)**].
- D. Rod Hangers: **3/16-inch (5-mm)** minimum diameter, cadmium-plated, threaded steel rod.
- E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:
 - 1. Sized and rated for luminaire weight.
 - 2. Able to maintain luminaire position after cleaning and relamping.
 - 3. Provide support for luminaire without causing deflection of ceiling or wall.
 - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
- E. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.2 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 - 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 265119