

ADDENDUM NO. 23

June 21, 2019

**REQUEST FOR PROPOSALS
(BID DOCUMENTS)**

FOR

**STUDENT SUCCESS CENTER
PROJECT NO. 950512**



The following changes, additions, or deletions shall be made to the following documents as indicated for this Project; and all other terms and conditions shall remain the same. Each Proposer (Design Builder) is responsible for transmitting this information to all affected subcontractors and suppliers before the Proposal Deadline.

1. **ANNOUNCEMENT TO PREQUALIFIED PROPOSERS**

Delete the “Announcement to Prequalified Proposers” and **replace** with the one issued in this Addendum.

2. **REQUEST FOR PROPOSALS**

A. Proposal Schedule

Delete “Proposal Schedule” and **replace** with the one issued in this Addendum.

B. General Requirements (Div. 01)

1. Section 01 3300 - Submittal Procedures

Delete “Section 01 3300 - Submittal Procedures” and **replace** with the one issued in this Addendum.

2. Section 01 7900 - Demonstration and Training

Delete “Section 01 7900 - Demonstration and Training” and **replace** with the one issued in this Addendum.

3. Section 01 9113 - General Commissioning Requirements

Delete “Section 01 9113 - General Commissioning Requirements” and **replace** with the one issued in this Addendum.

C. Specifications (Divisions 02-33)

1. Division 28 – Security

Delete “Division 28 - Security” and **replace** with the one issued in this Addendum.

3. **DESIGN BUILDER QUESTIONS & ANSWERS**

Q125	When is the last day to submit an RFI to the University?
A125	The last day to submit an RFI to the University is Monday, June 24, 2019 at 5:00 PM.

END OF ADDENDUM

ANNOUNCEMENT TO PREQUALIFIED PROPOSERS

Subject to conditions prescribed by the University of California, Riverside, sealed proposals for a Design Build contract are invited from prequalified proposers for the following work:

STUDENT SUCCESS CENTER

DESCRIPTION OF WORK

The proposed Student Success Center will be a 60,000 GSF / 39,000 ASF facility that will address UCR's growing student population and its shortfall in classroom capacity. The Project will consist of three primary program elements: 1) General assignment classrooms designed for modern pedagogies and technology. 2) Multipurpose student life spaces for use by student organizations, and areas for scholarly activity such as tutoring, mentoring and study. 3) Shelled Dining Services venue.

Maximum Acceptance Cost: **\$49,980,000** (funding is pending administrative approval)

The University has determined that the following Proposers have been prequalified:

HENSEL PHELPS CONSTRUCTION CO, Irvine, CA 92612
MCCARTHY BUILDING COMPANIES, INC. Newport Beach, CA 92660
SWINERTON BUILDERS, Irvine, CA 92416

PROCEDURES:

Pending administrative approval, Request for Proposals will be available beginning at **2:00 PM**, on **Friday, January 11, 2019** and will be issued at:

IB Reprographics
3363 Durahart Street
Riverside, CA 92507
Phone: (951) 682-1850
Website: <https://www.ibrepro.com/>

Technical Proposals must be received on or before: **Monday, July 1, 2019, 2:00 PM**

Price Proposals must be received on or before: **Tuesday, July 2, 2019, 2:00 PM**

Price Proposals will be opened at: **Tuesday, July 16, 2019, 11:00 AM** at:

Planning, Design & Construction
University of California, Riverside
1223 University Avenue, Suite 240
Riverside, California 92521
951-827-7911

Mandatory Pre-Proposal Conference & Project Site Visit. A mandatory pre-proposal conference will be conducted on **Monday, January 14, 2019**, beginning promptly at **1:30 PM**. Only proposers who participate in the pre-proposal conference and project site visit, in their entirety, will be allowed to propose on the project. Participants must arrive at or before **1:30 PM**. Persons arriving later than **1:40 PM** will not be allowed to submit proposals as design builder on the project. The Big Springs Parking Garage located on Big Springs Road will be opened for all participants to park. A parking attendant will be issuing permits at the Big Springs Parking Garage from 12:00 PM - 1:30 PM.

Participants shall meet at:

Glen Mor Building K, Rooms K106/K108
University of California, Riverside
Riverside, California 92507
951-827-7911

Proposers shall come prepared with questions concerning needed clarifications and shall only send their project manager, design professional, or other professional intended to work on the project to attend this meeting. For further information, contact Lynn Javier, University's Consultant at (951) 827-7911, lynn.javier@ucr.edu

Proposal Security in the amount of 10% of the Lump Sum Base Proposal, excluding alternates, shall accompany each bid. The surety issuing the Bid Bond shall be, on the bid deadline, an admitted surety insurer (as defined in the California Code of Civil Procedure Section 995.120)

All insurance policies required to be obtained by Design Builder shall be subject to approval by University for form and substance. All such policies shall be issued by a company rated by Best as A- or better with a financial classification of VIII or better, or have equivalent rating by Standard and Poor's or Moody's.

The successful proposer and its subcontractors will be required to follow the nondiscrimination requirements set forth in the proposal documents and to pay prevailing wage rates at the location of the work.

No contractor or subcontractor may be listed on a Bid for this project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded any portion of this project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

The successful proposer shall pay all persons providing construction services and/or any labor on site, including any University location, no less than the UC Fair Wage (defined as \$13 per hour as of 10/1/15, \$14 per hour as of 10/1/16, and \$15 per hour as of 10/1/17) and shall comply with all applicable federal, state and local working condition requirements.

The successful proposer will be required to have the following California contractor's license at the time of the proposal opening: **General Building Contractor "B" License.**

Lynn Javier, University's Consultant, (951) 827-7911, lynn.javier@ucr.edu
Bid Board: <http://ae.ucr.edu/business/contractors.html>

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
University of California, Riverside
Dates of Publication: 12/21/2018 thru 01/14/2019

PROPOSAL SCHEDULE

	ACTIVITY	DATE	TIME
A	The RFP will be available to Prequalified Proposers, subcontractors and design consultants.	1/11/19	2:00 PM
B	Pre-Proposal Conference & Site Visit – Mandatory for all Prequalified Proposers. Participants must arrive at University of California, Riverside, Glen Mor, Building K, Room K106/K108, Riverside, CA 92507 at or before the established time.	1/14/19	1:30 PM
C	The University will hold confidential One-on-One meetings with each Proposer prior to the Technical Proposal Submittal for the purpose of answering questions, clarifying RFP and program requirements, reviewing and validating preliminary designs etc. Meeting location: University of California, Riverside, Pentland Hills Bear Cave B107/C101, Riverside, CA 92507.	2/7/19	8:30 AM (SB) 11:00 AM (HP) 1:30 PM (MB)
	The University will hold confidential One-on-One meetings with each Proposer prior to the Technical Proposal Submittal for the purpose of answering questions, clarifying RFP and program requirements, reviewing and validating preliminary designs etc. Meeting location: University of California, Riverside, University Village, 1299 University Ave., Room EUV-1103, Riverside, CA 92507.	3/1/19	8:00 AM (MB) 10:30 AM (SB) 1:00 PM (HP)
	The University will hold confidential One-on-One meetings with each Proposer prior to the Technical Proposal Submittal for the purpose of answering questions, clarifying RFP and program requirements, reviewing and validating preliminary designs etc. Meeting location: University of California, Riverside, Alumni & Visitor Center, Alumni Johnson Board Room, 3701 Canyon Crest Drive, Riverside, CA 92521.	3/21/19	8:30 AM (HP) 11:00 AM (MB) 1:30 PM (SB)
		05/21/2019	9:30 AM (SB) 12:00 PM (HP) 2:00 PM (MB)
	The University will hold optional confidential One-on-One meeting with each Proposer prior to the Technical Proposal Submittal for the purpose of answering questions, clarifying RFP and program requirements, reviewing and validating preliminary designs etc. Meeting location: University of California, Riverside, Planning, Design & Construction, 1223 University Avenue, Suite 210-16, Riverside, CA 92521	06/20/2019	8:30 AM (MB) 10:30 AM (SB) 3:00 PM (HP)

D	Technical Proposal Submittal is due from Proposers and will be received only at University of California, Riverside, Planning, Design & Construction, 1223 University Avenue, Suite 240, Riverside, CA 92507. The Technical Proposal Submittal is defined in the <i>Technical Proposal</i>.	<u>July 1, 2019</u>	2:00 PM
E	Lump Sum Base Price Proposal Submittal is due from Proposers and will be received only at University of California, Riverside, Planning, Design & Construction, 1223 University Avenue, Suite 240, Riverside, CA 92507. The Lump Sum Base Price Proposal Submittal is defined in the <i>Lump Sum Base Price Proposal</i>.	<u>July 2, 2019</u>	2:00 PM
F	The University's Technical Review Committee will meet to review timely submitted Technical Proposals as described in the Proposal Evaluation Process document.	<u>07/11/2019-07/12/2019</u>	8:00 AM – 5:00 PM
G	Proposers shall make an Oral Presentation and describe the best value aspects of their proposals. Cost shall not be discussed during the Oral Presentation.	<u>07/15/2019</u>	8:00 – 5:00 PM
H	Timely submitted Lump Sum Base Price Proposals shall be publicly opened at University of California, Riverside, Planning, Design & Construction, 1223 University Avenue, Conference Room Suite 210-16, Riverside, CA 92507. The University will acknowledge the timely receipt of submittals and whether or not the submittals appear to be responsive. No cost or point scoring information will be disclosed to the public at this time.	<u>07/16/2019</u>	11:00 AM
!	The University will issue Notice to Proceed- Phase 1 to the successful proposer.	<u>08/23/2019</u>	
<p>Late Proposals: Any proposal, modification, or revision that is received at the designated University of California, Riverside, Planning, Design & Construction location after the exact time specified for receipt of proposals is “late” and will not be considered unless it was the only proposal received. Late proposals and modifications that are not considered will be held unopened, unless opened for identification, and then returned to the Proposer after award.</p>			

SECTION 01 3300 SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
 - 1. See "Scope of Work" for Design Professionals Work and submittal process.
 - 2. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the Cost Breakdown.
 - 3. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 4. Division 01 Section "Coordination and Detailing Activity" for submitting CDA Drawings.
 - 5. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Design Builder's Contract Schedule and the Submittals Schedule.
 - 6. Division 01 Section "Photographic Documentation" for submitting construction photographs and construction videotapes.
 - 7. Division 01 Section "Product Requirements" for selection of products for submittal and product substitutions.
 - 8. Division 01 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
 - 9. Division 01 Section "Closeout Procedures" for submitting warranties.
 - 10. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 11. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 12. Division 01 Section "Demonstration and Training" for submitting material used for training of University's personnel.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires University's responsive action.
- B. Informational Submittals: Written information that does not require University's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. University reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Submittals Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on University's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 4 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. University will advise Design Builder when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 2 days for review of each resubmittal.
- D. Identification: Completely fill out and attach the University's "Submittal Transmittal" form on each submittal for identification. Provide a Design Builder review sheet after the transmittal and include the following:
1. Indicate name of firm or entity that prepared each submittal on review sheet.
 2. Provide a space approximately 6 by 8 inches on review sheet to record Design Builder's and Design Professional review and approval markings and action taken.
 3. Include the University's Project name and number, date and submittal number.
 4. Submittal number shall be as follows, include revision identifier on resubmittals only:
 - a. Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06 1000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06 1000.01.A).
 - b. Number and title of appropriate Specification Section.
 - c. Drawing number and detail references, as appropriate.
 - d. Location(s) where product is to be installed, as appropriate.
 - e. Other necessary identification.
- E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

- F. Additional Copies: Unless additional copies are required for final submittal, and unless University observes noncompliance with provisions in the Contract Documents+ initial submittal may serve as final submittal.
- G. Transmittal: Package each submittal individually by specification section and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. University will return submittals, without review, received from sources other than Design Builder. Substitutions are to be submitted separate from submittals, using the substitution request form as the transmittal.
 - 1. Transmittal Form: Use facsimile of sample form provided with Exhibits.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked "NET or MCN" by University's Representative.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
- J. Use for Construction: Use only final submittals with mark indicating "NET or MCN" by University's Representative.
- K. LEED Submittals: Comply with requirements specified in Division 01 Section "Sustainable Design Requirements."
 - 1. Submit LEED submittals in the following format:
 - a. PDF electronic file.
- L. Material Safety Data Sheets (MSDSs) for LEED Certification: Submit information necessary to show compliance with LEED certification requirements.
- M. **Energy Metering: Comply with requirements specified in Division 01 Section, "General Commissioning Requirements".**

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Post electronic submittals as PDF electronic files directly to Web-based building project management system specifically established for Project.
 - a. University will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
2. Submit electronic submittals via email as PDF electronic files.
 - a. University will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2.2 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections to demonstrate the way the Design Builder proposes to conform to the information given and the design concept expressed in the Contract Documents.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment per specification section.
 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable. Clearly indicate exact item submitted and in such a manner that reproduction by photocopying will not lose intent.
 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Compliance with specified referenced standards.
 - k. Testing by recognized testing agency.
 - l. Application of testing agency labels and seals.
 - m. Notation of coordination requirements.
 4. Submit Product Data before or concurrent with Samples.
 5. Submit Product Data in the following format:
 - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.
 - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.

3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.

- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.

 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

- b. Samples not incorporated into the Work, or otherwise designated as University's property, are the property of Design Builder.
 - 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit three and the number of samples the Design Builder wants returned. The University will retain three samples. Provide full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. University will return submittal with options selected.
 - 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three and the number of samples the Design Builder wants returned. The University will retain three samples.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include unique identifier for each product.
 - 2. Number and name of room or space.
 - 3. Location within room or space.
 - 4. Submit product schedule in the following format:
 - a. PDF electronic file.
- F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation".
- G. Submittals Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."

- H. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."
- I. Cost Breakdown: Comply with requirements specified in Division 01 Section "Payment Procedures."

2.3 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Submit in the following format:
 - a. PDF electronic file.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements specified in Division 01 Section "Quality Requirements."
- B. CDA Drawings: Comply with requirements specified in Division 01 Section "Coordination and Detailing Activity"
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and contractors, and other information specified.
- D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

- I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- K. Research/Evaluation Reports: Prepare written evidence, from ICBO Evaluation Service, Inc. unless another evaluation organization has been approved by the University's Representative, that product complies with California Building Code. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- L. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."
- M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

- R. **Manufacturer's Instructions:** Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
 2. Required substrate tolerances.
 3. Sequence of installation or erection.
 4. Required installation tolerances.
 5. Required adjustments.
 6. Required maintenance
 7. Recommendations for cleaning and protection.
- S. **Manufacturer's Field Reports:** Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- T. **Insurance Certificates and Bonds:** Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- U. **Construction Photographs and Videos:** Comply with requirements specified in Division 1 Section "Photographic Documentation."
- V. **Material Safety Data Sheets (MSDS's):** Submit information directly to the University's Representative. Submit MSDS within 30 days of the associated material being delivered to the Project Site or sooner, as required by law. Material and Safety Data Sheets shall be kept on the Project Site throughout the course of the Work.
- 2.4 **DELEGATED DESIGN**
- A. **Performance and Design Criteria:** Where professional design services or certifications by a design professional are required after the Construction Documents are stamped "Reviewed for Conformance", provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to University.

- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit one original and seven copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 DESIGN BUILDER'S REVIEW

- A. Design Builder and Design Professional shall review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract and Construction Documents. Note corrections and field dimensions. Mark with approval stamps before submitting to the University's Representative.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Design Professional and Design Builder's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
- C. Coordinate each submittal with requirements of the Work and of the Contract Documents. Any submittal that is not complete or not clearly identified for review will be rejected and returned to the Design Builder for re-submission.
- D. Begin no fabrication or Work that requires submittals until the return of University Representative's final reviewed submittals.

3.2 UNIVERSITY'S ACTION

- A. General: University will not review submittals that do not bear Design Builder's and Design Professional's approval stamp and will return them without action.
- B. Action Submittals: University will review each submittal, make marks to indicate corrections or modifications required, and return it. University will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 - 1. "NET" No Exceptions Taken
 - 2. "MCN" Make Corrections Noted
 - 3. "REJ" Rejected
 - 4. "R&R" Revise and Resubmit
- C. Informational Submittals: University will review each submittal and will not return it, or will return it if it does not comply with requirements. University will forward each submittal to appropriate party.

- D. Failure to properly and clearly mark the submittal to indicate use and options may cause submittal return without review. Submittal will be marked “Revise and Resubmit”.
- E. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- F. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 3300

SECTION 01 7900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing University's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training videotapes.
 - 4. Operator Training Schedule
- B. Related Sections include the following:
 - 1. Division 01 Section "Project Management and Coordination" for requirements for preinstruction conferences.
 - 2. Divisions 02 through 33 Sections for specific requirements for demonstration and training for products in those Sections.

1.2 SUBMITTALS

- A. Instruction Program: Submit four copies of Basic System Training Schedule form with the outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. At completion of training, submit two complete training manual(s) for University's use.
- B. Qualification Data: For instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.3 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- B. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.

2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.4 COORDINATION

- A. Coordinate instruction schedule with University's operations. Adjust schedule as required to minimize disrupting University's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by University's Representative.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. Systems and equipment listed below are minimum examples that might apply to the project. Revise to suit Project:
 1. Motorized doors, such as overhead coiling doors, overhead coiling grilles and automatic entrance doors.
 2. Equipment, such as stage equipment, projection screens, loading dock equipment, waste compactors, and food-service equipment.
 3. Fire-protection systems, such as fire alarm, fire pumps and fire-extinguishing systems.
 4. Conveying systems, such as elevators.
 - ~~5. Medical equipment, such as medical gas equipment and piping.~~
 6. Heat generation, such as boilers, feedwater equipment, pumps, steam distribution piping and water distribution piping.
 7. Refrigeration systems, such as chillers, cooling towers, condensers, pumps and distribution piping.
 8. HVAC systems, such as air-handling equipment, air distribution systems, and terminal equipment and devices.
 9. HVAC instrumentation and controls.
 10. Electrical service and distribution, such as transformers, switchboards, panel boards and motor controls.
 11. Packaged engine generators, such as transfer switches.
 12. Lighting equipment and controls.
 13. Communication systems, such as intercommunication, surveillance, clocks and programming, voice and data, and television equipment.

14. *Audiovisual systems and controls, including digital controls, Audiovisual systems, projection screens and Loudspeakers.*
15. *Security Systems, including card readers (including scheduling software integration), access control systems and Video Management systems.*

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.

- f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Engage qualified instructors to instruct University's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed on times.
 - 1. Schedule training with University's Representative with at least 14 days' advance notice.
 - 2. Fill out and expand, if necessary, the schedule form attached at the end of this section to reflect equipment and systems on the project.
- C. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 01 7900

SECTION 01 9113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes general requirements that apply to implementation of commissioning without regard to systems, subsystems, and equipment being commissioned.
- B. OPR documentation prepared by University contains requirements that apply to this Section.
- C. Related Sections include the following:
 - 1. Division 22 "Plumbing" for specific requirements for commissioning Plumbing systems.
 - 2. Division 23 "Heating, Ventilating, and Air-Conditioning (HVAC)" for specific requirements for commissioning HVAC systems.
 - 3. Division 26 "Electrical" for specific requirements for commissioning Electrical systems.

1.2 DEFINITIONS

- A. **BoD: Basis of Design.** A document, prepared by the Design Builder, that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- B. **CxA: Commissioning Authority.**
- C. **OPR: Owner's (University) Project Requirements.**
- D. **Systems, Subsystems, and Equipment:** Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, assemblies, equipment, and components.
- E. **TAB: Testing, Adjusting, and Balancing.**
- F. **Pre-Functional Checklist (PFC):** A form used by the commissioning team to verify that appropriate materials and components are on-site, ready for installation, correctly installed, and in compliance with the Owner's Project Requirements
- G. **Functional Performance Test (FPT):** The process of verifying that a material, product, assembly, or system meets defined performance criteria. The methods and conditions under which performance is verified are described in one or more test protocols.

1.3 COMMISSIONING TEAM

- A. Members Appointed by the Design Builder and approved by the University's Representative: Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions. The commissioning team shall consist of, but not be limited to, representatives of Design Builder, including Project superintendent, architect and engineering design professionals and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by University:
 - 1. Representatives of the facility user and operation and maintenance personnel.
 - 2. Architect and engineering design professionals that are not the AE designers of record.

1.4 UNIVERSITY'S RESPONSIBILITIES

- A. Coordinate University's operation and maintenance personnel and engineering staff, schedule them to participate in commissioning team activities including, but not limited to, the following:
 - 1. Coordination meetings.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Testing meetings.
 - 4. Demonstration of operation of systems, subsystems, and equipment.
 - 5. Review and approve final commissioning documentation.
- B. Provide the OPR documentation to the CxA for use in developing the commissioning plan; systems manual; operation and maintenance training plan; and testing plans and checklists.
- C. Provide the OPR documentation to the Design Builder to aid in the creation of the BoD.
- D. Observe and inspect construction and report progress and deficiencies. In addition to compliance with the OPR, BoD, and Contract Documents, inspect systems and equipment installation for adequate accessibility for maintenance and component replacement or repair.

1.5 DESIGN BUILDER'S RESPONSIBILITIES

- A. Provide utility services required for the commissioning process.
- B. Ensure that a CxA is onboard during the design development phase.
- C. Design Builder shall assign representatives with expertise and authority to act on behalf of the Design Builder and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
 - 1. Participate in design-and construction-phase coordination meetings.
 - 2. Participate in maintenance orientation and inspection.

3. Participate in operation and maintenance training sessions.
 4. Participate in final review at acceptance meeting.
 5. Continuously coordinate project and system status with the CxA.
 6. Certify that Work is complete and systems are operational according to the Contract Documents, including calibration of instrumentation and controls.
 7. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
- D. Subcontractors shall assign representatives with expertise and authority to act on behalf of subcontractors and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
1. Participate in design- and construction-phase coordination meetings.
 2. Participate in maintenance orientation and inspection.
 3. Participate in procedures meeting for testing.
 4. Participate in final review at acceptance meeting.
 5. Provide schedule for operation and maintenance data submittals, equipment startup, and testing to CxA for incorporation into the commissioning plan. Update schedule on a weekly basis throughout the construction period.
 6. Provide information to the CxA for developing construction-phase commissioning plan.
 7. Participate in training sessions for the University's operation and maintenance personnel.
 8. Provide updated Project Record Documents to the CxA.
 9. Gather and submit operation and maintenance data for systems, subsystems, and equipment to the CxA, as specified in Division 01 Section "Operation and Maintenance Data."
 10. Complete start-up or pre-functional checklists for 100% of systems to be commissioned. These checklists need to be provided by the CxA or approved by the CxA before being filled out.
 11. Complete all Title 24 required acceptance testing.
 12. Provide technicians who are familiar with the construction and operation of installed systems and who shall ~~develop~~ implement project specific test procedures and participate in testing of installed systems, subsystems, and equipment. Technicians may include, but are not limited to, HVAC start-up technicians, building automation system technicians, lighting control technicians, test and balance technicians, and any other technicians the CxA deems necessary to complete testing.
 13. Provide technicians who are familiar with the construction and operation of installed systems and who shall implement project specific seasonal testing procedures. The seasonal testing will be performed 3 to 6 months after initial functional performance testing.
- E. Provide the BoD documents to the CxA and the University for use in developing the commissioning plan, systems manual, and operation and maintenance training plan. The BoD must include information on all commissioned systems, plus the exterior enclosure, at a minimum.
- F. Assemble the final commissioning documentation, including the commissioning report and Project Record Documents.
- G. Video and edit training sessions.

- H. Any other items necessary to meet the commissioning requirements as detailed in LEED v4.1 for both fundamental and enhanced commissioning, Title 24 Part 6, or Title 24 Part 11. This includes monitoring-based commissioning and envelope commissioning, if pursued.

1.6 COMMISSIONING AUTHORITY QUALIFICATIONS

- A. The Commissioning Authority (CxA) shall satisfy the following requirements:
 - 1. Have extensive experience in startup and troubleshooting HVAC, refrigeration, hot water heating, chilled water, steam, plumbing, electrical, emergency power, fire ~~alarm,~~ life alarm, life safety and systems of similar complexity to those contained in these documents;
 - 2. Have excellent working knowledge of complex environmental, fire alarm, and electric power control and facility management systems; be capable of understanding control vendors' operating system and control code; be capable of trouble-shooting control code and recommending necessary modifications;
 - 3. Be competent in system design and intent;
 - 4. Be knowledgeable in test and balance of both air and hydronic system;
 - 5. Have excellent communication and writing skills, be highly organized, and be able to work well with both management and trades contractors.
 - 6. Have experience as the commissioning agent for at least 2 completed projects that are similar in size and scope to those contained in these documents.
 - 7. A Bachelors degree in Mechanical Engineering and P.E. certification, with extensive practical field experience, is preferred; however, other technical training and experience with extensive practical field experience will be considered.
 - 8. A professional accreditation specific to building commissioning is required.
- B. The CxA cannot be financially associated with any of the Division 01 through 33 contractors or vendors-to avoid potential conflicts of interest.
- C. The University's Representative reserves the right to personally interview the CxA candidate prior to accepting placement in the position. Final approval of the Commissioning Agent will be by the University's Representative.

1.7 CxA'S RESPONSIBILITIES

- A. Organize and lead the commissioning team.
- B. Prepare a design-phase commissioning plan.
- C. Review the OPR, BoD, and project design before the issuance of 100% construction documents. The design shall be reviewed at 50% design development, 100% design development, and 50% construction documents. The design review shall cover all commissioned systems, plus the exterior enclosure, at a minimum.

- D. Complete NRCC-CXR-01-E through NRCC-CXR-05-E for the version of Title 24 that the project is permitted under.
- E. Update the commissioning plan for construction phase. Collaborate with Design Builder and with subcontractors to develop test and inspection procedures. Include design changes and scheduled commissioning activities coordinated with overall Project schedule. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.
- F. Review and comment on submittals from Design Builder for compliance with the OPR, BoD, Contract Documents, and construction-phase commissioning plan. Review and comment on performance expectations of systems and equipment and interfaces between systems relating to the OPR and BoD.
- G. Convene commissioning team meetings for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. Responsibilities include arranging for facilities, preparing agenda and attendance lists, and notifying participants. The CxA shall prepare and distribute minutes to commissioning team members and attendees within three workdays of the commissioning meeting.
- H. At the beginning of the construction phase, conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance submittals; operation and maintenance training sessions; TAB Work; and Project completion.
- I. Prepare Project-specific functional test procedures and pre-functional checklists.
- J. Schedule, direct, witness, and document functional performance tests, and systems startup.
- K. Compile test data, and certificates and include them in the systems manual and commissioning report.
- L. Certify date of acceptance and startup for each item of equipment for start of warranty periods.
- M. Review Project Record Documents for accuracy. Request revisions from Design Builder to achieve accuracy. Project Record Documents requirements are specified in Division 01 Section "Project Record Documents."
- N. Review and comment on operation and maintenance documentation and systems manual outline for compliance with the OPR, BoD, and Contract Documents. Operation and maintenance documentation requirements are specified in Division 01 Section "Operation and Maintenance Data."
- O. Coordinate operation and maintenance training program with the Design Builder to provide qualified instructors to conduct operation and maintenance training. Operation and maintenance training is specified in Division 01 Section "Demonstration and Training."

- P. Witness training and verify the Design Builder records all training sessions. Review edited training tapes to verify they comprehensively cover all items in the training. Verify training tapes are delivered to the University.
- Q. Prepare commissioning reports and systems manual.
- R. Prepare and maintain a current facilities requirements and operations and maintenance plan.
- S. Complete all commissioning forms within LEED Online. Upload all required documentation. Respond to and resolve all clarifications received from GBCI regarding commissioning or any commissioning prerequisite or credit. This includes monitoring-based commissioning and envelope commissioning.
- T. Schedule, direct, witness, and document seasonal testing.
- U. Review building operations 10 months after substantial completion, before warranties expire.
- V. Develop an on-going commissioning plan.
- W. Any other items necessary to meet the commissioning requirements as detailed in LEED v4.1 for both fundamental and enhanced commissioning, Title 24 Part 6, or Title 24 Part 11. This includes monitoring-based commissioning and envelope commissioning.

1.8 MONITORING-BASED COMMISSIONING

- A. The CxA shall perform the following to meet monitoring-based commissioning:
 - 1. During the design development phase, incorporate monitoring-based commissioning requirements and activities into the commissioning plan.
 - 2. Implement or oversee the implementation of the MBCx plan.

1.9 ENVELOPE COMMISSIONING

- A. The CxA shall perform the following to meet envelope commissioning:
 - 1. Incorporate envelope commissioning into the commissioning plan by extending the requirements to cover the building's thermal envelope.
 - 2. Incorporate envelope commissioning and envelope features into all commissioning documents, including but not limited to the commissioning report, systems manual, ongoing commissioning plan, current facilities requirements and operations and maintenance plan, and any others.
 - 3. Review submittals that pertain to the building envelope.
 - 4. Verify building operator training on the building envelope.
 - 5. Witness or perform functional performance testing with regards to the building envelope.
 - 6. Verify the building envelope during the 10-month follow-up visit.

- B. If the CxA is not qualified to perform envelope commissioning, a separate CxA may be brought on to perform envelope commissioning. This second CxA must meet all qualifications as described in these documents, including experience and conflict of interest. The University’s Representative reserves the right to personally interview the CxA candidate prior to accepting placement in the position. Final approval of the Commissioning Agent will be by the University’s Representative.

1.10 SYSTEMS TO BE COMMISSIONED

- A. The following systems and their components are the focus of the Commissioning Process.
 1. HVAC and Refrigeration Systems and Associated Controls
 2. Electrical Systems, including service, distribution, generators, transfer switches, emergency controls, lighting, lighting controls including daylighting controls, exterior lighting, and exterior lighting controls
 3. Plumbing, including domestic hot water systems, pumps, and controls
 4. Building Automation System
 5. Receptacle Load Control
 6. Energy Metering
 7. Renewable Energy Systems (if applicable)
 8. Water Reuse or Recycling Systems (if applicable)
 9. Landscape Irrigation, if the project is new construction and over 10,000 square feet
- B. All systems will undergo functional performance testing. Sampling for functional performance testing may be performed according to ASHRAE Guideline 0-2013 with a minimum sampling rate of 10%.
- C. **Energy Metering: All installed meters and sub-meters are to be tested on site and verified for effective operation, programmed accuracy and accuracy of readings by the manufacturer. A Manufacturer’s certificate of compliance to be issued to the University.**

1.11 COMMISSIONING DOCUMENTATION

- A. Index of Commissioning Documents: CxA shall prepare an index to include storage location of each document.
- B. OPR: A written document, prepared by University’s Representative that details the functional requirements of Project and expectations of how it will be used and operated. This document includes Project and design goals, measurable performance criteria, budgets, schedules, success criteria, and supporting information.
- C. BoD Document: A document, prepared by Design Builder, that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

- D. Commissioning Plan: A document, prepared by CxA, that outlines the schedule, allocation of resources, and documentation requirements of the commissioning process, and shall include, but is not limited to the following:
1. Plan for delivery and review of submittals, systems manuals, and other documents and reports. Identification of the relationship of these documents to other functions and a detailed description of submittals that are required to support the commissioning processes. Submittal dates shall include the latest date approved submittals must be received without adversely affecting commissioning plan.
 2. Description of the organization, layout, and content of commissioning documentation (including systems manual) and a detailed description of documents to be provided along with identification of responsible parties.
 3. Directory of all commissioning team members.
 4. Identification of systems and equipment to be commissioned.
 5. Description of schedules for testing procedures along with identification of parties involved in performing and verifying tests.
 6. Identification of items that must be completed before the next operation can proceed.
 7. Description of responsibilities of commissioning team members.
 8. Description of observations to be made.
 9. Description of requirements for operation and maintenance training, including required training materials.
 10. Description of expected performance for systems, subsystems, equipment, and controls.
 11. Schedule for commissioning activities with specific dates coordinated with overall construction schedule.
 12. Identification of installed systems, subsystems, and equipment, including design changes that occurred during the construction phase.
 13. Process and schedule for documenting changes on a continuous basis to appear in Project Record Documents.
 14. Process and schedule for completing prestart and startup checklists for systems, subsystems, and equipment to be verified and tested.
 15. Step-by-step procedures for testing systems, subsystems, and equipment with descriptions for methods of verifying relevant data, recording the results obtained, and listing parties involved in performing and verifying tests.
- E. Monitoring-Based Commissioning: If pursued, the CxA shall incorporate MBCx requirements into the design phase commissioning plan and all other commissioning documents. Those requirements include, at a minimum:
1. Definition of analysis procedures, including frequency during year one.
 2. Outline the evaluation process and determine the procedure for handling system conflicts, usage profiles, and out-of-sequence operations.
 3. Include preventive planning and maintenance procedures necessary to meet performance goals.
 4. Determine measurement requirements and decide whether predictive algorithms can be used in conjunction with metered points.
 5. Verify that MBCx requirements in the OPR, such as trends to track, are reflected in the BoD.
 6. Verify that the metering and monitoring required for MBCx are included in the BOD.

7. Verify that single-line diagrams and the location of all meters is in the commissioning documents.
 8. Controls sequences specify the appropriate monitoring points.
 9. CxA reviews appropriate submittals, including meters, control drawings, and any other submittals pertinent to MBCx.
 10. Creation and completion of pre-functional tests for MBCx equipment, such as meters, building automation system, and any other systems that will be used for MBCx.
- F. Verification of operator training regarding measurement techniques, energy analysis tools, fault detection, and fault resolution. Test Checklists: CxA, with assistance of Design Builder, shall develop test checklists for each system, subsystem, or equipment including interfaces and interlocks, and include a separate entry, with space for comments, for each item to be tested. Prepare separate checklists for each mode of operation and provide space to indicate whether the mode under test responded as required. Provide space for testing personnel to sign off on each checklist. Specific checklist content requirements are specified in Division 23 Section "HVAC Commissioning Requirements." Each checklist, regardless of system, subsystem, or equipment being tested, shall include, but not be limited to, the following:
1. Name and identification code of tested item.
 2. Test number.
 3. Time and date of test.
 4. Indication of whether the record is for a first test or retest following correction of a problem or issue.
 5. Dated signatures of the person performing test and of the witness, if applicable.
 6. Individuals present for test.
 7. Deficiencies.
 8. Issue number, if any, generated as the result of test.
- G. Certificate of Readiness: Certificate of Readiness shall be signed by Design Builder, Subcontractor(s), Installer(s), and CxA certifying that systems, subsystems, equipment, and associated controls are ready for testing. Completed test checklists signed by the responsible parties shall accompany this certificate.
- H. Test and Inspection Reports: CxA shall record test data, observations, and measurements on test checklists. Photographs, forms, and other means appropriate for the application shall be included with data. CxA shall compile test and inspection reports and test and inspection certificates and include them in systems manual and commissioning report.
- I. Corrective Action Documents: CxA shall document corrective action taken for systems and equipment that fail tests. Include required modifications to systems and equipment and revisions to test procedures, if any. Retest systems and equipment requiring corrective action and document retest results.
- J. Issues and Benefits Log: CxA shall prepare and maintain an issues and benefits log that describes design, installation, and performance issues that are at variance with the OPR, BoD, and Contract Documents. Identify and track issues as they are encountered, documenting the status of unresolved and resolved issues. All issues shall include the monetary benefit to identifying and resolving that issue.

1. Creating an Issues Log Entry:
 - a. Identify the issue with unique numeric or alphanumeric identifier by which the issue may be tracked.
 - b. Assign a descriptive title of the issue.
 - c. Identify date and time of the issue.
 - d. Identify test number of test being performed at the time of the observation, if applicable, for cross-reference.
 - e. Identify system, subsystem, and equipment to which the issue applies.
 - f. Identify location of system, subsystem, and equipment.
 - g. Include information that may be helpful in diagnosing or evaluating the issue.
 - h. Note recommended corrective action.
 - i. Identify commissioning team member responsible for corrective action.
 - j. Identify expected date of correction.
 - k. Identify person documenting the issue.
 - l. Identify monetary benefit associated with correcting the issue.

2. Documenting Issue Resolution:
 - a. Log date correction is completed or the issue is resolved.
 - b. Describe corrective action or resolution taken. Include description of diagnostic steps taken to determine root cause of the issue, if any.
 - c. Identify changes to the OPR, BoD, or Contract Documents that may require action.
 - d. State that correction was completed and system, subsystem, and equipment is ready for retest, if applicable.
 - e. Identify person(s) who corrected or resolved the issue.
 - f. Identify person(s) documenting the issue resolution.

3. Issues Log Report: On a periodic basis, but not less than for each commissioning team meeting, CxA shall prepare a written narrative for review of outstanding issues and a status update of the issues log. As a minimum, CxA shall include the following information in the issues log and expand it in the narrative:
 - a. Issue number and title.
 - b. Date of the identification of the issue.
 - c. Name of the commissioning team member assigned responsibility for resolution.
 - d. Expected date of correction.

- K. Commissioning Report: CxA shall document results of the commissioning process including unresolved issues and performance of systems, subsystems, and equipment. The commissioning report shall indicate whether systems, subsystems, and equipment have been completed and are performing according to the OPR, BoD, and Contract Documents. The commissioning report shall include, but is not limited to, the following:
 1. Lists and explanations of substitutions; compromises; variances in the OPR, BoD, and Contract Documents; record of conditions; and, if appropriate, recommendations for resolution. This report shall be used to evaluate systems, subsystems, and equipment and shall serve as a future reference document during University's occupancy and operation.

- It shall describe components and performance that exceed requirements of the OPR, BoD, and Contract Documents and those that do not meet requirements of the OPR, BoD, and Contract Documents. It may also include a recommendation for accepting or rejecting systems, subsystems, and equipment.
2. OPR and BoD documentation.
 3. Commissioning plan.
 4. Testing plans and reports.
 5. Corrective modification documentation.
 6. Issues log.
 7. Completed test checklists.
 8. Listing of off-season test(s) not performed and a schedule for their completion.
- L. Systems Manual: CxA shall gather required information and compile systems manual. Systems manual shall include, but is not limited to, the following:
1. OPR and BoD, including system narratives, schematics, and changes made throughout the Project.
 2. Project Record Documents as specified in Division 01 Section "Project Record Documents."
 3. Final commissioning plan.
 4. Commissioning report.
 5. Operation and maintenance data as specified in Division 01 Section "Operation and Maintenance Data."
 6. Any other sections required for LEED Enhanced Commissioning.
- M. Current Facilities Requirements (CFR) and Operations and Maintenance (O&M) Plan: CxA shall gather required information and compile a CFR and O&M Plan. The plan contains the information necessary to operate the building efficiently and must include the following, at a minimum:
1. A sequence of operations for commissioned systems for the building.
 2. The building occupancy schedule.
 3. Equipment run-time schedules.
 4. Setpoints for all HVAC equipment.
 5. Set lighting levels throughout the building.
 6. Minimum outside air requirements.
 7. Any changes in schedules or setpoints for different seasons, days of the week, and times of day.
 8. A systems narrative describing the mechanical and electrical systems and equipment.
 9. A preventive maintenance plan for building equipment described in the systems narrative.
 10. A commissioning program that includes periodic commissioning requirements, ongoing commissioning tasks, and continuous tasks for critical facilities.
- N. Ongoing Commissioning Plan: CxA shall issue an ongoing commissioning plan that will provide the operating staff with procedures, blank test scripts, and a schedule for ongoing commissioning activities. It may be implemented by the operation staff, initial CxA, or a different CxA. The plan must include, at a minimum:
1. Definition of the ongoing commissioning process.

2. Defined roles and responsibilities.
3. Recommended schedule for recommissioning as-built systems.
4. Continuous documentation and updating of building operating plan and current facility requirements throughout the building's lifetime.
5. Blank testing materials, including functional performance tests for all commissioned as-built systems in the building, as well as an issues log.
6. Direction for testing new and retrofitted equipment.

1.12 SUBMITTALS

- A. CxA Qualifications Submittal: Submit the Commissioning Authority's resume and sample documents in a timely fashion to the University's Representative for approval; which shall include the following:
1. Education and technical training.
 2. Present employment:
 - a. Company name and address
 - b. Present title and job description
 - c. History of employment (include dates and positions held)
 3. Relevant work experience:
 - a. Job name
 - b. Position held
 - c. Work history (include dates and positions held)
 4. Example of prior building commissioning project performed by the proposed CxA
 - a. Submitted project shall be similar in commissioning scope and complexity.
 - b. Include construction/commissioning schedule developed by proposed CxA
 - c. Include test procedures developed by proposed CxA
 - d. Include final report prepared by proposed CxA
- B. Commissioning Plan Prefinal Submittal: CxA shall submit hard copies of prefinal commissioning plan to the Design Builder for review by the Design Builder and their Design Professional. Design Builder shall submit five copies to the University's Representative. Present submittal in sufficient detail to evaluate data collection and arrangement process. One copy, with review comments, will be returned to the CxA for preparation of the final construction-phase commissioning plan.
- C. Commissioning Plan Final Submittal: CxA shall submit hard copies and electronically formatted information of final commissioning plan to the Design Builder. Design Builder shall submit two hard copies and one disc to the University. The final submittal must address previous review comments. The final submittal shall include a copy of the prefinal submittal review comments along with a response to each item.

- D. Test Checklists and Report Forms: CxA shall submit sample checklists and forms to Design Builder quality-control manager and subcontractors for review and comment. Submit three copies of each checklist and report form.
- E. Corrective Action Documents: CxA shall submit corrective action documents pertaining to installation and start up of systems. CxA shall also submit recommendations to better operation and maintenance of the systems, if applicable.
- F. Prefinal Commissioning Report Submittal: CxA shall submit five hard copies of the prefinal commissioning report CxA shall deliver three copies to the University, and one copy to the Design Builder. One copy, with review comments, will be returned to the CxA for preparation of final submittal.
- G. Final Commissioning Report Submittal: CxA shall submit hard copies and electronically formatted information of the final commissioning report. Design Builder shall deliver four hard copies and two set of discs to the University. The final submittal must address previous review comments and shall include a copy of the prefinal submittal review comments along with a response to each item.

1.13 QUALITY ASSURANCE

- A. Training Instructor Qualifications: Factory-authorized service representatives, experienced in training, operation, and maintenance procedures for installed systems, subsystems, and equipment.
- B. Test Equipment Calibration: Comply with test equipment manufacturer's calibration procedures and intervals. Recalibrate test instruments immediately whenever instruments have been repaired following damage or dropping. Affix calibration tags to test instruments. Instruments shall have been calibrated within six months prior to use.

1.14 COORDINATION

- A. Coordinating Meetings: CxA shall conduct monthly coordination meetings of the commissioning team to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities. Coordination meetings shall start at least 8 months prior to project completion.
- B. Pretesting Meetings: CxA shall conduct pretest meetings of the commissioning team to review startup procedures, biweekly testing procedures, testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested. Pretest meetings shall start at least 4 months prior to project completions
- C. Testing Coordination: CxA shall coordinate sequence of testing activities weekly to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- D. Manufacturers' Field Services: CxA shall coordinate services of manufacturers' field services.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 OPERATION AND MAINTENANCE TRAINING REQUIREMENTS

- A. Training Preparation Conference: Before operation and maintenance training, CxA shall convene a training preparation conference to include the University's operation and maintenance personnel, Design Builder, and subcontractors. In addition to requirements specified in Division 01 Section "Demonstration and Training," perform the following:
 1. Review the OPR and BoD.
 2. Review installed systems, subsystems, and equipment.
 3. Review instructor qualifications.
 4. Review instructional methods and procedures.
 5. Review training module outlines and contents.
 6. Review course materials (including operation and maintenance manuals).
 7. Inspect and discuss locations and other facilities required for instruction.
 8. Review and finalize training schedule and verify availability of educational materials, instructors, audiovisual equipment, and facilities needed to avoid delays.
 9. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.
- B. Training Modules: Develop an instruction program that includes individual training modules for each system, subsystem, and equipment as specified in Division 01 Section "Demonstration and Training."

END OF SECTION 01 9113

DIVISION 28 - SECURITY

28 30 00 - Security Detection, Alarm, And Monitoring

PRODUCTS

Access Control System: Update existing (ICPAM) Identiv Connected Physical Access Manager system and Cisco Video Surveillance Manager to accommodate new equipment provided under this scope of work. Provide additional licenses for new components added to existing (ICPAM) Identiv Connected Physical Access Manager system and Cisco Video Surveillance Manager and necessary software to provide a complete and working system. Provide and install 24VAC/VDC or lower voltage electrical connection aspects specified as part of the project. Configure to operate using proximity card technologies.

Request to Exit Devices: New UL-294 Listed Request-To-Exit (RTE) device for each card reader installation identified within this project as applicable.

Request to Exit Sensors: Adjustable beam pattern.

Magnetic Alarm Door Contact Switches: New UL-Listed magnetic alarm door contact switch which shall work in conjunction with the associated card access reader and the system programming.

Card Access Readers: Card readers to be Identiv Hirsch Digi-Trac Model MX8. **Card Access readers to be wired using shielded wiring.**

Power Supplies: Altronix UL Listed 12 VDC and/or 24VDC. All power supplies installed shall include a re-charging battery backup system with a minimum 7-amp-hour sealed UL-Listed industry acceptable battery for 12 VDC power supplies and two (2) batteries for 24 VDC power supplies.

Door Position Switches: Securitron DPS-M series, or approved equal.

Control Line Modules: Hirsch model MELM-2

Duress Button: Honeywell 269R, or approved equal.

Interior IP Cameras: Sony IP model with protective dome.

Exterior IP Cameras: Sony IP model with protective dome and mount.

Network Video Recorder: The NVR shall be configured with redundant power supplies and RAID 5 hard drive configuration. NVR shall be located in the campus data center. The contractor shall provide NVRs with expansion units as required to provide up to 90 days of storage per camera @ 15 frames per second. NVR shall be configured for 30-day typical at general locations but will be configured for 90-day retention for Cashier areas.

Video Management: The DVMS shall be OnSSI Ocularis (no substitutions allowed) to be compliant with the existing campus security system hardware and software. The software and all networked cameras shall interface with the Hirsch Velocity Software for access control. The software will also connect with the room scheduling system for reservation and room access based on student / staff room booking. Provide additional licenses-OnSSI Enterprise camera License (1 year).

Card Access: Doorways to have card access readers include Lecture Halls, Classrooms, Main entrance to building, Group meeting spaces, Group study rooms, Multipurpose room, Auxiliary dining.

Exterior Cameras: Infrastructure for future cameras shall be included to allow all external entrances and the first-floor external lobby space to be monitored at a later date. Cameras monitoring parkway (high occupancy) gathering area and breezeway between buildings. Cameras monitoring high-density bike rack areas. Cameras monitoring the patio area.

Interior Cameras: Multipurpose room entrances. Cameras shall be located in all entrance lobbies facing the entrance doors. Two cameras shall be located at the information desk – one to monitor the desk and the other to monitor people approaching the desk. Cameras shall be located in each elevator cab. Cameras will appropriately view Cashier and any other locations where monetary transactions occur.

Duress Alarm (Panic Button): Locations include Student Affairs information desk, Dining area cashier location(s).

Warranty: A renewable yearly maintenance service contract on all parts and labor shall be provided as a part of this bid with the first-year contract price established to take effect after the warranty period.