

BUILDING AUTOMATION SYSTEM (BAS)
REPAIRS & UPGRADES
FOR
NORTHWESTERN STATE UNIVERSITY

PROJECT # 01-107-24-05
F.01004613;
JLCB ITEM #: 227

NORTHWESTERN STATE UNIVERSITY

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PROJECT #:25062
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TABLE OF CONTENTS

DIVISION 00

ADVERTISEMENT FOR BID

INSTRUCTION TO BIDDERS

NOTICE TO BIDDERS

CERTIFICATION STATEMENT

INDEMNIFICATION AGREEMENT

AIA 201 GENERAL CONDITIONS OF THE CONTRACT

SUPPLEMENTARY CONDITIONS

BID FORM

BID BOND FORM

SAMPLE CONTRACT BETWEEN OWNER AND CONTRACTOR / PAYMENT AND PERFORMANCE BOND

ATTESTATION AFFIDAVIT

SCHEDULE OF VALUES

CHANGE ORDER FORMS

PARTIAL OCCUPANCY FORM

RECOMMENDATION OF ACCEPTANCE

LIQUIDATED DAMAGES ASSESSMENT

DIVISION 01

01 04 00 PROJECT COORDINATION

01 06 50 SAFETY

01 20 00 PROJECT MEETINGS

01 30 00 SHOP DRAWINGS SUBMITTALS, PRODUCT DATA AND SUBMITTALS

01 70 00 PROJECT CLOSEOUT

01 72 00 RECORD DRAWINGS

DIVISION 23

23 00 10 MECHANICAL GENERAL PROVISIONS

23 00 20 BASIC MATERIALS AND METHODS

23 09 00 BUILDING AUTOMATION SYSTEM

23 09 00 SIEMENS DESIGO MIGRATION



BID NUMBER: SB # 7677

DATE: 03/03/2026

NORTHWESTERN STATE UNIVERSITY

Business Affairs – Purchasing Section
St. Denis Hall/ 200 Sam Sibley Dr.
Natchitoches, Louisiana 71497
(318) 357-5716
email: purchasing@nsula.edu

INVITATION FOR BID: Sealed bid, subject to the conditions herein stated and attached hereto, will be received at this office until **2 pm Thursday, March 26th, 2026**, and then publicly opened for furnishing the items and/or services as described below for Northwestern State University:

Mandatory Pre-Bid Conference: A mandatory Prebid conference will be held at **10:00 AM Tuesday, March 17th, 2026**, at the following location: NSU Physical Plant, Conference Room, 998 South Jefferson, Natchitoches, La 71497.

DESCRIPTION

Building Automation System (BAS) Repairs & Upgrades for Northwestern State University

BIDDERS PLEASE FILL IN ALL BLANK SPACES AND SIGN BELOW

Terms will be _____ and shipment will be received within _____ days after receipt of order.

In compliance with and subject to the conditions thereof, the undersigned offers and agrees, if this bid be accepted within thirty (30) days from date of opening, to furnish any or all of the items (or sections) at the price set opposite each item (or section).

VENDOR NAME

SIGNATURE AUTHORITY (Re: L.R.S. 39:1594(Act 121))

ADDRESS

PRINTED OR TYPED NAME / TITLE

CITY, STATE, ZIP

FEDERAL TAX IDENTIFICATION NUMBER (FIN)

TELEPHONE NUMBER

EMAIL

DATE

ACCEPTANCE /AWARD

Date of Award and Execution

Recommendation: _____

Approved: _____

Ashlee Grayson, Director of Purchasing

INSTRUCTIONS TO BIDDERS

1. Bid Forms

All written bids, unless otherwise provided for, must be submitted on, and in accordance with, forms provided, properly signed. Bids submitted in the following manner will not be accepted:

1. Bid contains no signature indicating intent to be bound;
2. Bid filled out in pencil; and
3. Bid not submitted on NSU's standard forms.

Bids must be received at the address specified in the Invitation for Bids prior to bid opening time in order to be considered. Any bid received after bid opening time will be returned to sender unopened. Telegraphic and fax alterations to bids received before bid opening time will be considered provided formal bid and written alteration have been received and time-stamped before bid opening time.

2. Submission of Bids

Firms/individuals who are interested in providing services requested under this ITB must submit a bid containing the information specified in this solicitation. The bid must be received in hard copy (printed) by the Purchasing Office on or before **(2:00 PM)** Central Daylight Time on the date specified. FAX or e-mail submissions are not acceptable. Bidders mailing their submittals shall allow sufficient mail delivery time to ensure receipt of their submittal by the time specified. The submitted bid must be delivered at the Bidder's expense to:

Attn: Ashlee Grayson
Director of Purchasing
Business Affairs/St. Denis Hall
200 Sam Sibley Drive
Northwestern State University
Natchitoches, Louisiana 71497

*******Submittals should have ITB #7677 clearly printed on all documents and shipping containers, failure to clearly label submittals may result in rejection.*******

For courier delivery, the street address above and the telephone number is (318-357-5716). It is solely the responsibility of each Bidder to ensure that their submittal is delivered at the specified place and prior to the deadline for submission. Submittals received after the deadline will not be considered.

NSU requests that **(1)** copy of the solicitation be submitted to the Purchasing Office at the address specified. The bid shall contain original signatures of those company officials or agents duly authorized to sign bids or contracts on behalf of the organization. A certified copy of a board resolution granting such authority shall be submitted if Bidder is a corporation. The bid with original signatures will be retained for incorporation in any contract resulting from this ITB.

3. **Required Bid Submittals:** The following documents must be submitted in full at the time of the sealed bid opening:

1. Louisiana Uniform Public Bid Form, including:
 - a) Base Bid
 - b) Alternates
 - c) Acknowledgement
2. Unit Price Form
3. Bid Security
4. Corporate Resolution or other satisfactory evidence of authority
5. Louisiana Contractor's License Number

6. Signed Instructions to Bidders

Failure to provide any of the above documents at the time of bid submission may render the bid non-responsive and subject to rejection.

4. Time for Completion and Liquidated Damages: Following the issuance of a Notice to Proceed, the Contractor shall have **three hundred sixty-five (365) consecutive calendar days to complete all work**. Failure to complete the work within this timeframe will result in the assessment of liquidated damages at the rate of **One Thousand dollars (\$1,000.00) per calendar day**, beginning on the first day after the established completion date and continuing until the work is satisfactorily completed.

5. Prices: The bidder must state the prices (written in ink, in figures) for which he proposes to furnish each item and shall show the total extended amount for each based on the quantities shown. In case, however, of conflict between the unit price and the extended amount, the unit price shall govern. Unit prices should be inclusive of any freight charges.

6. F.O.B: Bid should be FOB Destination/Agency, title passing upon acceptance of merchandise. Failure to comply with this requirement may disqualify your bid.

7. Standard of Quality: Any product or service bid shall conform to all applicable Federal and State laws and regulations and the specifications contained in the ITB. Unless otherwise specified in the ITB, any manufacturer's name, trade name, brand, name, or catalog number used in the specifications is for the purpose of describing the quality level and characteristic required. Bidder must specify the brand and model number of the product offered in his bid. Bids not specifying brand and model number shall be considered as offering the exact products specified in the ITB.

8. Descriptive Information: Bidders proposing an equivalent brand or model should submit with the bid information (such as illustrations, descriptive literature, and technical data) sufficient for NSU Purchasing to evaluate quality, suitability, and compliance with the specifications in the ITB. Failure to submit descriptive information may cause bid to be rejected. Any change made to a manufacturer's published specifications submitted for a product shall be verifiable by the manufacturer. If item(s) bid do not fully comply with specifications (including brand and/or product number), bidder must state in what respect the item(s) deviate. Failure to note exceptions on the bid form will not relieve the successful bidder(s) from supplying the actual products requested.

MANUFACTURER'S NUMBERS AND TRADE NAMES: Where the manufacturer's product is named or specified, it is understood that "or equal" shall apply, whether stated or not. Such name and number is meant to establish the standard, type, quality, style, etc. Northwestern State University shall be the sole judge as to whether or not the equipment offered is equal to that specified.

9. Interpretation of Solicitation/Bidder Inquiries: If Bidder is in doubt as to the meaning of any part or requirement of this solicitation, Bidder may submit a written request for interpretation to the Buyer-of-Record at purchasing@nsula.edu. Written inquiries must be received in the NSU Purchasing Office no later than **five (5) calendar days prior to the opening of bids and must clearly cross-referenced to the bid/solicitation/specification number in subject field** of the email request.

No decisions or actions shall be executed by any Bidder as a result of oral discussions with any TBA Studio and/or NSU employee or consultant. Any interpretation of the documents will be made by formal addendum only, issued by the TBA Studios, and mailed or delivered to all Bidders known to have received the solicitation. TBA Studios shall not be responsible for any other interpretations or assumptions made by Bidder.

3. **Bid Opening:** Bidders may attend the bid opening, but no information or opinions concerning the ultimate contract award will be given at the bid opening or during the evaluation process. Bids may be examined 72 hours after request is made. Information pertaining to completed files may be secured by visiting Northwestern State University Purchasing during normal working hours. Written bid tabulations will not be furnished.

4. **Award:** Award will be made to the lowest responsible bidder, taking into consideration the quality of the products to be supplied, their conformity with specifications, the purposes for which they are required, and the time for delivery. Northwestern State University Purchasing reserves the right to award items separately, grouped or on an all-or-none basis and to reject any or all bids and waive any informalities.

5. **Purchase Order:** If any bid or bids are accepted, an initial purchase order or orders for the entire number of units or part thereof, will be issued not later than thirty (30) days after receipt of bids by the Owner to the lowest bidder offering products which, in the opinion of the University, meet the requirements of these specifications.

6. **Conditions of Purchase Orders:** We will not in any manner be responsible for goods delivered or work done for our account without a written order. No allowance for boxing or crating. If you cannot fill order as directed, return for advice. Quantities in excess of the order may be returned or held subject to shipper's order, expense and risk. By accepting the order, you hereby warrant that the merchandise to be furnished hereunder will be in full conformity with the specifications, drawing or sample and agree that this warrant shall survive acceptance of the merchandise and that you will bear the cost of inspecting merchandise rejected. Northwestern State University reserves the right to purchase additional quantities at the same price, terms and conditions for a period of ninety (90) days from the date of order based upon vendor acceptance.

7. **Inspection and Acceptance:** Upon delivery of each item to the Agency, inspection of the item will be made by Northwestern State University, or their representative, at the point of delivery, or in special cases, at point of origin. Acceptance of the item will be made after inspection determines that all requirements of the specifications and the proposal have been met.

8. **U.S. Taxpayer Identification Number:** Vendor must include an IRS Form W-9 and enter your taxpayer identification number in the appropriate space on the Specifications and Bid Form Page. For individuals and sole proprietors, this is your social security number. For other entities, it is your employer identification number. **PAYMENT CANNOT BE PROCESSED WITHOUT YOUR TAX I.D. NUMBER.**

9. **Taxes:** The State is exempt from sales/use tax. Vendor is responsible for including all other applicable taxes in the bid price.

10. Builders Risk Insurance: Contractor shall purchase and maintain builders' risk/all-risk property insurance covering all physical loss or damage to the work, materials, equipment, and supplies, including temporary structures, in the amount of the Contract Sum. Coverage shall commence at the start of construction and continue until final acceptance by the Owner. The insurance shall include the Owner as named insured and contain a waiver of subrogation in favor of the Owner.

Bidders shall submit with their bids a Certificate of Insurance or a Letter of Insurability acceptable to the Owner demonstrating that the Builders Risk Insurance requirement will be met. Failure to submit said Certificate or Letter with the bid may result in the bid being declared non-responsive.

11. New Products: Unless specifically called for in the ITB, all products for purchase must be new, never previously used, and the current model and/or packaging. No remanufactured, demonstrator, used or irregular product will be considered for purchase unless otherwise specified in the ITB. The manufacturer's standard warranty will apply unless otherwise specified in the ITB.

12. Contract Renewals: Upon Agreement of Northwestern State University Purchasing and the contractor, an open-ended requirements contract may be extended for 2 additional 12-month periods at the same prices, terms and conditions. In such cases, the total contract term cannot exceed 36 months.

13. Contract Cancellation: Northwestern State University has the right to cancel any contract for cause, in accordance with purchasing rules and regulations, including buy not limited to: (1) failure to deliver within the time specified in the contract; (2) failure of the product or service to meet specifications, conform to sample quality or to be delivered in good condition; (3) misrepresentation by the vendor; (4) fraud, collusion, conspiracy or other unlawful means of obtaining any contract with the University; (5) conflict of contract provisions with constitutional or statutory provision of state or federal law; (6) any other breach of contract. Northwestern State University has the right to cancel any contract for convenience at any time by giving thirty (30) days written notice to the vendor. In such cases, the vendor shall be entitled to payment for compliant deliverables in progress.

14. Default of Contractor: Failure to deliver within the time specified in the bid will constitute a default and may cause cancellation of the contract. Where the Northwestern State University Purchasing has determined the contractor to be in default, NSU Purchasing reserves the right to purchase any or all products or services covered by the contract on the open market and to charge the contractor with cost in excess of the contract price. Until such assessed charges have been paid, no subsequent bid from the defaulting contractor will be considered.

15. Order of Priority: In the event there is a conflict between the Instructions to Bidders or General Conditions and the Special Conditions, the Special Conditions shall govern.

16. Applicable Law: All contracts shall be construed in accordance with governed by the laws of the State of Louisiana

17. LICENSED CONTRACTOR: A Louisiana State Contractor's License for the classifications of *Mechanical*. will be required for this bid. The Louisiana Contractor's License number must be listed on the outside of the bid envelope.

18. Discrimination and EEOC COMPLIANCE: The contractor agrees to abide by the requirements of the following as applicable: Title VI and VII of 1972, Federal Executive Order 11246, the Federal Rehabilitation Act of 1973, as amended, the Vietnam Era Veteran’s Readjustment Assistance Act of 1974, Title IX of the Education Amendments of 1972, the Age Act of the Civil Rights Act of 1964, as amended by the Equal Opportunity Act 1972, and contractor agrees to abide by the requirements of the Americans With Disabilities Act of 1990: Contractor agrees not to discriminate in its employment practices, and will render services under this contract without regard to race, color, religion, sex, national origin, veteran status, political affiliation, disabilities, or in accordance with KBB 2004-54 because of an individual’s sexual orientation. Any act of discrimination committed by Contractor, or failure to comply with these statutory obligations when applicable shall be grounds for termination of this contract.

19. Standard Preference:

A. In accordance with Louisiana Revised Statutes 39:1595, a preference not to exceed 10% may be allowed for paper and paper products manufactured or converted in Louisiana of equal quality. For paper supplied in wrapped reams, each carton and each individual ream shall be clearly labeled with the name of the manufacturer or converter and the location within Louisiana where such paper is manufactured or converted. For paper and paper products supplied in bulk or in other forms, the smallest unit of packaging shall be clearly labeled with the name of the manufacturer or converter and the location within Louisiana where such paper or paper product is manufactured or converted.

Do you claim this preference? Yes _____

Specify Item Number(s) _____

Name and location within Louisiana where such paper or paper product is manufactured or converted:

B. A preference not to exceed 10% may be allowed for products manufactured, produced, grown, or assembled in Louisiana of equal quality.

Do you claim this preference? Yes

Specify Item Number(s) _____

Specify location within Louisiana where this product is manufactured, produced, grown or assembled:

If so, do you certify that at least fifty percent (50%) of your Louisiana business workforce is comprised of Louisiana residents?

Yes: _____ No: _____

[Note: If more space is required, include on separate sheet. Failure to specify above information may cause elimination from preferences. Preferences shall not apply to service contracts.]

20. Scope of Contract: Furthermore, submittal of any terms and conditions contrary to those of the State of Louisiana may cause your bid to be rejected. By signing this form terms and conditions which may be included in your bid are nullified, and contractor agrees that this contract shall be construed in accordance with and governed by the laws of the State of Louisiana.

21. Right to Audit: The Contractor agrees that the University and the Legislative Auditor of the State of Louisiana shall have access to, and the right to audit and examine, any pertinent books, documents, papers, and records of the Contractor related to this bid and any resulting contract agreement.

22. Official University Recognized Holidays: The following is a list of officially recognized University Holidays:

- | | |
|------------------------|----------------------|
| New Year's Day | Juneteenth |
| Martin Luther King Day | July 4 th |
| Mardi Gras Day | Labor Day |
| Good Friday | Thanksgiving Day |
| Memorial Day | Christmas Day |

(Members of firm or person authorized to sign bids for corporation)

BIDDERS MUST SIGN IN INK

I M P O R T A N T

Signature Authority: In Accordance with L.R.S.39:1594 (Act 121), the person signing the bid must be:

- a. A current corporate officer, partnership member of other individual specifically authorized to submit a bid as reflected in the appropriate records on file with the Secretary of State; or**
- b. An individual authorized to bind the vendor as reelected by an accompanying corporate resolution, certificate or affidavit; or**
- c. An individual listed on the State of Louisiana Bidder's Application as authorized to execute bids.**

By signing the bid, the bidder certified compliance with the above.

WE ARE AN EQUAL OPPORTUNITY UNIVERSITY

NOTICE TO BIDDERS

Bid security must be attached (insurance company, bank money order, certified check or cashier's check) in the sum of five percent (5%) of the amount bid (including base bid and additive alternates, if any) and shall become the property of the owner in the event the contract and bond are not executed within the time set forth above. If bid bond is used, it shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management service list of approved bonding companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide to write individual bonds up to ten percent of policyholders' surplus as shown in the A.M. Best's Key Rating Guide, or by an insurance company that is either domiciled in Louisiana or owned by Louisiana residents and is licensed to write surety bonds. In addition, the bond shall be written by a surety or insurance company that is currently licensed to do business in the State of Louisiana.

Bids shall be accepted only from Contractors who are licensed under La. R.S. 37:2150-2163 for the classification(s) such as Building Construction work. No bid may be withdrawn for a period of thirty (30) days after receipt of bids. IN ACCORDANCE LA R.S. 37:2163 "ANYONE OBJECTING TO THE CLASSIFICATION MUST SEND A CERTIFIED LETTER TO BOTH THE LOUISIANA STATE LICENSING BOARD FOR CONTRACTORS AND THE OFFICE OF STATE PURCHASING. THE LETTER MUST BE RECEIVED NO LATER THAN TEN WORKING DAYS PRIOR TO THE DAY ONWHICH BIDS ARE TO BE OPENED.

When this project is financed either partially or entirely with State Bonds, the award of this Contract is contingent upon the sale of bonds by the State Bond Commission. The State shall incur no obligation to the Contractor until the Contract between Owner and Contractor is fully executed.

CONTRACT, PERFORMANCE BOND, LABOR AND MATERIALS PAYMENT BOND:

If the undersigned is notified of the acceptance of the above bid or bids, within thirty (30) days of the time set forth for the opening of bids, he agrees to execute a contract for the work accepted, in the standard contract form currently used by Northwestern State University of Louisiana within ten (10) days after notice from NSU.

The undersigned further agrees, if awarded the contract, to execute and deliver to NSU at the time the contract documents are executed, a Performance Bond with Power of Attorney, on the forms provided, in an amount equal to the contract sum and agrees that this bond will be secured by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide to write individual bonds up to ten percent of policyholders' surplus as shown in the A.M. Best's Key Rating Guide, or by an insurance company that is either domiciled in Louisiana or owned by Louisiana residents and is licensed to write surety bonds. In addition, the bond shall be written by a surety or insurance company that is currently licensed to do business in the state of Louisiana. Also, to be provided at the same time is a Labor and Materials Payment Bond in an amount equal to 100% of the contract amount.

CERTIFICATION STATEMENT

The undersigned hereby acknowledges she/he has read and understands all requirements and specifications of the Invitation to Bid (ITB), including any attachments.

OFFICIAL CONTACT. The University requests that the Bidder designate one person to receive all documents and the method in which the documents are best delivered. Identify the Contact name and fill in the information below: (Print Clearly)

Date _____ Official Contact Name: _____

A. E-mail Address: _____

B. Telephone Number with area code: () _____

C. Facsimile Number with area code: () _____

Bidder certifies that the above information is true and grants permission to the University to contact the above- named person or otherwise verify the information provided. By its submission of this Proposal and authorized signature below, Bidder certifies that:

1. The information contained in its response to this ITB is accurate.
2. Bidder complies with each of the mandatory requirements listed in the ITB and will meet or exceed the requirements specified therein.
3. Bidder agrees to provide all tasks, services, and deliverables listed in Scope of Services for the total cost stated on Bid Form;
4. Bidder accepts the procedures, evaluation criteria, mandatory contract terms, and all other administrative requirements set forth in this ITB.
5. Bidder confirms that its bid will be considered valid until award is made.
6. In making this bid, each Bidder represents that: They have read and understand the bid documents and the bid is made in accordance herewith, and the bid is based upon the specifications described in the bid documents without exception.
7. Bidder certifies, by signing and submitting a proposal for \$25,000 or more, that their company, any subcontractors, or principals are not suspended or debarred by the General Services Administration (GSA) in accordance with the requirements in OMB Circular A-133. (A list of parties who have been suspended or debarred can be viewed via the internet at www.epls.gov .)

Professional Job Title: _____

Official Company Name: _____

Street Address: _____

City: _____ State: _____ Zip: _____

SIGNATURE of Bidder’s Authorized Representative: _____
 (Signature MUST be HAND SIGNED and should be in Blue ink)

Date: _____

INDEMNIFICATION AGREEMENT

The _____ {Contractor/Lessee} agrees to protect, defend, indemnify, save, and hold harmless, the State of Louisiana, all State Departments, Agencies, Boards and Commissions, its officers, agents, servants, employees, and volunteers, from and against any and all claims, damages, expenses, and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur, or in any way grow out of, any act or omission of _____ {Contractor/Lessee}, its agents, servants, and employees, or any and all costs, expenses and/or attorney fees incurred by _____ {Contractor/Lessee} as a result of any claims, demands, suits or causes of action, except those claims, demands, suits, or causes of action arising out of the negligence of the State of Louisiana, all State Departments, Agencies, Boards, Commissions, its officers, agents, servants, employees and volunteers.

_____ {Contractor/Lessee} agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands, suits, or causes of action at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claims, demands, suits, or causes of action are groundless, false or fraudulent. The State of Louisiana may, but is not required to, consult with the Contractor in the defense of claims, but this shall not affect the Contractor's responsibility for the handling of and expenses for all claims.

Accepted by _____
Company Name

Signature

Title

Date Accepted _____

Is Certificate of Insurance Attached? _____ Yes _____ No

Contract No. _____ for _____
State Agency Name

PURPOSE OF CONTRACT: _____

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

TABLE OF ARTICLES

- 1 GENERAL PROVISIONS**
- 2 OWNER**
- 3 CONTRACTOR**
- 4 ARCHITECT**
- 5 SUBCONTRACTORS**
- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**
- 7 CHANGES IN THE WORK**
- 8 TIME**
- 9 PAYMENTS AND COMPLETION**
- 10 PROTECTION OF PERSONS AND PROPERTY**
- 11 INSURANCE AND BONDS**
- 12 UNCOVERING AND CORRECTION OF WORK**
- 13 MISCELLANEOUS PROVISIONS**
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT**
- 15 CLAIMS AND DISPUTES**

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

INDEX

(Topics and numbers in bold are Section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, **12.3**

Access to Work

3.16, 6.2.1, 12.1

Accident Prevention

10

Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5, 10.2.8, 13.3.2, 14.1, 15.1.2, 15.2

Addenda

1.1.1

Additional Costs, Claims for

3.7.4, 3.7.5, 10.3.2, 15.1.5

Additional Inspections and Testing

9.4.2, 9.8.3, 12.2.1, **13.4**

Additional Time, Claims for

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.6**

Administration of the Contract

3.1.3, **4.2**, 9.4, 9.5

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.13

Allowances

3.8

Applications for Payment

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10

Approvals

2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9, 3.12.10.1, 4.2.7, 9.3.2, 13.4.1

Arbitration

8.3.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Definition of

4.1.1

Architect, Extent of Authority

2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2, 9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1, 13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1

Architect, Limitations of Authority and Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4, 9.4.2, 9.5.4, 9.6.4, 15.1.4, 15.2

Architect's Additional Services and Expenses

2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4

Architect's Administration of the Contract

3.1.3, 3.7.4, 15.2, 9.4.1, 9.5

Architect's Approvals

2.5, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

Architect's Copyright

1.1.7, 1.5

Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1, 13.4.2, 15.2

Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4

Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2

Architect's Interpretations

4.2.11, 4.2.12

Architect's Project Representative

4.2.10

Architect's Relationship with Contractor

1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2

Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3

Architect's Representations

9.4.2, 9.5.1, 9.10.1

Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.6.8, 9.10.2, 10.3.3

Award of Separate Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1

Binding Dispute Resolution

8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5, 15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1

Bonds, Lien

7.3.4.4, 9.6.8, 9.10.2, 9.10.3

Bonds, Performance, and Payment

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**, 11.1.3, **11.5**

Building Information Models Use and Reliance

1.8

Building Permit

3.7.1

Capitalization

1.3

Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

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Certificates for Payment

4.2.1, 4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4

Certificates of Inspection, Testing or Approval
13.4.4

Certificates of Insurance
9.10.2

Change Orders

1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3, 7.1.2, 7.1.3, 7.2, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2

Change Orders, Definition of
7.2.1

CHANGES IN THE WORK

2.2.2, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1, 11.5

Claims, Definition of
15.1.1

Claims, Notice of
1.6.2, 15.1.3

CLAIMS AND DISPUTES

3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, 15, 15.4
Claims and Timely Assertion of Claims
15.4.1

Claims for Additional Cost

3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, 15.1.5

Claims for Additional Time

3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, 15.1.6

Concealed or Unknown Conditions, Claims for
3.7.4

Claims for Damages

3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3, 11.3.2, 14.2.4, 15.1.7

Claims Subject to Arbitration
15.4.1

Cleaning Up
3.15, 6.3

Commencement of the Work, Conditions Relating to
2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3, 6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, 15.1.5

Commencement of the Work, Definition of
8.1.2

Communications

3.9.1, 4.2.4

Completion, Conditions Relating to

3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1, 9.10, 12.2, 14.1.2, 15.1.2

COMPLETION, PAYMENTS AND 9

Completion, Substantial

3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 15.1.2

Compliance with Laws

2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3

Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract

1.1.1, 6.1.1, 6.1.4

Consent, Written

3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2, 15.4.4.2

Consolidation or Joinder

15.4.4

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

1.1.4, 6

Construction Change Directive, Definition of
7.3.1

Construction Change Directives

1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, 7.3, 9.3.1.1

Construction Schedules, Contractor's

3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2

Contingent Assignment of Subcontracts

5.4, 14.2.2.2

Continuing Contract Performance 15.1.4

Contract, Definition of
1.1.2

CONTRACT, TERMINATION OR SUSPENSION OF THE

5.4.1.1, 5.4.2, 11.5, 14

Contract Administration

3.1.3, 4, 9.4, 9.5

Contract Award and Execution, Conditions Relating to

3.7.1, 3.10, 5.2, 6.1

Contract Documents, Copies Furnished and Use of
1.5.2, 2.3.6, 5.3

Contract Documents, Definition of
1.1.1

Contract Sum

2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4, 9.1, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2, 12.3, 14.2.4, 14.3.2, 15.1.4.2, 15.1.5, 15.2.5

Contract Sum, Definition of
9.1

Contract Time

1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5, 7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7, 7.3.10, 7.4, 8.1.1, 8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2, 14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5

Contract Time, Definition of
8.1.1

CONTRACTOR 3

Contractor, Definition of

3.1, 6.1.2

Contractor's Construction and Submittal Schedules

3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6.2

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Contractor's Employees
2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.3, 14.1, 14.2.1.1

Contractor's Liability Insurance
11.1

Contractor's Relationship with Separate Contractors and Owner's Forces
3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4

Contractor's Relationship with Subcontractors
1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2, 9.6.7, 9.10.2, 11.2, 11.3, 11.4

Contractor's Relationship with the Architect
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1

Contractor's Representations
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2

Contractor's Responsibility for Those Performing the Work
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8

Contractor's Review of Contract Documents
3.2

Contractor's Right to Stop the Work
2.2.2, 9.7

Contractor's Right to Terminate the Contract
14.1

Contractor's Submittals
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3

Contractor's Superintendent
3.9, 10.2.6

Contractor's Supervision and Construction Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4

Coordination and Correlation
1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1

Copies Furnished of Drawings and Specifications
1.5, 2.3.6, 3.11

Copyrights
1.5, 3.17

Correction of Work
2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, 12.2, 12.3, 15.1.3.1, 15.1.3.2, 15.2.1

Correlation and Intent of the Contract Documents
1.2

Cost, Definition of
7.3.4

Costs
2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14

Cutting and Patching
3.14, 6.2.5

Damage to Construction of Owner or Separate Contractors
3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4

Damage to the Work
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4

Damages, Claims for
3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2, 11.3, 14.2.4, 15.1.7

Damages for Delay
6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2

Date of Commencement of the Work, Definition of
8.1.2

Date of Substantial Completion, Definition of
8.1.3

Day, Definition of
8.1.4

Decisions of the Architect
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2, 14.2.2, 14.2.4, 15.1, 15.2

Decisions to Withhold Certification
9.4.1, 9.5, 9.7, 14.1.1.3

Defective or Nonconforming Work, Acceptance, Rejection and Correction of
2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1

Definitions
1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1

Delays and Extensions of Time
3.2, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5

Digital Data Use and Transmission
1.7

Disputes
6.3, 7.3.9, 15.1, 15.2

Documents and Samples at the Site
3.11

Drawings, Definition of
1.1.5

Drawings and Specifications, Use and Ownership of
3.11

Effective Date of Insurance
8.2.2

Emergencies
10.4, 14.1.1.2, 15.1.5

Employees, Contractor's
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.3, 14.1, 14.2.1.1

Equipment, Labor, or Materials
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2

Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3.1, 15.1.4

Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2,
10.4, 14.3, 15.1.6, **15.2.5**

Failure of Payment
9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Faulty Work
(See Defective or Nonconforming Work)

Final Completion and Final Payment
4.2.1, 4.2.9, 9.8.2, **9.10**, 12.3, 14.2.4, 14.4.3

Financial Arrangements, Owner's
2.2.1, 13.2.2, 14.1.1.4

GENERAL PROVISIONS

1

Governing Law

13.1

Guarantees (See Warranty)

Hazardous Materials and Substances
10.2.4, **10.3**

Identification of Subcontractors and Suppliers
5.2.1

Indemnification
3.1.7, **3.18**, 9.6.8, 9.10.2, 10.3.3, 11.3

Information and Services Required of the Owner
2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5,
9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2,
14.1.1.4, 14.1.4, 15.1.4

Initial Decision
15.2

Initial Decision Maker, Definition of
1.1.8

Initial Decision Maker, Decisions
14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Initial Decision Maker, Extent of Authority
14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Injury or Damage to Person or Property
10.2.8, 10.4

Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,
9.9.2, 9.10.1, 12.2.1, 13.4

Instructions to Bidders
1.1.1

Instructions to the Contractor
3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2

Instruments of Service, Definition of
1.1.7

Insurance
6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5, 11

Insurance, Notice of Cancellation or Expiration
11.1.4, 11.2.3

Insurance, Contractor's Liability
11.1

Insurance, Effective Date of
8.2.2, 14.4.2

Insurance, Owner's Liability
11.2

Insurance, Property
10.2.5, 11.2, 11.4, 11.5

Insurance, Stored Materials
9.3.2

INSURANCE AND BONDS
11

Insurance Companies, Consent to Partial Occupancy
9.9.1

Insured loss, Adjustment and Settlement of
11.5

Intent of the Contract Documents
1.2.1, 4.2.7, 4.2.12, 4.2.13

Interest
13.5

Interpretation
1.1.8, 1.2.3, 1.4, 4.1.1, 5.1, 6.1.2, 15.1.1

Interpretations, Written
4.2.11, 4.2.12

Judgment on Final Award
15.4.2

Labor and Materials, Equipment
1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,
5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1,
10.2.4, 14.2.1.1, 14.2.1.2

Labor Disputes
8.3.1

Laws and Regulations
1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4,
9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8,
15.4

Liens
2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

Limitations, Statutes of
12.2.5, 15.1.2, 15.4.1.1

Limitations of Liability
3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6,
4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.6.8, 10.2.5, 10.3.3,
11.3, 12.2.5, 13.3.1

Limitations of Time
2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7,
5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,
9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15,
15.1.2, 15.1.3, 15.1.5

Materials, Hazardous
10.2.4, **10.3**

Materials, Labor, Equipment and
1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,
5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2,
10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2

Means, Methods, Techniques, Sequences and
Procedures of Construction
3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2

Mechanic's Lien
2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

Mediation
8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, **15.3**, 15.4.1,
15.4.1.1

Minor Changes in the Work
1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, 7.4

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MISCELLANEOUS PROVISIONS

13

Modifications, Definition of

1.1.1

Modifications to the Contract

1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2

Mutual Responsibility

6.2

Nonconforming Work, Acceptance of

9.6.6, 9.9.3, 12.3

Nonconforming Work, Rejection and Correction of

2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2

Notice

1.6, 1.6.1, 1.6.2, 2.1.2, 2.2.2., 2.2.3, 2.2.4, 2.5, 3.2.4, 3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4, 8.2.2, 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1, 13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5, 15.1.6, 15.4.1

Notice of Cancellation or Expiration of Insurance

11.1.4, 11.2.3

Notice of Claims

1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, 15.1.3, 15.1.5, 15.1.6, 15.2.8, 15.3.2, 15.4.1

Notice of Testing and Inspections

13.4.1, 13.4.2

Observations, Contractor's

3.2, 3.7.4

Occupancy

2.3.1, 9.6.6, 9.8

Orders, Written

1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2, 14.3.1

OWNER

2

Owner, Definition of

2.1.1

Owner, Evidence of Financial Arrangements

2.2, 13.2.2, 14.1.1.4

Owner, Information and Services Required of the

2.1.2, 2.2, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4

Owner's Authority

1.5, 2.1.1, 2.3.3.2.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7

Owner's Insurance

11.2

Owner's Relationship with Subcontractors

1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2

Owner's Right to Carry Out the Work

2.5, 14.2.2

Owner's Right to Clean Up

6.3

Owner's Right to Perform Construction and to Award Separate Contracts

6.1

Owner's Right to Stop the Work

2.4

Owner's Right to Suspend the Work

14.3

Owner's Right to Terminate the Contract

14.2, 14.4

Ownership and Use of Drawings, Specifications and Other Instruments of Service

1.1.1, 1.1.6, 1.1.7, 1.5, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12, 5.3

Partial Occupancy or Use

9.6.6, 9.9

Patching, Cutting and

3.14, 6.2.5

Patents

3.17

Payment, Applications for

4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3

Payment, Certificates for

4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4

Payment, Failure of

9.5.1.3, 9.7, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Payment, Final

4.2.1, 4.2.9, 9.10, 12.3, 14.2.4, 14.4.3

Payment Bond, Performance Bond and

7.3.4.4, 9.6.7, 9.10.3, 11.1.2

Payments, Progress

9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4

PAYMENTS AND COMPLETION

9

Payments to Subcontractors

5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2

PCB

10.3.1

Performance Bond and Payment Bond

7.3.4.4, 9.6.7, 9.10.3, 11.1.2

Permits, Fees, Notices and Compliance with Laws

2.3.1, 3.7, 3.13, 7.3.4.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF

10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, 3.12, 4.2.7

Progress and Completion

4.2.2, 8.2, 9.8, 9.9.1, 14.1.4, 15.1.4

Progress Payments

9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4

Init.

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Project, Definition of
1.1.4
 Project Representatives
 4.2.10
Property Insurance
 10.2.5, 11.2
Proposal Requirements
 1.1.1
PROTECTION OF PERSONS AND PROPERTY
10
 Regulations and Laws
 1.5, 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1,
 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14, 15.2.8, 15.4
 Rejection of Work
 4.2.6, 12.2.1
 Releases and Waivers of Liens
 9.3.1, 9.10.2
 Representations
 3.2.1, 3.5, 3.12.6, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.10.1
 Representatives
 2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.10, 13.2.1
 Responsibility for Those Performing the Work
 3.3.2, 3.18, 4.2.2, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10
 Retainage
 9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3
Review of Contract Documents and Field
Conditions by Contractor
3.2, 3.12.7, 6.1.3
 Review of Contractor's Submittals by Owner and
 Architect
 3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2
 Review of Shop Drawings, Product Data and Samples
 by Contractor
 3.12
Rights and Remedies
 1.1.2, 2.4, 2.5, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1,
 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.1, 12.2.2,
 12.2.4, 13.3, 14, 15.4
Royalties, Patents and Copyrights
3.17
 Rules and Notices for Arbitration
 15.4.1
Safety of Persons and Property
10.2, 10.4
Safety Precautions and Programs
 3.3.1, 4.2.2, 4.2.7, 5.3, 10.1, 10.2, 10.4
Samples, Definition of
3.12.3
Samples, Shop Drawings, Product Data and
3.11, 3.12, 4.2.7
Samples at the Site, Documents and
3.11
Schedule of Values
9.2, 9.3.1
 Schedules, Construction
 3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2

Separate Contracts and Contractors
 1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2
Separate Contractors, Definition of
6.1.1
Shop Drawings, Definition of
3.12.1
Shop Drawings, Product Data and Samples
 3.11, 3.12, 4.2.7
Site, Use of
3.13, 6.1.1, 6.2.1
 Site Inspections
 3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4
 Site Visits, Architect's
 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4
 Special Inspections and Testing
 4.2.6, 12.2.1, 13.4
Specifications, Definition of
1.1.6
Specifications
 1.1.1, 1.1.6, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14
 Statute of Limitations
 15.1.2, 15.4.1.1
 Stopping the Work
 2.2.2, 2.4, 9.7, 10.3, 14.1
 Stored Materials
 6.2.1, 9.3.2, 10.2.1.2, 10.2.4
Subcontractor, Definition of
5.1.1
SUBCONTRACTORS
5
 Subcontractors, Work by
 1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2,
 9.6.7
Subcontractual Relations
5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1
 Submittals
 3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3, 9.8,
 9.9.1, 9.10.2, 9.10.3
 Submittal Schedule
 3.10.2, 3.12.5, 4.2.7
Subrogation, Waivers of
6.1.1, 11.3
Substances, Hazardous
10.3
Substantial Completion
 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2,
 15.1.2
Substantial Completion, Definition of
9.8.1
 Substitution of Subcontractors
 5.2.3, 5.2.4
 Substitution of Architect
 2.3.3
 Substitutions of Materials
 3.4.2, 3.5, 7.3.8
Sub-subcontractor, Definition of
5.1.2

Init.

Subsurface Conditions
3.7.4

Successors and Assigns
13.2

Superintendent
3.9, 10.2.6

Supervision and Construction Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4

Suppliers
1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6, 9.10.5, 14.2.1

Surety
5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2, 15.2.7

Surety, Consent of
9.8.5, 9.10.2, 9.10.3

Surveys
1.1.7, 2.3.4

Suspension by the Owner for Convenience
14.3

Suspension of the Work
3.7.5, 5.4.2, 14.3

Suspension or Termination of the Contract
5.4.1.1, 14

Taxes
3.6, 3.8.2.1, 7.3.4.4

Termination by the Contractor
14.1, 15.1.7

Termination by the Owner for Cause
5.4.1.1, 14.2, 15.1.7

Termination by the Owner for Convenience
14.4

Termination of the Architect
2.3.3

Termination of the Contractor Employment
14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT

14

Tests and Inspections

3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 12.2.1, 13.4

TIME

8

Time, Delays and Extensions of

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5

Time Limits

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15.1.2, 15.1.3, 15.4

Time Limits on Claims

3.7.4, 10.2.8, 15.1.2, 15.1.3

Title to Work

9.3.2, 9.3.3

UNCOVERING AND CORRECTION OF WORK

12

Uncovering of Work

12.1

Unforeseen Conditions, Concealed or Unknown

3.7.4, 8.3.1, 10.3

Unit Prices

7.3.3.2, 9.1.2

Use of Documents

1.1.1, 1.5, 2.3.6, 3.12.6, 5.3

Use of Site

3.13, 6.1.1, 6.2.1

Values, Schedule of

9.2, 9.3.1

Waiver of Claims by the Architect

13.3.2

Waiver of Claims by the Contractor

9.10.5, 13.3.2, 15.1.7

Waiver of Claims by the Owner

9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, 15.1.7

Waiver of Consequential Damages

14.2.4, 15.1.7

Waiver of Liens

9.3, 9.10.2, 9.10.4

Waivers of Subrogation

6.1.1, 11.3

Warranty

3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2,

15.1.2

Weather Delays

8.3, 15.1.6.2

Work, Definition of

1.1.3

Written Consent

1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3,

13.2, 13.3.2, 15.4.4.2

Written Interpretations

4.2.11, 4.2.12

Written Orders

1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

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§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

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§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

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§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

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- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

Int.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

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§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 **Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or

expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 **Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 **Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during

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that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;

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- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

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§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

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§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Int.

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions modify, change, delete from or add to the General Conditions of the Contract for Construction, AIA Document A201, 2017 Edition. Where any Article of the General Conditions is modified or any Section, Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Section, Article, Paragraph, Subparagraph or Clause shall remain in effect.

Articles, Sections, Paragraphs, Subparagraphs or Clauses modified or deleted have the same numerical designation as those occurring in the General Conditions.

ARTICLE 1

GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1. The Contract Documents

In Section 1.1.1 delete the third sentence, and add the following sentence:
The Contract Documents shall include the Bid Documents as listed in the Instructions to Bidders and any modifications made thereto by addenda.

1.1.8 Initial Decision Maker

Delete all after the words, “shall not show partiality to the Owner or Contractor”.

1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE [REFER TO *La R.S. 38:2317*]

1.5.1 Delete the first sentence of the paragraph.

1.5.1 In the third sentence: delete the remainder after the word “publication”.

1.7 DIGITAL DATA USE AND TRANSMISSION

In the first sentence after the words, “in digital form” delete “. The parties will use AIA Document E203 2013, Building Information Modeling and Digital Data Exhibit”.

1.8 BUILDING INFORMATION MODELS USE AND RELIANCE

Delete Section 1.8.

ARTICLE 2

OWNER

2.2 EVIDENCE OF THE OWNER’S FINANCIAL ARRANGEMENTS

Delete Section 2.2.

2.3 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.3.1 In the first sentence, delete: all before “the Owner shall secure...”

Delete Section 2.3.2 and substitute the following:

2.3.2 The term Architect, when used in the Contract Documents, shall mean the prime Designer (Architect, Engineer, or Landscape Architect), or his authorized representative, lawfully licensed to practice architecture, engineering, or landscape architecture in the State of Louisiana, identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number.

2.3.3 Delete the words: “to whom the Contractor has no reasonable objection and”.

ARTICLE 3

CONTRACTOR

3.4 LABOR AND MATERIALS

3.4.2 Delete Section 3.4.2.

Delete Section 3.4.3 and substitute with the following:

3.4.3 Contractor and its employees, officers, agents, representatives, and Subcontractors shall conduct themselves in an appropriate and professional manner, in accordance with the Owner’s requirements, at all times while working on the Project. Any such individual who behaves in an inappropriate manner or who engages in the use of inappropriate language or conduct while on Owner’s property, as determined by the Owner, shall be removed from the Project at the Owner’s request. Such individual shall not be permitted to return without the written permission of the Owner. The Owner shall not be responsible or liable to Contractor or any Subcontractor for any additional costs, expenses, losses, claims or damages incurred by Contractor or its Subcontractor as a result of the removal of an individual from the Owner’s property pursuant to this Section. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

3.5 WARRANTY

3.5.2 Replace reference to “Section 9.8.4” with “Section 9.8.6”.

3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS (La R.S. 40:1724[A])

3.7.1 Delete Section 3.7.1.

3.7.2 In Section 3.7.2, replace the word “public” with the word “State”.

Delete Section 3.7.5 and substitute the following:

- 3.7.5 If, during the course of the Work, the Contractor discovers human remains, unmarked burial or archaeological sites, burial artifacts, or wetlands, which are not indicated in the Contract Documents, the Contractor shall follow all procedures mandated by State and Federal law, including but not limited to La R.S. 8:671 et seq., the Office of Coastal Protection and Restoration, and Sections 401 & 404 of the Federal Clean Water Act. Request for adjustment of the Contract Sum and Contract Time arising from the existence of such remains or features shall be submitted in writing to the Owner pursuant to the Contract Documents.

3.8 ALLOWANCES

Delete Sections 3.8.1, 3.8.2, and 3.8.3 in their entirety and add the following new Section 3.8.1:

- 3.8.1 Allowances shall not be made on any of the Work.

3.9 SUPERINTENDENT

- 3.9.1 Add the following to the end of the paragraph:
Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION AND SUBMITTAL SCHEDULES

- 3.10.1 Add the following: For projects with a contract sum greater than \$1,000,000.00, the Contractor shall include with the schedule, for the Owner's and Architect's information, a network analysis to identify those tasks which are on the critical path, i.e., where any delay in the completion of these tasks will lengthen the project timescale, unless action is taken. A revised schedule shall be submitted with each Application and Certificate for Payment. No payment shall be made until this schedule is received.

- 3.10.3 In the first sentence, delete the word "general".

After the first sentence, add the following:

If the Work is not on schedule, as determined by the Architect, and the Contractor fails to take action to bring the Work on schedule, then the Contractor shall be deemed in default under this Contract and the progress of the Work shall be deemed unsatisfactory. Such default may be considered grounds for termination by the Owner for cause in accordance with Section 14.2.

Add the following Sections:

- 3.10.4 Add the following: Submittal by the contractor of a schedule or other documentation showing a completion date for his Work prior to the completion date stated in the contract shall not impose any obligation or responsibility on the Owner or Architect for the earlier completion date.
- 3.10.5 In the event the Owner employs a commissioning consultant, the Contractor shall cooperate fully in the commissioning process and shall require all subcontractors and

others under his control to cooperate. The purpose of such services shall be to ensure that all systems perform correctly and interactively according to the provisions of the Contract Documents.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add the following: This requirement is of the essence of the contract. The Architect shall determine the value of these documents and this amount shall not be approved for payment to the Contractor until all of the listed documents are delivered to the Architect in good order, completely marked with field changes and otherwise complete in all aspects.

ARTICLE 4

ARCHITECT

4.2 ADMINISTRATION OF THE CONTRACT

4.2.1 In the first sentence, delete the phrase: “the date the Architect issues the final Certificate for Payment” and replace with the phrase “final payment is due, and with the Owner’s concurrence, from time to time during the one year period for correction of Work described in Section 12.2.”

4.2.2 In the first sentence, after the phrase: “become generally familiar with”; insert the following: “and to keep the Owner informed about”.

In the first sentence, after the phrase “portion of the Work completed”, insert the following: “to endeavor to guard the Owner against defects and deficiencies in the Work,”

4.2.4 In the first sentence, delete all after “The Owner and Contractor”, and add the following “may communicate directly with each other, when deemed necessary by the Owner, and the Owner will notify the Architect of any decision.”

4.2.10 Add the following sentence to the end of Section 4.2.10: There shall be no restriction on the Owner having a Representative.

4.2.11 Add the following sentence to the end of Section 4.2.11:

If no agreement is made concerning the time within which interpretation required of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretation until 15 days after written request is made for them.

4.2.14 Insert the following sentence between the second and third sentences of Section 4.2.14:

If no agreement is made concerning the time within which interpretation required of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretation until 15 days after written request is made for them.

ARTICLE 5

SUBCONTRACTORS

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

Delete Section 5.2.1, and substitute the following:

- 5.2.1 Unless otherwise required by the Contract Documents, the Contractor shall furnish at the Pre-Construction Conference, to the Owner and the Architect, in writing, the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. No Contractor payments shall be made until this information is received.

Delete Section 5.2.2, and substitute the following:

- 5.2.2 The Contractor shall be solely responsible for selection and performance of all subcontractors. The Contractor shall not be entitled to claims for additional time and/or an increase in the contract sum due to a problem with performance or nonperformance of a subcontractor.

Delete Sections 5.2.3 and 5.2.4 and substitute the following:

- 5.2.3 The Contractor shall notify the Architect and the Owner when a subcontractor is to be changed and substituted with another subcontractor.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

Delete Sections 5.4, 5.4.1, 5.4.2 and 5.4.3

ARTICLE 7

CHANGES IN THE WORK

7.1 GENERAL

Add the following Sections:

- 7.1.4 As part of the pre-construction conference submittals, the Contractor shall submit the following prior to the Contractor's initial request for payment:

7.1.4.1 Fixed job site overhead cost itemized with documentation to support daily rates.

7.1.4.2 Bond Premium Rate with supporting information from the General Contractor's carrier.

7.1.4.3 Labor Burden by trade for both Subcontractors and General Contractor. The Labor Burden shall be supported by the Worker's Compensation and Employer's Liability Insurance Policy Information Page. Provide for all trades.

7.1.4.4 Internal Rate Charges for all significant company owned equipment.

7.1.5 If the General Contractor fails to submit the aforementioned documentation as part of the pre-construction submittals, then pay applications shall not be processed until such time as the Owner receives this information.

7.2 CHANGE ORDERS

Delete Section 7.2.1, and substitute the following Sections:

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, the Architect, and the Contractor issued after execution of the Contract, authorizing a change in the Work and/or an adjustment in the Contract Sum and/or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order signed by the Contractor indicates his agreement therewith, including the adjustment in the Contract Sum or the Contract Time. Any reservation of rights, stipulation, or other modification made on the change order by the contractor shall have no effect.

7.2.2 "Cost of the Work" for the purpose of Change Orders shall be the eligible costs required to be incurred in performance of the Work and paid by the Contractor and Subcontractors which eligible costs shall be limited to:

7.2.2.1 Actual wages paid directly to labor personnel, with a labor burden markup exclusively limited to applicable payroll taxes, worker's compensation insurance, unemployment compensation, and social security taxes for those labor personnel performing the Work. Wages shall be the basic hourly labor rate paid an employee exclusive of fringe benefits or other employee costs. The labor burden percentage for the "Cost of the Work" is limited to categories listed herein. Employer-provided health insurance, fringe benefits, employee training (whether a requirement of employment or not), vacation pay, etc., are examples of ineligible labor burden costs which **shall not** be included, as these costs are already compensated by the Overhead and Profit markup.

Supervision shall not be included as a line item in the "Cost of the Work", except when the change results in a documented delay in the critical path, as described in Section 7.2.7.

7.2.2.2 Cost of all materials and supplies necessary and required to perform the Work, identifying each item and its individual cost, including taxes. Incidental consumables are not eligible costs and shall not be included.

7.2.2.3 Cost of each necessary piece of machinery and equipment required to perform the Work, identifying each item and its individual cost, including taxes. Incidental small tools of a specific trade (i.e., shovels, saws, hammers, air compressors, etc.,) and general use vehicles, such as pickup trucks even for

moving items around the site, fuel for these general use vehicles, travel, lodging, and/or meals are not eligible and shall not be included.

7.2.2.4 Eligible Insurance costs shall be limited to documented increases in “Builder’s Risk” insurance premium / costs only. Commercial General Liability, Automobile Liability, and all other required insurances, where referenced in the Contract shall be considered part of normal overhead. These costs are already compensated by the Overhead and Profit markup.

7.2.2.5 Cost for the General Contractor Performance and Payment Bond premium, where the documented cost of the premiums have been increased due to the Change Order.

7.2.3 Overhead and Profit - The Contractor and Subcontractor shall be due home office fixed overhead and profits on the Cost of the Work, but shall not exceed a total of 16% of the direct cost of any portion of Work.

The credit to the Owner resulting from a change in the Work shall be the sum of those items above, including overhead and profit. Where a change results in both credits to the Owner and extras to the Contractor for related items, overhead and profit shall be computed for credits to the Owner and extras to the Contractor. The Owner shall receive full credit for the computed overhead and profit on credit change order items.

7.2.4 The cost to the Owner resulting from a change in the Work shall be the sum of: Cost of the Work (as defined at Section 7.2.2) and Overhead and Profit (as defined at Section 7.2.3), and shall be computed as follows:

7.2.4.1 When all of the Work is General Contractor Work; 8% markup on the Cost of the Work.

7.2.4.2 When the Work is all Subcontract Work; 8% markup on the Cost of the Work for Subcontractor’s Overhead and Profit, plus 8% markup on the Cost of the Work, not including the Subcontractor’s Overhead and Profit markup, for General Contractor’s Overhead and Profit.

7.2.4.3 When the Work is a combination of General Contractor Work and Subcontract Work; that portion of the direct cost that is General Contract Work shall be computed per Section 7.2.4.1 and that portion of the direct cost that is Subcontract Work shall be computed per Section 7.2.4.2.

Premiums for the General Contractor’s bond may be included, but after the markup is added to the Cost of the Work.

Premiums for the Subcontractor’s Bond shall not be included.

7.2.4.4 Subcontract cost shall consist of the items in Section 7.2.2 above plus Overhead and Profit as defined in Section 7.2.3.

7.2.5 Before a Change Order is prepared, the Contractor shall prepare and deliver to the Architect the following information concerning the Cost of the Work, not subject to waiver, within a reasonable time after being notified to prepare said Change Order:

A detailed, itemized list of labor, material and equipment costs for the General Contractor's Work including quantities and unit costs for each item of labor, material and equipment.

An itemized list of labor, material and equipment costs for each Subcontractor's and/or Sub-Subcontractor's Work including quantities and unit costs for each item of labor, material and equipment.

7.2.6 After a Change Order has been approved, no future requests for extensions of time or additional cost shall be considered for that Change Order.

7.2.7 Extended fixed job-site costs are indirect costs that are necessary to support the work in the field. Examples of fixed job-site costs are field office rental, salaries of field office staff, field office utilities, and telephone.

Extended fixed job-site costs or equitable adjustment may be included in a Change Order due to a delay in the critical path, with the exception of weather related delays. In the event of a delay in the critical path, the Contractor shall submit all changes or adjustments to the Contract Time **within twenty-one (21) days** of the event giving rise to the delay. The Contractor shall submit documentation and justification for the adjustment by performing a critical path analysis of its most recent schedule in use prior to the change, which shows an extension in critical path activities.

The Contractor shall notify the Architect in writing that the Contractor is making a claim for extended fixed job-site overhead as required by Section 15.1.2. The Contractor shall provide proof that the Contractor is unable to mitigate financial damages through Alternate Work within this Contract or replacement work. "Replacement Work" is that work which the Contractor is obligated to perform under any construction contract separate from this Contract. Reasonable proof shall be required by the Architect that the delays affected the Completion Date.

7.2.8 "Cost of the Work" whether General Contractor cost or Subcontractor cost shall not apply to the following:

7.2.8.1 Salaries or other compensation of the Contractor's personnel at the Contractor's principal office and branch offices.

7.2.8.2 Any part of the Contractor's capital expenses, including interest on the Contractor's capital employed for the Work.

7.2.8.3 Overhead and general expenses of any kind or the cost of any item not specifically and expressly included above in Cost of the Work.

7.2.8.4 Cost of supervision refer to section 7.2.2.1, with exception as provided in Section 7.2.7.

7.2.9 When applicable as provided by the Contract, the cost to Owner for Change Orders shall be determined by quantities and unit prices. The quantity of any item shall be as

submitted by the Contractor and approved by the Architect. Unit prices shall cover cost of Material, Labor, Equipment, Overhead and Profit.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.3 In the first sentence after “following methods” insert: “, but not to exceed a specified amount”.

7.3.4 From .1 of the list, delete all after “Costs of labor, including” and substitute the following “social security, old age and employment insurance, applicable payroll taxes, and workers’ compensation insurance;”

Delete the following from .4 of the list: “permit fees,”

Delete Section 7.3.9 and substitute the following:

7.3.9 Pending final determination of the total costs of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties’ agreement with part or all of such costs.

ARTICLE 8

TIME

8.1 DEFINITIONS

Add the following:

8.1.5 The Contract Time shall not be changed by the submission of a schedule that shows an early completion date unless specifically authorized by change order.

8.2 PROGRESS AND COMPLETION

Add to Section 8.2.1 the following:

Completion of the Work must be within the Time for Completion stated in the Agreement, subject to such extensions as may be granted under Section 8.3. The Contractor agrees to commence Work not later than fourteen (14) days after the transmittal date of Written Notice to Proceed from the Owner and to substantially complete the project within the time stated in the Contract. The Owner will suffer financial loss if the project is not substantially complete in the time set forth in the Contract Documents. The Contractor and the Contractor’s Surety shall be liable for and shall pay to the Owner the sum stated in the Contract Documents as fixed, agreed and liquidated damages for each consecutive calendar day (Saturdays, Sundays and holidays included) of delay until the Work is substantially complete. The Owner shall be entitled to the sum stated in the Contract Documents. Such Liquidated Damages shall be withheld by the Owner from the amounts due the Contractor for progress payments.

Delete Section 8.2.2.

8.3 DELAYS AND EXTENSIONS OF TIME

- 8.3.1 In the first sentence after the words “Owner pending” delete the words “mediation and binding dispute resolution” and add the word “litigation”, and delete the last word “determine” and add the following: “recommend, subject to Owner’s approval of Change Order. If the claim is not made within the limits of Article 15, all rights for future claims for that month are waived.”

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

Delete Section 9.1.2.

Delete Section 9.2 and substitute the following:

9.2 SCHEDULE OF VALUES

At the Pre-Construction Conference, the Contractor shall submit to the Owner and the Architect a Schedule of Values prepared as follows:

- 9.2.1 The attached Schedule of Values Format shall be used. If applicable, the cost of Work for each section listed under each division, shall be given. The cost for each section shall include Labor, Materials, Overhead and Profit.
- 9.2.2 The Total of all items shall equal the Total Contract Sum. This schedule, when approved by the Architect, shall be used as a basis for the Contractor’s Applications for Payment and it may be used for determining the cost of the Work in deductive change orders, when a specific item of Work listed on the Schedule of Values is to be removed. Once the Schedule of Values is submitted at the Pre-Construction Conference, the schedule shall not be modified without approval from the Owner and Architect.

9.3 APPLICATIONS FOR PAYMENT

Delete Sections 9.3.1, 9.3.1.1, and 9.3.1.2 and substitute the following:

- 9.3.1 Monthly, the Contractor shall submit to the Architect an Application and Certification for Payment form, supported by any additional data substantiating the Contractor’s right to payment as the Owner or the Architect may require. Application for Payment shall be submitted on or about the first of each month for the value of labor and materials incorporated into the Work and of materials, suitably stored, at the site as of the twenty-fifth day of the preceding month, less normal retainage as follows, per La R.S. 38:2248:

9.3.1.1 Projects with Contract price up to \$500,000.00 – 10% of the Contract price.

9.3.1.2 Projects with Contract price of \$500,000.00, or more – 5% of the Contract price.

9.3.1.3 No payment shall be made until the revised schedule required by Section 3.10.1 is received.

9.3.1.4 The normal retainage shall not be due the Contractor until after substantial completion and expiration of the forty-five day lien period and submission to the Architect of a clear lien certificate, consent of surety, and invoice for retainage.

Delete Section 9.3.2 and substitute the following:

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. Payments for materials or equipment stored on the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, including applicable insurance.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

Section 9.5.1.7: Delete the word "repeated".

Delete Section 9.5.4.

9.6 PROGRESS PAYMENTS

Delete Section 9.6.1 and substitute the following:

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment within twenty days except for projects funded fully or in part by a Federal reimbursement program. For such projects the Owner will make payment in a timely manner consistent with reimbursement.

9.6.2 Delete the phrase: "no later than seven days" from the first sentence.

After the end of the second sentence, add the following:

La R.S. 9:2784 (A) and (C) require a Contractor or Subcontractor to make payment due to each Subcontractor and supplier within fourteen (14) consecutive days of the receipt of payment from the Owner. If not paid, a penalty in the amount of ½ of 1% per day is due, up to a maximum of 15% from the expiration date until paid. The contractor or subcontractor, whichever is applicable, is solely responsible for payment of a penalty.

9.6.4 Delete the first two sentences of Section 9.6.4 and add the following to the end of the Section:

Pursuant to La. R.S. 38:2242 and La. R.S. 38:2242.2, when the Owner receives any claim of nonpayment arising out of the Contract, the Owner shall deduct 125% of such claim from the Contract Sum. The Contractor, or any interested party, may deposit security, in accordance with La. R.S. 38:2242.2, guaranteeing payment of the claim with the recorder

of mortgages of the parish where the Work has been done. When the Owner receives original proof of such guarantee from the recorder of mortgages, the claim deduction will be added back to the Contract Sum.

Delete Section **9.7 FAILURE OF PAYMENT.**

Delete Section 9.8 and substitute the following:

9.8 SUBSTANTIAL COMPLETION

- 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The Architect shall determine if the project is substantially complete in accordance with this Section.
- 9.8.2 When the Contractor considers that the Work is Substantially Complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- 9.8.3 Upon receipt of the Contractor's list, the Architect shall make an inspection to determine whether the Work is substantially complete. A prerequisite to the Work being considered as substantially complete is the Owner's receipt of the executed Roofing Contractor's and Roofing Manufacturer's guarantees, where roofing Work is part of the Contract. Prior to inspection by the Architect, the Contractor shall notify the Architect that the project is ready for inspection by the State Fire Marshal's office. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use, the Contractor shall, before the Work can be considered as Substantially Complete, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.
- 9.8.4 When the Architect determines that the project is Substantially Complete, he shall prepare a punch list of exceptions and the dollar value related thereto. The monetary value assigned to this list will be the sum of the cost estimate for each particular item of Work the Architect develops based on the mobilization, labor, material and equipment costs of correcting the item and shall be retained from the monies owed the contractor, above and beyond the standard lien retainage. The cost of these items shall be prepared in the same format as the schedule of values. At the end of the forty-five day lien period payment shall be approved for all punch list items completed up to that time. After that payment, none of the remaining funds shall be due the contractor until all punch list items are completed and are accepted by the Architect. If the dollar value of the punch list exceeds the amount of funds, less the retainage amount, in the remaining balance of the Contract, then the Project shall not be considered as substantially complete. If funds remaining are less than that required to complete the Work, the Contractor shall pay the difference.

- 9.8.5 When the preparation of the punch list is complete the Architect shall prepare a Recommendation of Acceptance incorporating the punch list and submit it to the Owner. Upon approval of the Recommendation of Acceptance, the Owner may issue a Notice of Acceptance of Building Contract which shall establish the Date of Substantial Completion. The Contractor shall record the Notice of Acceptance with the Clerk of Court in the Parish in which the Work has been performed. If the Notice of Acceptance has not been recorded seven (7) days after issuance, the Owner may record the Acceptance at the Contractor's expense. All additive change orders must be processed before issuance of the Recommendation of Acceptance. The Owner shall not be responsible for payment for any Work associated with change orders that is not incorporated into the contract at the time of the Recommendation of Acceptance.
- 9.8.6 Warranties required by the Contract Documents shall commence on the date of Acceptance of the Work unless otherwise agreed to in writing by the Owner and Contractor. Unless otherwise agreed to in writing by the Owner and Contractor, security, maintenance, heat, utilities, damage to the Work not covered by the punch list and insurance shall become the Owner's responsibility on the Date of Substantial Completion.
- 9.8.7 If all punch list items have not been completed by the end of the forty-five (45) day lien period, through no fault of the Architect or Owner, the Owner may hold the Contractor in default. If the Owner finds the Contractor is in default, the Surety shall be notified. If within forty-five (45) days after notification, the Surety has not completed the punch list, through no fault of the Architect or Owner, the Owner may, at his option, contract to have the balance of the Work completed and pay for such Work with the unpaid funds remaining in the Contract sum. Finding the Contractor in default shall constitute a reason for disqualification of the Contractor from bidding on future state contracts. If the surety fails to complete the punch list within the stipulated time period, the Owner may not accept bonds submitted, in the future, by the surety.

9.9 PARTIAL OCCUPANCY OR USE

Delete Section 9.9.1 and substitute the following:

- 9.9.1 Partial Occupancy is that stage in the progress of the Work when a designated portion of the Work is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the designated portion of the Work for its intended use. The Owner may occupy or use any substantially completed portion of the Work so designated by separate agreement with the Contractor and authorized by public authorities having jurisdiction over the Work. Such occupancy or use may commence provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers the designated portion substantially complete the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.

9.10 FINAL COMPLETION AND FINAL PAYMENT

Delete Section 9.10.4 and replace with the following:

9.10.4 The making of final payment shall not constitute a waiver of Claims by the Owner for the following:

9.10.4.1 Claims, security interests, or encumbrances arising out of the Contract and unsettled;

9.10.4.2 failure of the Work to comply with the requirements of the Contract Documents irrespective of when such failure is discovered;

9.10.4.3 terms of special warranties required by the Contract Documents; or

9.10.4.4 audits performed by the Owner, after final payment.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.2 In the first sentence, between the words: “bearing on” and “safety”, add the words: “the health and,”

10.3 HAZARDOUS MATERIALS

10.3.1 In the second sentence after (PCB) add: “or lead”.

10.3.2 After the first sentence, delete all remaining sentences.

Add at the end: “The Contract time shall be extended appropriately.”

Delete Section 10.4 and substitute the following:

10.4 EMERGENCIES

In an emergency affecting the safety of persons or property, the Contractor shall notify the Owner and Architect immediately of the emergency, simultaneously acting at his discretion to prevent damage, injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency Work shall be determined as provided in Article 15 and Article 7.

ARTICLE 11

INSURANCE AND BONDS

AIA A101 – 2017 Exhibit A is not a part of these documents. Delete all of Sections 11.1, 11.2, 11.3, 11.4, and 11.5, and substitute the following:

**INSURANCE REQUIREMENTS FOR
NEW CONSTRUCTION, ADDITIONS AND RENOVATIONS**

11.1 CONTRACTOR’S LIABILITY INSURANCE

The Contractor shall purchase and maintain without interruption for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work hereunder by the Contractor, its agents, representatives, employees or subcontractors. The duration of the contract shall be from the inception of the contract until the date of final payment.

11.2 MINIMUM SCOPE AND LIMITS OF INSURANCE

11.2.1 Worker’s Compensation

Worker’s Compensation insurance shall be in compliance with the Worker’s Compensation law of the Contractor’s headquarters. Employers Liability is included with a minimum limit of \$1,000,000 per accident/per disease/per employee. If Work is to be performed over water and involves maritime exposure, applicable LHWCA, Jones Act or other maritime law coverage shall be included. A.M. Best’s insurance company rating requirement may be waived for Worker’s compensation coverage only.

11.2.2 Commercial General Liability

Commercial General Liability insurance, including Personal and Advertising Injury Liability and Products and Completed Operations Liability, shall have a minimum limit per occurrence based on the project value. The Insurance Services Office (ISO) Commercial General Liability occurrence coverage form CG 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. Claims-made form is unacceptable.

The aggregate loss limit must apply to each project. ISO form CG 25 03 (current form approved for use in Louisiana), or equivalent, shall also be submitted. The State project number, including part number, and project name shall be included on this endorsement.

COMBINED SINGLE LIMIT (CSL) PER OCCURRENCE

Type of Construction	Projects up to \$1,000,000	Projects over \$1,000,000 up to \$10,000,000	Projects over \$10,000,000
New Buildings:			
Each Occurrence Minimum Limit	\$1,000,000	\$2,000,000	\$4,000,000

Per Project Aggregate	\$2,000,000	\$4,000,000	\$8,000,000
Renovations:	The building(s) value for the Project is \$ _____.		
Each Occurrence Minimum Limit	\$1,000,000**	\$2,000,000**	\$4,000,000**
Per Project Aggregate	2 times per occur limit**	2 times per occur limit**	2 times per occur limit**

**While the minimum Combined Single Limit of \$1,000,000 is required for any renovation, the limit is calculated by taking 10% of the building value and rounding it to the nearest \$1,000,000 to get the insurance limit. Example: Renovation on a \$33,000,000 building would have a calculated \$3,000,000 combined single limit of coverage (33,000,000 times .10 = 3,300,000 and then rounding down to \$3,000,000). If the calculated limit is less than the minimum limit listed in the above chart, then the amount needed is the minimum listed in the chart. Maximum per occurrence limit required is \$10,000,000 regardless of building value. The per project aggregate limit is then calculated as twice the per occurrence limit.

11.2.3 Automobile Liability

Automobile Liability Insurance shall have a minimum combined single limit per occurrence of \$1,000,000. ISO form number CA 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned automobiles.

11.2.4 Excess Umbrella

Excess Umbrella Insurance may be used to meet the minimum requirements for General Liability and Automobile Liability only.

11.2.5 Builder's Risk

11.2.5.1 Builder's Risk Insurance shall be in an amount equal to the amount of the construction contract including any amendments and shall be upon the entire Work included in the contract. The policy shall provide coverage equivalent to the ISO form number CP 10 20, Broad Form Causes of Loss (extended, if necessary, to include the perils of wind, earthquake, collapse, vandalism/malicious mischief, and theft, including theft of materials whether or not attached to any structure). The policy must include architects' and engineers' fees necessary to provide plans, specifications and supervision of Work for the repair and/or replacement of property damage caused by a covered peril, not to exceed 10% of the cost of the repair and/or replacement.

11.2.5.2 Flood coverage shall be provided by the Contractor on the first floor and below for all projects, except as otherwise noted. The builder's risk insurance policy, sub-limit for flood coverage shall not be less than ten percent (10%) of the total

contract cost per occurrence. If flood is purchased as a separate policy, the limit shall be ten percent (10%) of the total contract cost per occurrence (with a max of \$500,000 if NFIP). Coverage for roofing projects shall **not** require flood coverage.

11.2.5.3 A Specialty Contractor may provide an installation floater in lieu of a Builder's Risk policy, with the similar coverage as the Builder's Risk policy, upon the system to be installed in an amount equal to the amount of the contract including any amendments. Flood coverage is not required.

11.2.5.4 The policy must include coverage for the Owner, Contractor and any subcontractors as their interests may appear.

11.2.6 Pollution Liability (*required when asbestos or other hazardous material abatement is included in the contract*)

Pollution Liability insurance, including gradual release as well as sudden and accidental, shall have a minimum limit of not less than \$1,000,000 per claim. A claims-made form will be acceptable. A policy period inception date of no later than the first day of anticipated Work under this contract and an expiration date of no earlier than 30 days after anticipated completion of all Work under the contract shall be provided. There shall be an extended reporting period of at least 24 months, with full reinstatement of limits, from the expiration date of the policy if the policy is not renewed. The policy shall not be cancelled for any reason, except non-payment of premium.

11.2.7 Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and accepted by the Owner. The Contractor shall be responsible for all deductibles and self-insured retentions.

11.3 OTHER INSURANCE PROVISIONS

11.3.1 The policies are to contain, or be endorsed to contain, the following provisions:

11.3.1.1 Worker's Compensation and Employers Liability Coverage

11.3.1.1.1 To the fullest allowed by law, the insurer shall agree to waive all rights of subrogation against the Owner, its officers, agents, employees and volunteers for losses arising from Work performed by the Contractor for the Owner.

11.3.1.2 Commercial General Liability Coverage

11.3.1.2.1 The Owner, its officers, agents, employees and volunteers are to be added as additional insureds as respects liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor, premises owned, occupied or used by the Contractor. ISO Form CG 20 10 (for ongoing work)

AND CG 20 37 (for completed work) (current forms approved for use in Louisiana), or equivalent, are to be used.

11.3.1.2.2 The Contractor's insurance shall be primary as respects the Owner, its officers, agents, employees and volunteers for any and all losses that occur under the contract. The coverage shall contain no special limitations on the scope of protection afforded to the Owner, its officers, officials, employees or volunteers. Any insurance or self-insurance maintained by the Owner shall be excess and non-contributory of the Contractor's insurance.

11.3.1.3 Builder's Risk

The policy must include an endorsement providing the following:

In the event of a disagreement regarding a loss covered by this policy, which may also be covered by a State of Louisiana self-insurance or commercial property policy through the Office of Risk Management (ORM), Contractor and its insurer agree to follow the following procedure to establish coverage and/or the amount of loss:

Any party to a loss may make written demand for an appraisal of the matter in disagreement. Within 20 days of receipt of written demand, the Contractor's insurer and either ORM or its commercial insurance company shall each select a competent and impartial appraiser and notify the other of the appraiser selected. The two appraisers shall select a competent and impartial umpire. The appraisers shall then identify the policy or policies under which the loss is insured and, if necessary, state separately the value of the property and the amount of the loss that must be borne by each policy. If the two appraisers fail to agree, they shall submit their differences to the umpire. A written decision by any two shall determine the policy or policies and the amount of the loss. Each insurance company agrees that the decision of the appraisers and the umpire if involved shall be binding and final and that neither party will resort to litigation. Each of the two parties shall pay its chosen appraiser and bear the cost of the umpire equally.

11.3.1.4 All Coverages

11.3.1.4.1 All policies must be endorsed to require 30 days written notice of cancellation to the Agency. Ten-day written notice of cancellation is acceptable for non-payment of premium. Notifications shall comply with the standard cancellation provisions in the Contractor's policy. In addition, Contractor is required to notify Agency of policy cancellations or reductions in limits.

11.3.1.4.2 Neither the acceptance of the completed Work nor the payment thereof shall release the Contractor from the obligations of the insurance requirements or indemnification agreement.

11.3.1.4.3 The insurance companies issuing the policies shall have no recourse against the Owner for payment of premiums or for assessments under any form of the policies.

11.3.1.4.4 Any failure of the Contractor to comply with reporting provisions of the policy shall not affect coverage provided to the Owner, its officers, agents, employees and volunteers.

11.3.2 Acceptability of Insurers

All required insurance shall be provided by a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located. Insurance shall be placed with insurers with an A.M. Best's rating of **A-: VI or higher**. This rating requirement may be waived for Worker's compensation coverage only.

If at any time an insurer issuing any such policy does not meet the minimum A.M. Best rating, the Contractor shall obtain a policy with an insurer that meets the A.M. Best rating and shall submit another certificate of insurance within 30 days.

11.3.3 Verification of Coverage

Contractor shall furnish the Owner with Certificates of Insurance reflecting proof of required coverage. The Certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The Certificates are to be received and approved by the Owner before Work commences and upon any contract renewal or insurance policy renewal thereafter. The Certificate Holder must be listed as follows:

State of Louisiana

Name of Owner

Owner Address

City, State, Zip

Attn: Project # _____

The Owner reserves the right to request complete certified copies of all required insurance policies at any time.

Upon failure of the Contractor to furnish, deliver and maintain required insurance, this contract, at the election of the Agency, may be suspended, discontinued, or terminated. Failure of the Contractor to purchase and/or maintain any required insurance shall not relieve the Contractor from any liability or indemnification under the contract.

If the Contractor does not meet the insurance requirements at policy renewal, at the option of the Owner, payment to the Contractor may be withheld until the requirements have been met, OR the Owner may pay the renewal premium and withhold such payment from any monies due the Contractor, OR the contract may be suspended or terminated for cause.

11.3.4 Subcontractors

Contractor shall include all subcontractors as insureds under its policies OR shall be responsible for verifying and maintaining the certificates provided by each subcontractor. Subcontractors shall be subject to all of the requirements stated herein. The Owner reserves the right to request copies of subcontractor's certificates at any time.

If Contractor does not verify subcontractors' insurance as described above, Owner has the right to withhold payments to the Contractor until the requirements have been met.

11.3.5 Worker's Compensation Indemnity

In the event Contractor is not required to provide or elects not to provide Worker's compensation coverage, the parties hereby agree the Contractor, its Owners, agents and employees shall have no cause of action against, and shall not assert a claim against, the State of Louisiana, its departments, agencies, agents and employees as an employer, whether pursuant to the Louisiana Worker's Compensation Act or otherwise, under any circumstance. The parties also hereby agree that the State of Louisiana, its departments, agencies, agents and employees shall in no circumstance be, or considered as, the employer or statutory employer of Contractor, its Owners, agents and employees. The parties further agree that Contractor is a wholly independent Contractor and is exclusively responsible for its employees, Owners, and agents. Contractor hereby agrees to protect, defend, indemnify and hold the State of Louisiana, its departments, agencies, agents and employees harmless from any such assertion or claim that may arise from the performance of this contract.

11.3.6 Indemnification/Hold Harmless Agreement

Contractor agrees to protect, defend, indemnify, save, and hold harmless, the State of Louisiana, all State Departments, Agencies, Boards and Commissions, its officers, agents, servants, employees and volunteers, from and against any and all claims, damages, expenses and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur, or in any way grow out of, any act or omission of Contractor, its agents, servants and employees, or any and all costs, expenses and/or attorney fees incurred by Contractor as a result of any claims, demands, suits or causes of action, except those claims, demands, suits or causes of action arising out of the negligence of the State of Louisiana, all State Departments, Agencies, Boards, Commissions, its officers, agents, servants, employees and volunteers.

Contractor agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands, suits or causes of action at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claims, demands, suits, or causes of action are groundless, false or fraudulent. The State of Louisiana may, but is not required to, consult with the Contractor in the defense of claims, but this shall not affect the Contractor's responsibility for the handling and expenses of all claims.

11.4 PERFORMANCE AND PAYMENT BOND

11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as

stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

11.4.3 Recordation of Contract and Bond [La R.S. 38:2241 thru 38:2241.1]

The Owner shall record within thirty (30) days the Contract Between Owner and Contractor and Performance and Payment Bond with the Clerk of Court in the Parish in which the Work is to be performed.

ARTICLE 12

UNCOVERING AND CORRECTION OF WORK

12.2 CORRECTION OF WORK

12.2.1 Before Substantial Completion

At the end of the paragraph, add the following sentences:

“If the Contractor fails to correct Work identified as defective within a thirty (30) day period, through no fault of the Designer, the Owner may hold the Contractor in default. If the Owner finds the Contractor in default, the Surety shall be notified. If within thirty (30) days after notification, the Surety has not corrected the nonconforming Work, through no fault of the Architect or Owner, the Owner may contract to have nonconforming Work corrected and hold the Surety and Contractor responsible for the cost, including architectural fees and other indirect costs. If the Surety fails to correct the Work within the stipulated time period and fails to meet its obligation to pay the costs, the Owner may elect not to accept bonds submitted in the future by the Surety. Finding the Contractor in default shall constitute a reason for disqualification of the Contractor from bidding on future state contracts.

12.2.2 After Substantial Completion

12.2.2.1 At the end of the paragraph delete the last sentence and add the following sentences:

“If the Contractor fails to correct nonconforming Work, or Work covered by warranties, within a thirty (30) day period, through no fault of the Architect or Owner, the Owner may hold the Contractor in default. If the Owner finds the Contractor is in default, the Surety shall be notified. If within thirty (30) days after notification, the Surety has not corrected the non-conforming or warranty Work, through no fault of the Architect or Owner, the Owner may contract to have the nonconforming or warranty Work corrected and hold the Surety responsible for the cost including architects fees and other indirect costs. Corrections by the Owner shall be in accordance with Section 2.4. If the Surety fails to correct the nonconforming or warranty Work within the stipulated time period and fails to meet its obligation to pay the costs, the Owner may not accept bonds submitted, in the future, by the Surety.”

ARTICLE 13

MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

Delete all after the word “located”.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 In the second sentence, delete “Except as ... 13.2.2”

Delete Section 13.2.2.

13.3 RIGHTS AND REMEDIES

Add the following Section 13.3.3:

13.3.3 The Nineteenth Judicial Court in and for the Parish of East Baton Rouge, State of Louisiana shall have sole jurisdiction and venue in any action brought under this contract.

13.4 TESTS AND INSPECTIONS

In Section 13.4.1, delete the second sentence and substitute the following:

The Contractor shall make arrangements for such tests, inspections and approvals with the Testing Laboratory provided by the Owner, and the Owner shall bear all related costs of tests, inspections and approvals.

Delete the last two sentences of Section 13.4.1.

13.5 INTEREST

Delete Section 13.5.

ARTICLE 14

TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

Delete Section 14.1.1.4.

In Section 14.1.3, after the word “profit,” delete the words “on Work not executed” and substitute the following: “for Work completed prior to stoppage”.

14.2 TERMINATION BY THE OWNER FOR CAUSE

Add the following Section:

14.2.1.5 failure to complete the punch list within the lien period as provided in 9.8.7.

14.2.3 Add the following sentence:

“Termination by the Owner shall not suspend assessment of liquidated damages against the Surety.”

Add the following Section:

14.2.5 If an agreed sum of liquidated damages has been established, termination by the Owner under this Article shall not relieve the Contractor and/or Surety of his obligations under the liquidated damages provisions and the Contractor and/or Surety shall be liable to the Owner for per diem liquidated damages.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

In Section 14.4.3, delete all after “incurred by reason of the termination,” and add “along with reasonable profit on the Work not executed.”

ARTICLE 15

CLAIMS AND DISPUTES

15.1 CLAIMS

Delete Section 15.1.2, **Time Limit on Claims**, (See La R.S. 38:2189, and 38:2189.1).

15.1.3.1 Add the following to the end of the paragraph:

“A Reservation of Rights and similar stipulations shall not be recognized under this contract as having any effect. A party must make a claim as defined herein within the time limits provided.”

15.1.4.2 In the first sentence of the Section, delete “Initial Decision Maker’s” and replace with “Architect’s”. In the second sentence of the Section, delete “the decision of the Initial Decision Maker” and replace with: “his/her decision”.

Delete Section 15.1.6.2 and substitute the following:

15.1.6.2 If adverse weather conditions are the basis for a claim for additional time, the Contractor shall document that weather conditions had an adverse effect on the scheduled construction. An increase in the contract time due to weather shall not be cause for an increase in the contract sum. At the end of each month, the Contractor shall make one Claim for any adverse weather days occurring within the month. The Claim must be accompanied by sufficient documentation evidencing the adverse days and the impact on construction. Failure to make such Claim within **twenty-one (21) days** from the last day of the month shall prohibit any future claims for adverse days

for that month. No additional adverse weather days shall be granted after the original or extended contract completion date, except those adverse weather days associated with a National Weather Service named storm or federally declared weather related disaster directly affecting the project site.

Add the following Section:

15.1.6.3 The following are considered reasonably anticipated days of adverse weather on a monthly basis:

January	<u>11</u> days	July	<u>6</u> days
February	<u>10</u> days	August	<u>5</u> days
March	<u>8</u> days	September	<u>4</u> days
April	<u>7</u> days	October	<u>3</u> days
May	<u>5</u> days	November	<u>5</u> days
June	<u>6</u> days	December	<u>8</u> days

The Contractor shall ask for total adverse weather days. The Contractor's request shall be considered only for days over the allowable number of days stated above.

Note: Contract is on a calendar day basis.

15.2 INITIAL DECISION

15.2.1 In the second sentence, delete the word "will" and replace with: "shall always".

In the second sentence, delete the phrase: ", unless otherwise indicated in the Agreement."

In the third sentence, delete the word "mediation" and replace with: "litigation".

At the end of the third sentence, add: "arising prior to the date final payment is due".

Delete the fourth sentence.

15.2.5 In the middle of the first sentence, delete all after the phrase: "rejecting the Claim".

In the second sentence, delete the phrase: "and the Architect, if the Architect is not serving as the Initial Decision Maker,".

In the third sentence, delete all after: "binding on the parties" and add the following: "except that the Owner may reject the decision or suggest a compromise or both".

Delete Section 15.2.6.

Delete Section 15.2.6.1.

15.3 MEDIATION

Delete Section 15.3.

15.4 ARBITRATION

Delete Section 15.4.

LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: Northwestern State University
Business Affairs – Purchasing Section St. Denis Hall
200 Sam Sibley Drive
Natchitoches, LA 71497
(Owner to provide name and address of owner)

BID FOR: Building Automation System Repairs & Upgrades for Northwestern State University

(Owner to provide name of project and other identifying information)

The undersigned bidder hereby declares and represents that she/he: a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: Associated Design Group, Inc. and dated: FEBRUARY 13, 2026

(Owner to provide name of entity preparing bidding documents.)

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following **ADDENDA:** (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging) _____ .

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated “Base Bid” * but not alternates) the sum of:

_____ Dollars (\$ _____)

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1 *(Owner to provide description of alternate and state whether add or deduct)* for the lump sum of:

Not Applicable _____ Dollars (\$ _____ N/A _____)

Alternate No. 2 *(Owner to provide description of alternate and state whether add or deduct)* for the lump sum of:

Not Applicable _____ Dollars (\$ _____ N/A _____)

Alternate No. 3 *(Owner to provide description of alternate and state whether add or deduct)* for the lump sum of:

Not Applicable _____ Dollars (\$ _____ N/A _____)

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

LOUISIANA CONTRACTOR’S LICENSE NUMBER: _____

NAME OF AUTHORIZED SIGNATORY OF BIDDER: _____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER: _____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER **: _____

DATE: _____

THE FOLLOWING ITEMS ARE TO BE INCLUDED WITH THE SUBMISSION OF THIS LOUISIANA UNIFORM PUBLIC WORK BID FORM:

* The Unit Price Form shall be used if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** **A CORPORATE RESOLUTION OR WRITTEN EVIDENCE** of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5).

BID SECURITY in the form of a bid bond, certified check or cashier’s check as prescribed by LA R.S. 38:2218(A) attached to and made a part of this bid.

LOUISIANA UNIFORM PUBLIC WORK BID FORM

UNIT PRICE FORM

TO: Northwestern State University
 Business Affairs – Purchasing Section St. Denis Hall
 200 Sam Sibley Drive
 Natchitoches, LA 71497
(Owner to provide name and address of owner)

BID FOR: Building Automation System Repairs & Upgrades for
 Northwestern State University

(Owner to provide name of project and other identifying information)

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

**Wording for “DESCRIPTION” is to be provided by the Owner.
 All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.**

BID BOND
FOR
NORTHWESTER STATE UNIVERSITY

Date: _____

KNOW ALL MEN BY THESE PRESENTS:

That _____ of _____, as Principal, and _____, as Surety, are held and firmly bound unto the State of Louisiana & Northwester State University (Obligee), in the full and just sum of five (5%) percent of the total amount of this proposal, including all alternates, lawful money of the United States, for payment of which sum, well and truly be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally firmly by these presents.

Surety represents that it is listed on the current U. S. Department of the Treasury Financial Management Service list of approved bonding companies as approved for an amount equal to or greater that the amount for which it obligates itself in this instrument or that it is a Louisiana domiciled insurance company with at least an A - rating in the latest printing of the A. M. Best's Key Rating Guide. If surety qualifies by virtue of its Best's listing, the Bond amount may not exceed ten percent of policyholders' surplus as shown in the latest A. M. Best's Key Rating Guide.

Surety further represents that it is licensed to do business in the State of Louisiana and that this Bond is signed by surety's agent or attorney-in-fact. This Bid Bond is accompanied by appropriate power of attorney.

THE CONDITION OF THIS OBLIGATION IS SUCH that, whereas said Principal is herewith submitting its proposal to the Obligee on a Contract for:

NOW, THEREFORE, if the said Contract be awarded to the Principal and the Principal shall, within such time as may be specified, enter into the Contract in writing and give a good and sufficient bond to secure the performance of the terms and conditions of the Contract with surety acceptable to the Obligee, then this obligation shall be void; otherwise this obligation shall become due and payable.

PRINCIPAL (BIDDER)

SURETY

BY: _____
AUTHORIZED OFFICER-OWNER-PARTNER

BY: _____
AGENT OR ATTORNEY-IN-FACT(SEAL)

July 2021

FOR INFORMATION ONLY

This document will be prepared by NORTHWESTER STATE UNIVERSITY in the form appropriate for the project.

STATE OF LOUISIANA
PARISH OF «PARISH OF PROJECT»

CONTRACT BETWEEN OWNER AND CONTRACTOR
AND PERFORMANCE AND PAYMENT BOND

This agreement entered into this _____ day of _____, 2026, by «Contractor» hereinafter called the "Contractor", whose business address is «Contractor Address», «Contractor City», «Contractor State» «Contractor Zip», and the Northwestern State University, herein represented by the contracting officer executing this contract, hereinafter called the "Owner".

Witnesseth that the Contractor and the Owner, in consideration of premises and the mutual covenants; consideration and agreement herein contained, agree as follows:

Statement of Work: The contractor shall furnish all labor and materials and perform all of the work required to build, construct and complete in a thorough and workmanlike manner:

- «Project_Reference_1»
- «Project_Reference_2»
- «Project_Reference_3»
- «Project_City», Louisiana
- Project No.: «ProjectNo»,

in strict accordance with Contract Documents prepared by:

- «Designer»
- «Designer_Address»
- «Designer_City», «Designer_State» «Designer_Zip»

It is recognized by the parties herein that said Contract Documents including by way of example and not of limitation, the Drawings and Specifications dated «Drawings and Specs Date», Addenda number(s) «Addenda No», the Instruction to Bidders, Bid Form, General Conditions, Supplementary Conditions, any Addenda thereto, impose duties and obligations upon the parties herein, and said parties thereby agree that they shall be bound by said duties and obligations. For these purposes, all of the provisions contained in the aforementioned Construction Documents are incorporated herein by reference with the same force and effect as though said Construction Documents were herein set out in full.

Time for Completion: The work shall be commenced on a date to be specified in a written order of the Owner and shall be completed within «Time Completion Days» («Time Completion Days») consecutive calendar days from and after the said date.

Liquidated Damages: Contractor shall be assessed Liquidated Damages in the amount of «Liquidated Damages Cost Per Day» per day for each consecutive calendar day which work is not complete beginning with the first day beyond the completion time.

Compensation to be paid to the Contractor: The Owner will pay and the Contractor will accept in full consideration for the performance of the contract the sum of «Contract Amount Words» and No/100 Dollars («Contract Amount Numeral») which sum represents the «Base Bid Only or Plus Alternates»

Taxes: Contractor hereby agrees that the responsibility for payment of taxes from the funds thus received under this Contract and/or legislative appropriation shall be contractor's obligation and identified under Federal tax identification number _____.

Performance and Payment Bond: To these presents personally came and intervened _____, herein acting for _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business in the State of Louisiana, as surety, who declared that having taken cognizance of this contract and of the Construction Documents mentioned herein, he hereby in his capacity as its Attorney in Fact obligates his said company, as Surety for the said Contractor, unto the said Owner, up to the sum of «Contract Amount Words» and No/100 Dollars («Contract Amount Numeral»). By issuance of this bond, the surety acknowledges they are in compliance with R.S. 38:2219.

The condition of this performance and payment bond shall be that should the Contractor herein not perform the contract in accordance with the terms and conditions hereof, or should said Contractor not fully indemnify and save harmless the Owner, from all cost and damages which he may suffer by said Contractor's non-performance or should said Contractor not pay all persons who have and fulfill obligations to perform labor and/or furnish materials in the prosecution of the work provided for herein, including by way of example

workmen, laborers, mechanics, and furnishers of materials, machinery, equipment and fixtures, then said Surety agrees and is bound to so perform the contract and make said payment(s).

Provided, that any alterations which may be made in the terms of the contract or in the work to be done under it, or the giving by the Owner of any extensions of time for the performance of the contract, or any other forbearance on the part of either the Owner or the Contractor to the other shall not in any way release the Contractor or the Surety from their liability hereunder, notice to the Surety of any such alterations, extensions or other forbearance being hereby waived.

Contractor acknowledges and agrees to comply with the provisions of La. R.S. 38:2212.10 and federal law pertaining to E-Verify in the performance of services under this Contract.

It is hereby agreed that the Legislative Auditor of the State of Louisiana and/or Northwestern State University auditors shall have the option of auditing all accounts of contractor which relate to this contract.

The continuation of this contract is contingent upon the appropriation of funds to fulfill the requirements of the contract by the legislature. If the legislature fails to appropriate sufficient monies to provide for the continuation of the contract, or if such appropriation is reduced by the veto of the Governor or by any means provided in the appropriations act to prevent the total appropriation for the year from exceeding revenues for that year, or for any other lawful purpose, and the effect of such reduction is to provide insufficient monies for the continuation of the contract, the contract shall terminate on the date of the beginning of the first fiscal year for which funds are not appropriated.

The contractor agrees to abide by the requirements of the following as applicable: Title VI of the Civil Rights Act of 1964 and Title VII of the Civil Rights Act of 1964, as amended by the Equal Employment Opportunity Act of 1972, Federal Executive Order 11246 as amended, the Rehabilitation Act of 1973, as amended, the Vietnam Era Veteran's Readjustment Assistance Act of 1974, Title IX of the Education Amendments of 1972, the Age Discrimination Act of 1975, the Fair Housing Act of 1968 as amended, and contractor agrees to abide by the requirements of the Americans with Disabilities Act of 1990.

Contractor agrees not to discriminate in its employment practices, and will render services under this contract without regard to race, color, religion, sex, sexual orientation, national origin, veteran status, political affiliation, disability, or age in any matter relating to employment. Any act of discrimination committed by Contractor, or failure to comply with these statutory obligations when applicable shall be grounds for termination of this contract.

In accordance with R.S. 39:1602.1, effective May 22, 2018, for any contract for \$100,000 or more and for any contractor with five or more employees, Contractor, or any Subcontractor, shall certify it is not engaging in a boycott of Israel, and shall, for the duration of this contract, refrain from a boycott of Israel. The State reserves the right to terminate this contract if the Contractor, or any Subcontractor, engages in a boycott of Israel during the term of the contract.

In accordance with La. R.S. 39:1602.2, the following applies to any competitive sealed bids, competitive sealed proposals, or contract(s) with a value of \$100,000 or more involving a for-profit company with at least fifty full-time employees:

Unless otherwise exempted by law, by submitting a response to this solicitation or entering into this contract, the Bidder, Proposer or Contractor certifies the following:

1. The company does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association based solely on the entity's or association's status as a firearm entity or firearm trade association;
2. The company will not discriminate against a firearm entity or firearm trade association during the term of the contract based solely on the entity's or association's status as a firearm entity or firearm trade association.

The State reserves the right to reject the response of the Bidder, Proposer or Contractor if this certification is subsequently determined to be false, and to terminate any contract awarded based on such a false response or if the certification is no longer true.

Contractor has a continuing obligation to disclose any suspensions or debarment by any government entity, including but not limited to General Services Administration (GSA). Failure to disclose may constitute grounds for suspension and/or termination of the Contract and debarment from future Contracts.

Contractor, and each tier of Subcontractors, shall certify that it is not on the List of Parties Excluded from Federal Procurement or Nonprocurement Programs promulgated in accordance with E.O.s 12549 and 12689, "Debarment and Suspension," as set forth at 24 CFR part 24.

In Witness whereof, the parties hereto on the day and year first above written have executed this agreement in six (6) counterparts, each of which shall, without proof or accountancy for the other counterparts, be deemed an original thereof.

THUS DONE AND SIGNED, on the day, month, and year first written above.

WITNESSES:

STATE OF LOUISIANA

NORTHWESTERN STATE UNIVERSITY

NSU Witness #1 Sign Here

NSU Witness #2 Sign Here

Contractor Witness #1 Sign Here

Contractor Witness #2 Sign Here

Surety Witness #1 Sign Here

Surety Witness #2 Sign Here

BY: _____
NORTHWESTERN STATE UNIVERSITY

BY: _____
«CONTRACTOR»

SURETY:

BY: _____
ATTORNEY IN FACT

ADDRESS

TELEPHONE NUMBER

PROJECT NO.:«ProjectNo», ;

NAME: «Project Reference 1»
«Project Reference 2»
«Project Reference 3»
LOCATION: «Project City»

NON-COLLUSION AFFIDAVIT

Before me, the undersigned authority, duly commissioned and qualified within and for the State and Parish aforesaid, personally came and appeared _____ representing «Contractor» who, being by me first duly sworn deposed and said that he has read this affidavit and does hereby agree under oath to comply with all provisions herein as follows:

PART I.

Section 2224 of Part II of Chapter 10 of Title 38 of the Louisiana Revised Statutes, as amended.

(1) That affiant employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public contract were in the regular course of their duties for affiant; and

(2) That no part of the Contract price received by affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the Contract, other than the payment of their normal compensation to persons regularly employed by the affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for affiant.

PART II.

Section 2190 of Part I of Chapter 10 of Title 38 of the Louisiana Revised Statutes, as amended.

That affiant, if an architect or engineer, or representative thereof, does not own a substantial financial interest, either directly or indirectly, in any corporation, firm, partnership, or other organization which supplies materials for the construction of a public work when the architect or engineer has performed architectural or engineering services, either directly or indirectly, in connection with the public work for which the materials are being supplied.

For the purposes of this Section, a "substantial financial interest" shall exclude any interest in stock being traded on the American Stock Exchange or the New York Stock Exchange.

That affiant, if subject to the provisions of this section, does hereby agree to be subject to the penalties involved for the violation of this section.

AFFIANT

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____, 2026.

NOTARY

Building Automation System (BAS) Repairs & Upgrades

for Northwestern State University

Name of Project

Project No.

STATE OF LOUISIANA

PARISH OF _____

ATTESTATIONS AFFIDAVIT

Before me, the undersigned notary public, duly commissioned and qualified in and for the parish and state aforesaid, personally came and appeared Affiant, who after being duly sworn, attested as follows:

LA. R.S. 38:2227 PAST CRIMINAL CONVICTIONS OF BIDDERS

A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:

- | | |
|---------------------------------------|------------------------------------|
| (a) Public bribery (R.S. 14:118) | (c) Extortion (R.S. 14:66) |
| (b) Corrupt influencing (R.S. 14:120) | (d) Money laundering (R.S. 14:230) |

B. Within the past five years from the project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:

- | | |
|--|--|
| (a) Theft (R.S. 14:67) | (f) Bank fraud (R.S. 14:71.1) |
| (b) Identity Theft (R.S. 14:67.16) | (g) Forgery (R.S. 14:72) |
| (c) Theft of a business record
(R.S.14:67.20) | (h) Contractors; misapplication of
payments (R.S. 14:202) |
| (d) False accounting (R.S. 14:70) | (i) Malfeasance in office (R.S. 14:134) |
| (e) Issuing worthless checks
(R.S. 14:71) | |

LA. R.S. 38:2212.10 Verification of Employees

- A. At the time of bidding, Appearer is registered and participates in a status verification system to verify that all new hires in the state of Louisiana are legal citizens of the United States or are legal aliens.
- B. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.
- C. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

Building Automation System (BAS) Repairs & Upgrades

for Northwestern State University

Name of Project

Project No.

LA. R.S. 23:1726(B) Certification Regarding Unpaid Workers Compensation Insurance

- A. R.S. 23:1726 prohibits any entity against whom an assessment under Part X of Chapter 11 of Title 23 of the Louisiana Revised Statutes of 1950 (Alternative Collection Procedures & Assessments) is in effect, and whose right to appeal that assessment is exhausted, from submitting a bid or proposal for or obtaining any contract pursuant to Chapter 10 of Title 38 of the Louisiana Revised Statutes of 1950 and Chapters 16 and 17 of Title 39 of the Louisiana Revised Statutes of 1950.
- B. By signing this bid /proposal, Affiant certifies that no such assessment is in effect against the bidding / proposing entity.

NAME OF BIDDER

NAME OF AUTHORIZED SIGNATORY OF BIDDER

DATE

TITLE OF AUTHORIZED SIGNATORY OF BIDDER

**SIGNATURE OF AUTHORIZED
SIGNATORY OF BIDDER/AFFIANT**

Sworn to and subscribed before me by Affiant on the ____ day of _____, 20__.

Notary Public

SCHEDULE OF VALUES

The Contractor is to use the following format. The total Contract Cost is to be itemized in each Subsection listed (as applicable)

DIVISION 01 – GENERAL REQUIREMENTS	Quantity	Cost
01 00 00 General Requirements	_____	_____
01 32 50 Record Drawings, Shop Drawings, Product Data, Samples and other submittals.	_____	_____
	TOTAL	_____
DIVISION 02 – EXISTING CONDITIONS		
02 30 00 Subsurface Investigation	_____	_____
02 41 00 Demolition	_____	_____
	TOTAL	_____
DIVISION 03 – CONCRETE		
03 01 00 Maintenance of Concrete	_____	_____
03 11 00 Concrete Forming	_____	_____
03 15 00 Concrete Accessories	_____	_____
03 20 00 Concrete Reinforcing	_____	_____
03 30 00 Cast-in-place Concrete	_____	_____
03 40 00 Precast Concrete	_____	_____
03 50 00 Cast Decks & Underlayment	TOTAL	_____
DIVISION 04 – MASONRY		
04 01 00 Maintenance of Masonry	_____	_____
04 05 13 Masonry Mortaring	_____	_____
04 05 19 Masonry Anchorage & Reinforcing	_____	_____
04 05 23 Masonry Accessories	_____	_____
04 20 00 Unit Masonry	TOTAL	_____
DIVISION 05 – METALS		
05 05 23 Metal Fastenings	_____	_____
05 10 00 Structural Metal Framing	_____	_____
05 20 00 Metal Joists	_____	_____
05 30 00 Metal Decking	_____	_____
05 50 00 Metal Fabrications	_____	_____
05 58 00 Formed Metal Fabrications	TOTAL	_____
DIVISION 06 – WOOD, PLASTICS, & COMPOSITES		
06 05 23 Fastening and Adhesives	_____	_____
06 10 00 Rough Carpentry	_____	_____
06 13 00 Heavy Timber	_____	_____
06 17 00 Shop-fabricated Structural Wood	_____	_____
06 20 00 Finish Carpentry	SUB-TOTAL	_____

DISISION 06 – WOOD, PLASTICS, &
COMPOSITES (CONTINUES)

06 40 00	Architectural Woodwork	_____	_____
06 60 00	Plastic Fabrications	_____	_____
06 80 00	Composite Fabrications	_____	_____
		TOTAL	_____

DIVISION 07 – THERMAL AND MOISTURE
PROTECTION

07 10 00	Dampproofing and Waterproofing	_____	_____
07 18 00	Traffic Coatings	_____	_____
07 19 00	Water Repellents	_____	_____
07 21 00	Thermal Insulation	_____	_____
07 24 00	Exterior Insulation & Finish Systems	_____	_____
07 25 00	Weather Barriers	_____	_____
07 31 00	Shingles and Shakes	_____	_____
07 32 00	Roof Tiles	_____	_____
07 40 00	Roofing and Siding Panels	_____	_____
07 50 00	Membrane Roofing	_____	_____
07 60 00	Flashing and Sheet Metal	_____	_____
07 61 00	Sheet Metal Roofing	_____	_____
07 70 00	Roof & Wall Specialties and Accessories	_____	_____
07 80 00	Fire and Smoke Protection	_____	_____
07 90 00	Joint Protection	_____	_____
07 95 00	Expansion Control	_____	_____
		TOTAL	_____

DIVISION 08 – OPENINGS

08 11 00	Metal Doors and Frames	_____	_____
08 14 00	Wood Doors	_____	_____
08 15 00	Plastic Doors	_____	_____
08 30 00	Specialty Doors and Frames	_____	_____
08 41 00	Entrances and Storefronts	_____	_____
08 44 00	Curtain Wall and Glazed Assemblies	_____	_____
08 51 00	Metal Windows	_____	_____
08 52 00	Wood Windows	_____	_____
08 53 00	Plastic Windows	_____	_____
08 56 00	Special Function Windows	_____	_____
08 60 00	Roof Windows and Skylights	_____	_____
08 70 00	Hardware	_____	_____
08 80 00	Glazing	_____	_____
08 90 00	Louvers and Vents	_____	_____
		TOTAL	_____

DIVISION 09 – FINISHES

09 22 00	Supports for Plaster and Gypsum Board	_____	_____
09 23 00	Gypsum Plastering	_____	_____
09 24 00	Portland Cement Plastering	_____	_____
09 29 00	Gypsum Board	_____	_____
09 30 00	Tiling	_____	_____
		SUB-TOTAL	_____

DIVISION 09 – FINISHES (CONTINUED)

09 50 00 Acoustical Ceilings	_____	_____
09 54 00 Specialty Ceilings	_____	_____
Quantity	_____	_____
09 61 00 Flooring Treatment	_____	_____
09 62 00 Specialty Flooring	_____	_____
09 63 00 Masonry Flooring	_____	_____
09 64 00 Wood Flooring	_____	_____
09 65 00 Resilient Flooring	_____	_____
09 66 00 Terrazzo Flooring	_____	_____
09 68 00 Carpeting	_____	_____
09 69 00 Access Flooring	_____	_____
09 97 00 Wall Finishes	_____	_____
09 91 00 Painting	_____	_____
09 97 00 Special Coatings	_____	_____
	TOTAL	_____

DIVISION 10 – SPECIALTIES

10 11 00 Visual Display Surfaces	_____	_____
10 14 00 Signage	_____	_____
10 21 00 Compartments and Cubicles	_____	_____
10 22 00 Partitions	_____	_____
10 26 00 Wall and Door Protection	_____	_____
10 28 00 Toilet, Bath, and Laundry Accessories	_____	_____
10 44 00 Fire Protection Specialties	_____	_____
10 51 00 Lockers	_____	_____
10 56 00 Storage Assemblies	_____	_____
10 82 00 Grilles and Screens	_____	_____
	TOTAL	_____

DIVISION 11 – EQUIPMENT

11 15 00 Security, Detention, and Banking Equipment	_____	_____
11 19 00 Detention Equipment	_____	_____
11 23 00 Commercial Laundry and Dry Cleaning Equipment	_____	_____
11 26 00 Unit Kitchens	_____	_____
11 27 00 Photographic Processing Equipment	_____	_____
11 40 00 Foodservice Equipment	_____	_____
11 51 00 Library Equipment	_____	_____
11 52 00 Audio-Visual Equipment	_____	_____
11 53 00 Laboratory Equipment	_____	_____
11 61 00 Theater and Stage Equipment	_____	_____
11 65 00 Athletic and Recreational Equipment	_____	_____
11 70 00 Healthcare Equipment	_____	_____
	TOTAL	_____

DIVISION 12 – FURNISHINGS

12 20 00 Window Treatments	_____	_____
12 30 00 Casework	_____	_____
12 40 00 Furnishings and Accessories	_____	_____
12 50 00 Furniture	_____	_____
	TOTAL	_____

DIVISION 13 –SPECIAL CONSTRUCTION

13 10 00	Special Facility Components	_____	_____
13 34 00	Fabricated Engineered Structures	_____	_____
13 49 00	Radiation Protection	_____	_____
	TOTAL	_____	_____

DIVISION 14 – CONVEYING EQUIPMENT

14 20 00	Elevators	_____	_____
14 30 00	Escalators and Moving Walks	_____	_____
14 40 00	Lifts	_____	_____
14 80 00	Scaffolding	_____	_____
	TOTAL	_____	_____

DIVISION 21 – FIRE SUPPRESSION

21 10 00	Water-Based Fire-Suppression Systems Piping	_____	_____
21 20 00	Fire-Extinguishing Systems	_____	_____
21 30 00	Fire Pumps	_____	_____
	TOTAL	_____	_____

DIVISION 22 – PLUMBING

22 07 00	Plumbing Insulation	_____	_____
22 11 00	Facility Water Distribution	_____	_____
22 13 00	Facility Sanitary Sewerage	_____	_____
22 14 00	Facility Storm Drainage	_____	_____
22 30 00	Plumbing Equipment	_____	_____
22 40 00	Plumbing Fixtures	_____	_____
	TOTAL	_____	_____

DIVISION 23 – HEATING, VENTILATING, & AIR-
CONDITIONING

23 05 93	Testing, Adjusting, & Balancing for HVAC	_____	_____
23 07 00	HVAC Insulation	_____	_____
23 09 00	Instrumentation & Control for HVAC	_____	_____
23 13 00	Facility Fuel-Storage Tanks	_____	_____
23 20 00	HVAC Piping and Pumps	_____	_____
23 30 00	HVAC Air Distribution	_____	_____
23 40 00	HVAC Air Cleaning Devices	_____	_____
23 50 00	Central Heating Equipment	_____	_____
23 60 00	Central Cooling Equipment	_____	_____
23 70 00	Central HVAC Equipment	_____	_____
	TOTAL	_____	_____

DIVISION 26 – ELECTRICAL

26 09 00	Instrumentation & Control for Electrical Systems	_____	_____
26 10 00	Medium-Voltage Electrical Distribution	_____	_____
26 20 00	Low-Voltage Electrical Transmission	_____	_____
26 27 00	Low-Voltage Distribution Equipment	_____	_____
26 30 00	Facility Electrical Power Generating & Storage Equipment	_____	_____
26 40 00	Electrical and Cathodic Protection	_____	_____
26 50 00	Lighting	_____	_____
	TOTAL	_____	_____

DIVISION 27 – COMMUNICATIONS

27 10 00	Structured Cabling	_____	_____
27 20 00	Data Communications	_____	_____
27 30 00	Voice Communications	_____	_____
27 40 00	Audio-Video Communications	_____	_____
27 50 00	Distributed Communications & Monitoring Systems	_____	_____
		TOTAL	_____

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

28 10 00	Electronic Access Control & Intrusion Detection	_____	_____
28 20 00	Electronic Surveillance	_____	_____
28 30 00	Electronic Detection and Alarm	_____	_____
28 40 00	Electronic Monitoring and Control	_____	_____
		TOTAL	_____

DIVISION 31 – EARTHWORK

31 10 00	Site Clearing	_____	_____
31 20 00	Earth Moving	_____	_____
31 31 00	Soil Treatment	_____	_____
31 32 00	Soil Stabilization	_____	_____
31 40 00	Shoring and Underpinning	_____	_____
31 50 00	Excavation Support and Protection	_____	_____
31 60 00	Special Foundations and Load- Bearing Elements	_____	_____
		TOTAL	_____

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 10 00	Bases, Ballasts, and Paving	_____	_____
32 30 00	Site Improvements	_____	_____
32 90 00	Planting	_____	_____
		TOTAL	_____

DIVISION 33 – UTILITIES

33 10 00	Water Utilities	_____	_____
33 30 00	Sanitary Sewerage Utilities	_____	_____
33 40 00	Storm Drainage Utilities	_____	_____
33 50 00	Fuel Distribution Utilities	_____	_____
33 60 00	Hydronic & Steam Energy Utilities	_____	_____
33 70 00	Electrical Utilities	_____	_____
33 80 00	Communications Utilities	_____	_____
		TOTAL	_____

DIVISION 34 – TRANSPORTATION

34 00 00	Transportation	_____	_____
		TOTAL	_____

DIVISION 35 – WATERWAY AND MARINE CONSTRUCTIONS

35 00 00	Waterway and Marine construction	_____	_____
		TOTAL	_____

DIVISION 40-43 – PROCESS EQUIPMENT

DIVISION 44 – POLLUTION CONTROL
EQUIPMENT

44 40 00	Water Treatment Equipment	_____	_____
44 41 00	Packaged Water Treatment Plants	_____	_____
44 50 00	Solid Waste Control	_____	_____
		TOTAL	_____

DIVISION 45 – INDUSTRY SPECIFIC
MANUFACTURING
EQUIPMENT

DIVISION 48 – ELECTRICAL POWER
GENERATION

48 10 00	Electrical Power Generation Equipment	_____	_____
48 70 00	Electrical Power Generation Testing	_____	_____
		TOTAL	_____

CHANGE ORDER

PROJECT NAME: _____ CHANGE ORDER No. _____
 PROJECT & WBS No: _____ CONTRACT DATE: _____
 CONTRACTOR: _____ NTP DATE: _____
 SITE CODE: _____ STATE ID: _____ SRM No.: _____

You are directed to make the following change(s) in this contract. Attach SUMMARY, BREAKDOWN and/or UNIT PRICE BREAKDOWN forms as required and give a brief description of each change below, including RFI No., cost and days from Summary

The Original Contract Sum _____
 Total Changes by Previous Change Order(s) _____
 Current Contract Sum _____
 Contract Sum will be unchanged increased by decreased by: _____
New Contract Sum _____
 The Original Contract Completion Date and Contract Time. Date: _____ DAYS
 Total Time extended by Previous Change Order(s) _____ DAYS
 Contract Time will be unchanged increased by decreased by: _____ DAYS
New Contract Completion Date & Contract Time Date: _____ DAYS
Added Building Area _____ (Sq. Ft.)

NOTE: No additional increase in time or money will be considered for a Change Order item after it has been executed.

RECOMMENDED	ACCEPTED	APPROVED
Designer's Name: _____	Contractor's Name: _____	Project Manager: _____
Address: _____	Address: _____	Northwestern State University
Email Address: _____	Email Address: _____	
By: _____	By: _____	By: _____
Date: _____	Date: _____	Date: _____

Classification	Amount	Classification	Amount
Omission (Type "O")*	_____	Miscellaneous (Type "M")	_____
Error (Type "E")*	_____	Owner Requested (Type "R")	_____
COMMENTS:	Senior Manager/Assistant Director approval:		_____

Construction Contract Change Order
SUMMARY

Project & WBS No. _____

Item No. _____
RFI No. (or COR, CPR, etc.) _____
Date: _____

Project Name: _____

Contractor Name: _____

Description of Work:

General Contractor Direct Costs - Breakdown No. _____
(See attached breakdown)

Total General Contractor Cost _____ %
(General Contract Direct Cost plus OH&P) (Max: 8%)

Subcontractor Cost Breakdowns
(See attached.)

	A	B		C
Subcontractor Name	Breakdown No.	Total Direct Cost	OH&P (Max 8%)	Total A+(A X B)
_____	_____	_____	%	_____
_____	_____	_____	%	_____
_____	_____	_____	%	_____
_____	_____	_____	%	_____
_____	_____	_____	%	_____
_____	_____	_____	%	_____
_____	_____	_____	%	_____
_____	_____	_____	%	_____
_____	_____	_____	%	_____

Subcontractor Direct Costs Total _____
(Sum column A)

Subcontractor Direct Costs + Subcontractor OH&P _____
(Sum column C)

General Contractor OH&P on Subcontractor Direct Cost at _____ %
(Sum column A times General Contractor OH&P rate.) (Max: 8%)

Total Subcontractor Costs _____
(Subcontractor Direct Costs + OH&P + General Contractor OH&P)

Change Order Subtotal _____
(Sum of Total General Contractor Costs and Total Subcontractor Costs)

Performance and Payment Bond at _____ %
(Change Order Subtotal times Performance and Payment Bond rate)

Amount will be increased by decreased by unchanged _____
(Sum of Change Order Subtotal and Performance and Payment Bond)

Days will be increased by decreased by unchanged _____
(Attach supporting data such as meteorological reports)

Construction Contract Change Order

BREAKDOWN

Breakdown No. _____

Item No. _____

RFI No. (or COR, CPR, etc.) _____

Date: _____

Project & WBS No. _____

Project Name: _____

Contractor/Subcontractor Name: _____

Direct Cost of Work :

A. Labor

Check here if explained on the Comment Sheet ↓

Hourly Wage Rate

Hours

Total Cost

1	_____	<input type="checkbox"/>
2	_____	<input type="checkbox"/>
3	_____	<input type="checkbox"/>
4	_____	<input type="checkbox"/>
5	_____	<input type="checkbox"/>
6	_____	<input type="checkbox"/>
7	_____	<input type="checkbox"/>

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Sub Total

Add Labor Burden @ _____ %

LABOR TOTAL

B. Material

Unit Price

Unit

Units

Total Cost

1	_____	<input type="checkbox"/>
2	_____	<input type="checkbox"/>
3	_____	<input type="checkbox"/>
4	_____	<input type="checkbox"/>
5	_____	<input type="checkbox"/>
6	_____	<input type="checkbox"/>
7	_____	<input type="checkbox"/>

4,200.00	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Sub Total

Add Tax @ _____ %

MATERIAL TOTAL

C. Equipment

Unit Rate

Unit

Units

Total Cost

1	_____	<input type="checkbox"/>
2	_____	<input type="checkbox"/>
3	_____	<input type="checkbox"/>
4	_____	<input type="checkbox"/>
5	_____	<input type="checkbox"/>
6	_____	<input type="checkbox"/>
7	_____	<input type="checkbox"/>

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Sub Total

Add Tax @ _____ %

EQUIPMENT TOTAL

TOTAL DIRECT COST FOR THIS BREAKDOWN:

(Sum A, B & C)

Instructions for Change Order Back Up Forms

The General Conditions of the Contract for Construction, AIA Document A201, 2017 Edition, and the Supplementary Conditions provide for changes in the contract in the form of change orders. The costs of such changes must be carefully, clearly and accurately documented. Northwestern State University has prepared a set of forms to be used to provide this documentation in a consistent format that is in accordance with the Contract Documents.

Change orders will typically contain one or more items of work. Each item of work will typically include work by the general contractor and/or one or more subcontractors. The documentation begins with a breakdown of the work of the contractor and each subcontractor. This is prepared using the form entitled "BREAKDOWN." One form for the General Contractor and one for each subcontractor. Each breakdown will be summarized on the form entitled "SUMMARY." Each item of work will, in turn, be summarized on the change order itself. This should be on the face of the change order.

The forms are available as a Microsoft Excel worksheet for ease of preparation, with formulas established for mark-ups and other basic mathematical operations.

These forms are to be used as provided. Any alteration to the forms may cause the change order to be rejected.

GENERAL: (Refer to Article 7 of the Supplementary and General Conditions)

Forms - There are five forms to be used for all Northwestern State University change orders: CHANGE ORDER form, SUMMARY, BREAKDOWN, BREAKDOWN COMMENT SHEET and UNIT PRICE BREAKDOWN. The CHANGE ORDER form is the highest level and is the official, signed document. A CHANGE ORDER form may include one or more items of work, each of which is backed up by a SUMMARY. Each SUMMARY will be backed up with one or more BREAKDOWNs. Any unusual rates, unit costs or quantities may be explained on the COMMENT SHEET. It's simple. The BREAKDOWN form must be used for the general contractor and any subcontractor, at any level, that is to get OH&P. Use as many as needed.

Unit Pricing - Labor, material and equipment breakdown is the standard method of pricing change orders for Northwestern State University. However, unit pricing may be considered in some circumstances if the unit prices are clearly established such as by unit prices that were included in the bid. These prices may also be derived from a construction industry standard reference such as R.S. Means. If unit prices were included in the bid they are acceptable for pricing change order work and, in fact, must be used for any work that is included in the change order for which they were established. The UNIT PRICE BREAKDOWN is provided for this purpose.

CHANGE ORDER:

Project identification information: Complete as required. The Site Code, State ID and SRM No(s). (contract numbers) can be obtained from the Project Manager.

Description: This will include a list of each attached SUMMARY that makes up this change order and a brief statement of the work included in each, including RFI No., cost and days from the SUMMARY page.

New Contract Sum: Calculate the new contract amount using the original contract amount, previous change orders and the new change order. Indicate the appropriate word for increase, decrease or unchanged by selecting the appropriate checkbox.

New Contract Completion Date and Revised Time: Calculate the new contract time using the original Contract Completion Date and Contract Time, previous changes in time and the change in time by this change order. Indicate the appropriate word for increase, decrease or unchanged by selecting the appropriate checkbox. Show days in the main column and the date in the blank indicated.

Added Building Area: Show any building area added by this change order. If none, enter "None."

RECOMMENDED: Show the Designer's name and address, sign on the line indicated as "By:" and date on the indicated line.

ACCEPTED: Show the Contractor's name and address, sign on the line indicated as "By:" and date on the indicated line.

APPROVED: For approval by FP&C.

SUMMARY: (Refer to Article 7 of the Supplementary and General Conditions)

Item No.: Show the Item number as it will appear on the CHANGE ORDER Form. Note: This may be one of several items included in one CHANGE ORDER form.

RFI No.: Show the number of the request for information. This may be known by another name such as COR (Change Order Request,) CPR (Change Proposal Request,) etc.

Project No., WBS No., Date, Project Name. Will auto-fill from information entered on the first tab.

Contractor: Name of General Contractor. Will auto-fill from information entered on the first tab.

Description of Work: Give a brief description of the work included in this **Item**.

General Contractor Direct Costs: Show the total General Contractor Cost from the BREAKDOWN and show the Breakdown No. in the space provided.

General Contractor Total Cost: Show the total General Contractor Cost plus the General Contractor's overhead and profit. The overhead and profit shall not exceed 8% of the Direct Cost.

Subcontractor Cost Breakdowns: List each subcontractor, Breakdown No. and Total Direct Cost (in column "A") from the attached BREAKDOWN sheets. Show the subcontractor's overhead and profit percentage in column "B" and show the calculated total of the direct cost plus the percentage of the direct cost in column "C." If the electronic version of the form is being used, column "C" will be automatically calculated. The overhead and profit shall not exceed 8% of the Total Direct Cost.

Subcontractor Direct Costs Total: Sum of column "A." This will be used to calculate the General Contractor's overhead and profit on the subcontractors' work. If the electronic version is being used, this will be an automatic calculation.

Subcontractor Direct Costs + Subcontractor OH&P: Sum of column "C." This represents the total amount that subcontractors will be paid. Automatic calculation.

General Contractor OH&P on Subcontractor Direct Cost at ___%. The contractor's overhead and profit on the subcontractors' direct cost (without subcontractor OH&P.) Enter the percentage of the contractor's OH&P on the subcontractors' work (not to exceed 8%) and show the calculated total of the subcontractors' direct cost plus the percentage of the direct cost in the space. Automatic calculation.

Total Subcontractor Costs: Total of the last two spaces.

Change Order Subtotal: Total of change order except bond.

Performance and Payment Bond at ____%: Enter bond percentage (from amount provided by the contractor at the Pre-Construction Conference) and calculate the amount for the bond.

Amount will be (increased) (decreased) (unchanged) by: Add bond and calculate total change order amount. Indicate "increase," "decrease" or "unchanged" by checking the appropriate box.

Days will be (increased) (decreased) (unchanged) by: Show the number of days to be added or deleted from the contract, if any, due to changes in scope, adverse weather, unusual delays or other factors, **only** if it is proven the critical path is affected. Note that a change in scope does not necessarily indicate a change in time. Indicate "increased," "decreased" or "unchanged" by checking the appropriate box.

BREAKDOWN:

Item No. Show the Item number as it will appear on the CHANGE ORDER Form and the SUMMARY. Note: This may be one of several items included in one CHANGE ORDER form.

RFI No.: Show the number of the request for information. This may be known by another name such as COR (Change Order Request,) CPR (Change Proposal Request,) etc.

Project No., WBS No., Date, Project Name. Will auto-fill from information entered on the first tab.

Contractor: Name of General Contractor or Subcontractor, edit auto-fill as needed.

Direct Cost of Work:

Check here if explained on the Comment Sheet: If rates, unit costs or quantities may appear unreasonable compared to standard costs or quantities the reasons may be explained on the attached comment sheet and the box checked to indicate that there is an explanation.

A. Labor: Include the "wages paid" hourly direct labor and/or foreman necessary to perform the required change. "Wages paid" is the amount actually paid the employee, not the fully burdened charge rate used in the bid, etc. Supervisory personnel in district or home office shall not be included. Do not include the project superintendent, except as permitted by Section 7.2 of Supplementary Conditions. Supervisory personnel on the job-site, but with broad supervisory responsibility shall not be included as Direct Labor, except as permitted by Section 7.2 of Supplementary Conditions. Typically there will be only one superintendent on the job and his/her time shall not be included, except as permitted by Section 7.2 of Supplementary Conditions. Typically all other employees are eligible for inclusion. List by job title each person employed on the work, his/her hourly rate, the number hours work and the extended Total Cost. Do not list crews unless the rates for them are readily available in standard cost estimating references such as R. S. Means. Add the labor burden that was provided at the Pre-Construction conference and in compliance with the Contract Documents, and total the amounts in LABOR TOTAL.

B. Material: Include the acquisition cost of all materials directly required to perform the required change. List each material used in the work, the price per unit, name of the unit, the number of units used and the extended Total Cost. Add the tax rate and tax and total the amounts in MATERIAL TOTAL.

C. Equipment: Include the rental cost of equipment items necessary to perform the change. For company-owned equipment items, include documentation of internal rental rates submitted at the pre-construction conference. Charges for small tools, and craft specific tools are not allowed. List each piece of equipment used in the work, the rate by units of time (hour, day, week, etc.,) number of units of time the piece was in service on the work and the extended total cost. Add the tax rate, calculate the tax and total the amounts in EQUIPMENT TOTAL.

TOTAL DIRECT COST FOR THIS BREAKDOWN: Total of A. Labor, B. Material and C. Equipment. This is the amount that will be carried forward to the SUMMARY Sheet. This amount does **NOT** include Overhead and Profit. This will be added on the SUMMARY Sheet.

COMMENTS SHEET:

The COMMENTS SHEET uses the same heading as the SUMMARY and BREAKDOWN.

The COMMENTS SHEET includes three sections, one each for A. Labor, B. Materials and C. Equipment. These correspond to the sections in the BREAKDOWN. Each comment should be entered in the section to which it corresponds on the BREAKDOWN and numbered to correspond to the appropriate line. Comments are to be used only to explain unusual rates, costs or quantities.

UNIT PRICE BREAKDOWN:

The UNIT PRICE BREAKDOWN uses the same heading as the BREAKDOWN.

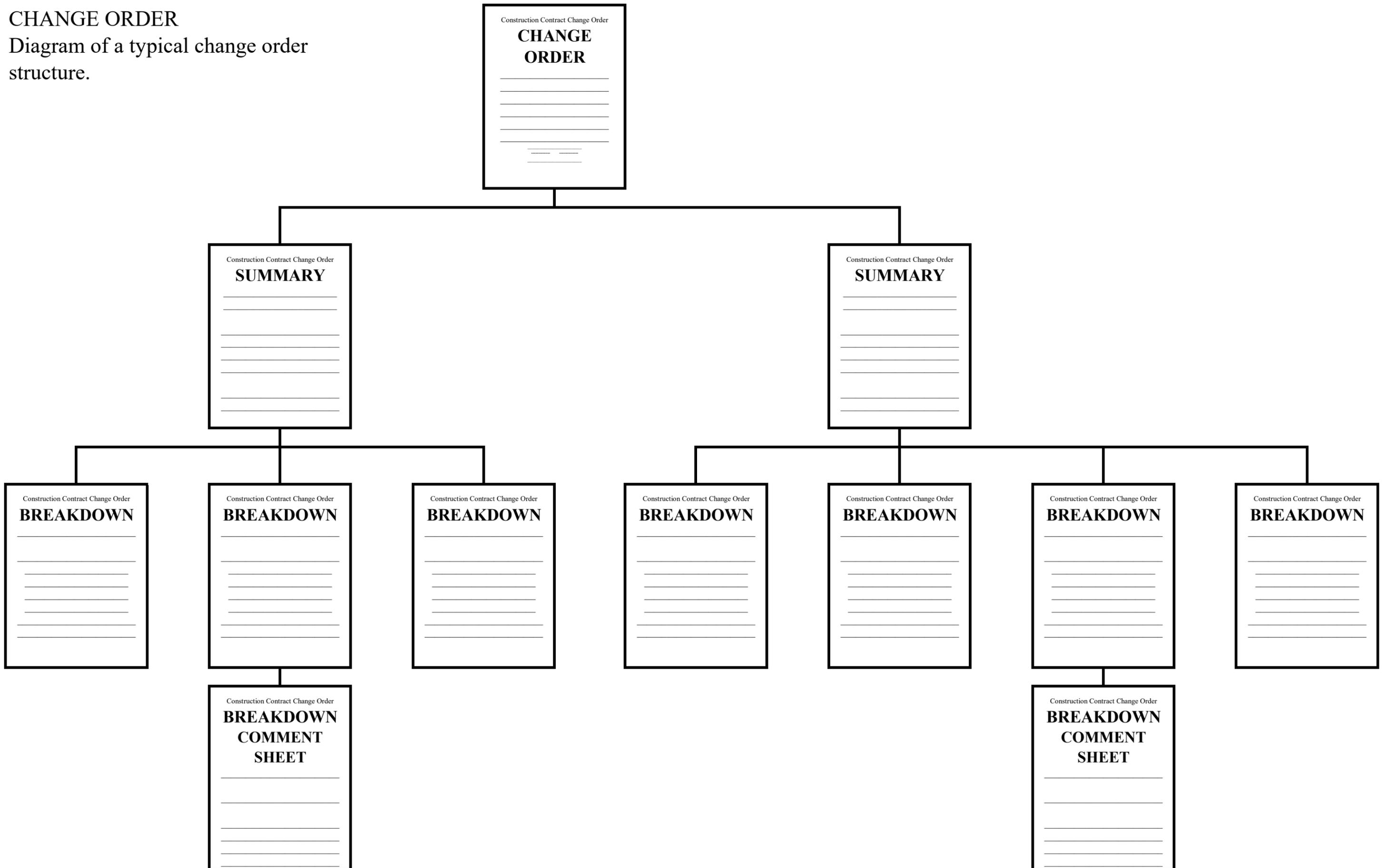
The UNIT PRICE BREAKDOWN is similar to the BREAKDOWN.

Unit Price Tabulation: Each unit price is listed along with its corresponding price and the number of units used in the work. The price and number of units are multiplied to provide the total cost of each unit price item. The pricing reference, such as the bid form for the project or a construction industry standard reference, must be cited for each unit price. This may be more fully described in "Reference Legend,"

Unit Price Total: Sum the unit prices to obtain the total cost for unit prices.

CHANGE ORDER

Diagram of a typical change order structure.



❖ NOT FOR RECORDATION PURPOSES ❖

NORTHWESTERN STATE UNIVERSITY PARTIAL OCCUPANCY

PROJECT NAME:

PROJECT LOCATION:

PROJECT NUMBER:

CONTRACTOR:

USER AGENCY:

The below described portion of subject project is, to the best of my knowledge and belief, complete to a point where the User desires to use in according with the Contract Documents.

DATE OCCUPIED: _____ .

WARRANTY items covered by Occupancy:

_____	Designer	_____	Date
_____	Contractor	_____	Date
_____	Northwestern State University	_____	Date

Punch List: Attached

 None

c: User Agency, ORM

❖ NOT FOR RECORDATION PURPOSES ❖

❖ NOT FOR RECORDATION PURPOSES ❖

NORTHWESTERN STATE UNIVERSITY
RECOMMENDATION OF ACCEPTANCE

TO: Northwestern State University
St. Denis Hall
200 Sam Sibley Drive
Natchitoches, LA 714797

FROM: Associated Design Group, Inc.
3909 W Congress Street
Lafayette, LA 70506
Design Firm Name and Address

DATE: _____

PROJECT NAME: Building Automation System Repairs & Upgrades for Northwestern State University

PROJECT NUMBER: _____

CONTRACTOR: _____

ORIGINAL CONTRACT AMOUNT: \$ _____

FINAL CONTRACT AMOUNT: \$ _____

FINAL BUILDING AREA (SQ. FEET): _____

I certify that, to the best of my knowledge and belief, this project is substantially complete in accordance with the Plans and Specifications to the point where it can be used for the purpose which was intended. It is recommended that it be accepted.

DATE OF ACCEPTANCE: _____

CONTRACT DATE OF COMPLETION: _____

NUMBER OF DAYS (OVERRUN) (UNDERRUN) (As of Acceptance Date) _____

LIQUIDATED DAMAGES PER DAY STIPULATED IN CONTRACT \$ _____

VALUE OF PUNCH LIST \$ _____

Was part of project occupied prior to Acceptance? No Yes, see attached Partial Occupancy Forms

ADA Certificate of Compliance Required? No Yes, see attached form.

La. Building Code Certificate of Compliance Required? No Yes, see attached form.

ROOF GUAR-MANUF: _____ START DATE: _____ END DATE: _____

ROOFER: _____ START DATE: _____ END DATE: _____

Signed: _____
DESIGNER

Signed: _____
NSU PROJECT MANAGER

❖ NOT FOR RECORDATION PURPOSES ❖

NORTHWESTERN STATE UNIVERSITY
CERTIFICATE OF COMPLIANCE
with
LOUISIANA BUILDING CODE FOR STATE OWNED BUILDINGS

TO: Northwestern State University
St. Denis Hall
200 Sam Sibley Drive
Natchitoches, LA 714797

FROM: Associated Design Group, Inc.
3909 W Congress St
Lafayette, LA 70506
Design Firm Name and Address

PROJECT NAME: **Building Automation System Repairs & Upgrades
for Northwestern State University**

PROJECT No.: _____

DATE OF ACCEPTANCE: _____

I, _____ certify that, to the best of my knowledge and belief, this project has been constructed in compliance with the Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines as reviewed by the fire marshal.

Designer Signature Date: _____

NORTHWESTERN STATE UNIVERSITY LIQUIDATED DAMAGES ASSESSMENT

TO: Northwestern State University
St. Denis Hall
200 Sam Sibley Drive
Natchitoches, LA 714797

FROM: Associated Design Group, Inc.
3909 W Congress St
Lafayette, LA 70506
Design Firm Name and Address

DATE: _____

PROJECT NAME: _____

PROJECT NUMBER: _____ WBS No: _____

SITE CODE: _____ STATE ID: _____ CFMS: _____

CONTRACTOR: _____

ORIGINAL CONTRACT AMOUNT: \$ _____

FINAL CONTRACT AMOUNT: \$ _____

DATE OF ACCEPTANCE: _____

CONTRACT DATE OF COMPLETION: _____

NUMBER OF DAYS OVERRUN (As of Acceptance Date) _____

LIQUIDATED DAMAGES PER DAY STIPULATED IN CONTRACT \$ _____

LIQUIDATED DAMAGES ASSESSMENT \$ _____

Signed: _____
DESIGNER

Signed: _____
PROJECT MANAGER

c: User Agency

NORTHWESTERN STATE UNIVERSITY
LIQUIDATED DAMAGES ASSESSMENT
(Procedure of How NSU Calculates Liquidate Damages at Acceptance)

- If Acceptance Date = Completion Date, then 0 days are assessed (mathematically If $AD = CD$, then $LD = 0$)
- If Acceptance Date is 1 day after Completion date, then 1 day is assessed (don't count acceptance date, mathematically If $AD - CD = 1$, then $LD = 1$)
- If Acceptance Date is 2 days after Completion date, then 1 day is assessed (don't count acceptance date or completion date, mathematically If $AD - CD > 1$, then $LD = AD - CD - 1$)
- If Acceptance date is 3 days after Completion date, then 2 days are assessed (same as line above)
- If Acceptance date is 4 days after Completion date, then 3 days are assessed... etc.

SECTION 01 04 00 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
 - 1. Coordination.
 - 2. Administrative and supervisory personnel.
 - 3. General installation provisions.
 - 4. Cleaning and protection.
- B. Progress meetings, coordination meetings and pre-installation conferences are included in Section "Project Meetings".
- C. Requirements for the Contractor's Construction Schedule are included in Section "Submittals".

1.3 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
- B. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
- C. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
- D. Make adequate provisions to accommodate items scheduled for later installation.
- E. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

- F. Prepare similar memoranda for the Government and separate Contractors where coordination of their Work is required.
- G. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project Close-out activities.
- H. Conservation: Where any or all utilities are being provided by Government, coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and related resources.
- I. Salvage materials and equipment involved in performance of, but not actually incorporated in, the work. Government shall have right of first refusal on equipment shown to be removed. If Government equipment, contractor shall dispose of equipment, off site as required.

1.4 SUBMITTALS

- A. Coordination Drawings: Prepare and submit coordination Drawings where required by other specific sections of the specifications.
- B. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.
- C. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Engineer for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Engineer for final decision.

3.2 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 - 1. Excessively high or low temperatures.
 - 2. Excessively high or low humidity.
 - 3. Water or ice.

4. Solvents/Chemicals.
5. Soiling, staining and corrosion.
6. Bacteria.
7. Excessive weathering.
8. Unprotected storage.
9. Improper shipping or handling.
10. Theft and Vandalism.

END OF SECTION 01 04 00

SECTION 01 06 50 – SAFETY

PART 1 - GENERAL

1.1 SCOPE

- A. Contractor shall be responsible for compliance with the state and federal Occupational Safety and Health Act (OSHA) requirements when applicable.

1.2 SUBMITTALS

- A. Submit the following to the Government in accordance with Section 01340, Submittals. Submittals are for the record or approval, as indicated.
- B. Site Safety Representative designation, for the record.

1.3 CONTRACT REQUIREMENTS:

- 1. The following clauses shall apply to this contract:
 - a. FAR 52.222-4 Contract Work Hours and Safety Standards – Overtime Compensation
 - b. FAR 52.236-13 Accident Prevention

PART 2 - PRODUCTS

(None are required by this Section.)

PART 3 - EXECUTION

3.1 CONTRACTOR SAFETY REPRESENTATIVE

- A. Prior to commencement of work at the site, Contractor shall designate in writing the name of its representative who will ensure Contractor compliance with safety requirements.

3.2 COMPLIANCE

- A. The Contractor shall comply with the requirements of the OSHA Manual.
- B. Contractor shall promptly correct any noncomplying work or conditions. Contractor shall be responsible to ensure its work does not affect the safety of the public or employees of the Government. Neither the Government nor its representatives shall bear any responsibility for safety precautions at the project work site. If, however, in the opinion of the Construction Inspector, a life-threatening condition exists, the Construction Inspector will orally (to be confirmed in writing) require the Contractor to immediately suspend work in the affected area until the condition is corrected. Whenever Contractor's operations may create a hazardous condition, it shall at its sole expense, furnish, install and

maintain such flagmen, guards, fences, barricades, railings, lights, signs, or other devices necessary to prevent accidents, injury or damage to people and equipment.

- C. Contractor shall determine the location of the paramedic unit, medical facility or hospital nearest to the project site to be used for medical emergencies. The name, telephone number, location and a route map to these facilities shall be prominently posted at the project site. Telephone numbers of the local fire and police departments shall be prominently displayed.

3.3 RECORD KEEPING

- A. Contractor shall maintain all required OSHA records. Records of safety performance shall be available at the project site for inspection upon request of the Government or the state.

3.4 DISCOVERY OF UNKNOWN POTENTIALLY HAZARDOUS CONDITIONS AND MATERIALS/SUBSTANCES.

- A. In the event conditions, materials, or substances are encountered during the course of the work which cause Contractor to reasonably suspect the presence of asbestos, polychlorinated biphenyl (PCB) or other hazardous materials, Contractor shall cease all work in the affected area immediately and notify the Construction Inspector by telephone. The affected area will be cordoned off in order to prevent access by any personnel. Contractor shall not proceed with further work of any kind in the affected area until instructions are received from the Contracting Officer. Upon identification of the material or substance and receipt of written instructions from the Contracting Officer, the Contractor may proceed only in accordance with the instructions of the Contracting Officer and the applicable code or regulation pertaining to the specific material identified.

End of Section 01 06 50

SECTION 01 20 00 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 SCOPE

- A. Project meetings will be conducted throughout the period of performance of the contract to enable orderly review during progress of the work and to provide for systematic resolution of problems. Contractor's jobsite supervisor and other responsible Contractor employees shall attend and participate in these meetings. The Contractor's representative shall have the authority to commit Contractor to activities under the contract.

1.2 SUBMITTALS

- A. Submit Meeting Minutes with daily log submittal following the meeting. Minutes are required for each Progress Meeting. Provide at a minimum the following information:
 - 1. List of individuals attending the meeting
 - 2. A record of discussions.
 - 3. Clearly identify decisions made and items requiring action to be taken.

PART 2 - PRODUCTS

(None are required by this Section)

PART 3 - EXECUTION

3.1 MEETING LOCATION

- A. To the maximum extent practicable, meetings will be held at or near the project site.

3.2 PRECONSTRUCTION MEETING

- A. A preconstruction meeting will be held before Contractor begins any work at the project site. Contractor shall ensure attendance by an individual authorized to sign the contract, its Project Manager, jobsite supervisor and major subcontractors.
- B. Data and information on at least the following topics will be distributed and discussed
- C. Organizations.
- D. Responsibilities and authority of the Contracting Officer (CO), Contracting Officer's Technical Representative (COTR), and the Government's Construction Inspector.

- E. Contract documents, including distribution of required copies of original documents and revisions.
- F. Channels and procedures for communication.
- G. Channels and procedures for submittal and approval of shop drawings, catalog cuts and samples.
- H. Bonds, insurance requirements, permits, and proof of compliance.
- I. Construction schedule.
- J. Invoicing and progress payments.
- K. Field decisions and change orders.
- L. Rules and regulations governing performance of the work.
- M. Procedures for safety, first aid, security, quality control, and housekeeping.
- N. Reports.

3.3 PROGRESS MEETINGS

- A. Whenever the Contracting Officer or his designated representative visits the project site, the Contractor's Jobsite supervisor shall be available to attend a meeting of approximately 1 to 2 hours in duration.
- B. Attendance:
- C. To the maximum extent practicable, Contractor shall assign the same person or persons to represent Contractor at project meetings throughout progress of the work. Contractor's Project Manager to attend Progress Meetings.
- D. Subcontractors, materials suppliers, and others may be invited by Contractor to attend those project meetings in which their aspect of the work is involved.
- E. Minimum agenda:
- F. Review unresolved items of previous meetings.
- G. Review progress of the work, including status of submittals and approvals.
- H. Identify problems which affect planned progress, and develop corrective measures to regain planned schedule.
- I. Review Contractor's quality control.

J. Identify next and remaining inspection hold points, and determine an approximate inspection schedule.

K. Review Contractor's safety.

3.4 TELEPHONE COMMUNICATIONS

A. It is anticipated that there will be many occasions in the period between Government site inspections, when the COTR and Contractor need to communicate. Contractor shall provide telephone numbers of two responsible Contractor employees responsible for this project.

End of Section 01 20 00

SECTION 01 30 00 - SHOP DRAWINGS SUBMITTALS, PRODUCT DATA AND SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 specification sections apply to this section.

1.2 SUMMARY:

- A. This section specifies administrative and procedural requirements for submittals required for performance of the work, including:

1. Contractor's Construction Schedule
2. Sequence of Work
3. Shop Drawings
4. Product Data
5. Samples
6. I/O Point List
7. Network Diagrams
8. Controller Layouts
9. Integration Drawings

- B. Administrative Submittals: Refer to other Division 1 sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Permits
2. Applications for Payment
3. Performance and Payment Bonds
4. Insurance Certificates
5. List of Subcontractors

- C. The Schedule of Values submittal is included in Section "Applications for Payment". Inspection and tests reports are included in Divisions 2 - 26. Submittal of project photographs, if required, is included under section "Construction Photographs."

1.3 SUBMITTAL PROCEDURES:

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity. Coordinate transmittal of different types of

submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- B. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
- C. No extension of Contract time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the work to permit processing.
- D. Submittal Preparation: Place a permanent label or title block on each submittals for identification. Indicate the name of the entity that prepared each submittal on the label or title block. Each submittal shall be dated and contain name of project; description or names of equipment, materials, and items; and complete identification of locations at which materials or equipment are to be installed, reference to the section of specifications where it is specified, and drawing numbers, where shown.
- E. Submittal Transmittal: Each submittal shall be accompanied by transmittal letter containing project name, contractor's name, number of drawings, titles, and other pertinent information and data. On the form or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements. Information submitted without Contractor's certification will be returned without action. Work under separate Divisions shall be transmitted on a separate transmittal.

1.4 PERMITS, LICENSES, AND CERTIFICATES:

- A. For the Government's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

1.5 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:

- A. General: Submit newly prepared information drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of shop drawings. Standard information prepared without specific reference to the project is not considered shop drawings.
- B. Shop drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information: Dimensions, identification of products and materials included; compliance with specified standards; notation of coordination requirements; and

notation of dimensions established by field measurement.

- C. Collect product data into a single submittal for each element of construction or system. Product data includes printed information such as manufacturer's installation instruction, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where product data must be specifically prepared because standard printed data is not suitable for use, submit as shop drawings. Mark each copy to show applicable choices and options. Where printed product data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information: Manufacturer's printed recommendations; compliance with recognized trade association standards; compliance with recognized testing agency standards; application of testing agency labels and seals; notation of dimensions verified by field measurement; notation of coordination requirements. Do not submit product data until compliance with requirements of the Contract Documents has been confirmed.
- D. Where called for, submit full-size, fully fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern. Mount, display, or package samples in the manner specified to facilitate review of qualities indicated. Prepare samples to match the Engineer's sample. Include the following: Sample source, product name or name of manufacturer, compliance with recognized standards, and availability and delivery time.
- E. Submit samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
- F. Shop drawings shall be dated and contain name of project; description or names of equipment, materials and items; and complete identification of locations at which materials or equipment are to be installed; reference to the section of specifications where it is specified, and drawing numbers, where shown.
- G. Submission of shop drawings shall be accompanied by transmittal letter containing project name, contractor's name, number of drawings, titles and other pertinent information and data.
- H. Product Data: For items not requiring special shop drawings for manufacture, submit six (6) copies of manufacturer's catalog sheets showing illustrated cuts of item to be furnished, scale details, size dimensions, performance characteristics, capacities, wiring diagrams and controls, and all other pertinent information. Following the Engineer's review, three (3) copies will be returned to Contractor.
- I. Furnish copies of final submittal to installers, subcontractors, suppliers,

manufacturers, fabricators, and others required for performance of construction activities. Shop distribution on transmittal forms. Do not proceed with installation until an applicable copy of product data applicable is in the installer's possession. Do not permit use of unmarked copies of product data in connection with construction.

- J. Samples: Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three (3) sets; one will be returned marked with the action taken. Maintain sets of samples, as returned, at the project site for quality comparison throughout the course of construction. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- K. Shop Drawings: For all other shop drawings, submit legible, unfolded, correctable, double coated reproducible (positive side up sepia) transparencies, and one blue-line print which has been checked and signed by General Contractor or his designated agent, filling in required information, field dimensions, etc. of each drawing. Show drawings not properly submitted, checked, and signed will be returned to Contractor with no action taken. Each drawing shall have a clear space for stamps. Where phrase "by others" appears on shop drawings, General Contractor shall indicate on drawings who is to furnish material or operations so marked, before submittal. When resubmission of shop drawings is required, Contractor shall correct original tracing and submit a new transparency for review. After completion of review of each submission of shop drawing transparencies, Engineer will obtain prints of each transparency for his records and will then return transparencies and Contractor's check print to General Contractor. For use of all trades, General Contractor shall provide such number of prints as are required for field distribution. Do not use shop drawings without an appropriate Final Approval Stamp indicating action taken with construction.
- L. Shop drawings shall be submitted to the Engineer.
- M. Project Closeout: At completion of construction, furnish Owner with three (3) unused corrected copy of all shop drawings, manufacturer's diagrams, literature, etc.

PART 2 - PRODUCTS
(Not Applicable)

PART 3 - EXECUTION
(Not Applicable)

End of Section 01 30 00

SECTION 01 70 00 - PROJECT CLOSEOUT

PART 1: GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 specification sections apply to this section.

1.2 SUMMARY:

- A. This section specifies administrative and procedural requirements for closeout, including but not limited to:
 - 1. Inspection Procedures
 - 2. Project Record Document Submittal
 - 3. Operating and Maintenance Manual Submittal
 - 4. Submittal of Warranties
 - 5. Final Cleaning
 - 6. Administrative Closeout Procedures required by the General and Supplemental Conditions.
 - 7. Provide Owner with Control Graphics, Passwords, and four (4) licenses.
- B. Closeout requirements for specific construction activities are included in the appropriate sections in Divisions 2 through 26.

1.3 SUBSTANTIAL COMPLETION:

- A. Preliminary Procedures:
 - 1. Contractor shall send a letter with his attached punch list items to the architect requesting a substantial completion, before requesting inspection. Complete the following; list exceptions in the request:
 - 2. In the Application for Payment that coincides with, or first follows the date Substantial Completion is claimed, show 100 percent completion for the

portion of the work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.

3. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the work is not complete. Schedule of Values shall reflect the uncompleted items in the values requested.
4. Advise Owner of pending insurance change-over requirements.
5. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
6. Obtain and submit releases enabling the Owner unrestricted use of the work and access to services and utilities; include occupancy permits, operating certificates, and similar releases.
7. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
8. Deliver tools, spare parts, extra stock, and similar items.
9. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.
10. Complete start-up testing of systems and instruction of the Owner's operating and maintenance personnel. Discontinue or change-over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
11. Complete final clean-up requirements including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

B. Inspection Procedures:

1. On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the Certificate will be issued. The Architect will repeat inspection when requested and assured that the work has been substantially completed. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE:

A. Preliminary Procedures:

1. Before requesting final inspection for certification of final acceptance and final payment, complete the following; list exceptions in the request:
 - a. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include Certificates of Insurance for products and complete operations where required.
 - b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 - c. Submit a Certified Copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
 - d. Submit consent of surety to final payment.
 - e. Submit a final liquidated damages settlement statement.
 - f. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure:

1. The Architect will reinspect the work upon receipt of notice that the work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.
2. Upon completion of reinspection, the Architect will prepare a Certificate of Final Acceptance or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance. If necessary, reinspection will be repeated.

PART 3: EXECUTION

3.1 FINAL CLEANING:

A. General:

1. General cleaning during construction is required by the General Conditions.

B. Cleaning:

1. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to be condition expected in a normal, commercial building cleaning and maintenance program.
2. Comply with manufacturer's instructions. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
3. Remove labels that are not permanent labels. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
4. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors mopped clean. Vacuum carpeted surfaces.
5. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
6. Clean the site, including landscape development areas of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth even-textured surface.
7. Clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

- C. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner. Where extra materials of value remaining after completion of associate work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 01 70 00

SECTION 01 72 00 - RECORD DRAWINGS

PART 1 - GENERAL

1.1 SCOPE

- A. The requirements for recording deviations from the contract drawings are described in this Section. The requirements for as-built drawings are described in this section.

1.2 SUBMITTALS

- A. Submit the following to the Government in accordance with Section 01 30 00, Submittals. Submittals are for approval.
- B. One set of marked-up record drawings shall be submitted to the Contracting Officer's Technical Representative at the Final Inspection Hold Point of the work.
- C. Certification stating that record drawings are current as of the period invoiced, as support documentation for each progress invoice.

1.3 CONTRACT REQUIREMENTS

- A. The following clause shall apply to this contract.
 - 1. FAR 52.236-21 Specifications and Drawings for Construction

PART 2 - PRODUCTS

2.1 JOBSITE RECORD DRAWINGS

- A. Contractor shall maintain at the jobsite, a set of full-size current drawings marked to show any deviations which have been made, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the contract drawings. Drawings shall also be marked to indicate work changed by contract modifications or no cost field adjustments.

PART 3 - EXECUTION

3.1 VARIATIONS FROM CONTRACT DRAWINGS

- A. For buried or concealed construction, drawings shall be marked up for variations of more than 3 inches (75mm) horizontally or vertically. For aboveground unconcealed construction, drawings shall be marked for variations of more than 6" (150 mm) horizontally or vertically. Changes by contract modification or field adjustment may

be indicated by clouding the drawing and referencing the change. e.g. "Work done per P.C. 4, Mod. No. 1."

End of Section 01 72 00

SECTION 23 00 10 - MECHANICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions) and Division 00 and 01 as appropriate, apply to the Work specified in this Section.
- B. Refer to all Sections, as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding all work.

1.2 SCOPE OF WORK

- A. Furnish all labor and material necessary to provide and install the complete mechanical portion of this Contract as called for herein and on accompanying drawings. Parts of the mechanical division may be bid separately or in combination, at the Contractor's option; however, it shall be the responsibility of the Contractor to assure himself that all items covered in the Mechanical Division have been included if he chooses to accept separate bids.
- B. It is the intent of this specification that all materials with temperatures below ambient conditions or conveying any fluid/gas at temperatures below 70 deg. F be insulated to completely eliminate the potential for condensation. Unless specified elsewhere in these specifications, for materials that do not require and requiring occasional access, use 2" thick closed cell rubberized insulation with re-sealable fabric joints (hook and loop type).
- C. It is the intention of these specifications that all mechanical systems shall be furnished complete with all necessary controls, equipment, etc. necessary to provide a satisfactory installation that is complete and in good working order.
- D. Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the Contractor from the responsibility of installing his work to meet the conditions.

1.3 BIDDING REQUIREMENTS AND RESPONSIBILITIES

- A. Prime bidder is responsible for all work, of all trades and sub-contractors bidding this project. It is the prime bidder's responsibility, prior to submitting a bid to ensure that sub-contractors coordinate all aspects of the work between trades, sub-contractors, etc. to the fullest extent possible.

- B. Prime bidder shall ensure that all sub-contractors, suppliers, equipment vendors, etc., obtain all necessary and pertinent contract document information pertaining to their work prior to the submission of a bid.
- C. Bidders of all or any portions of this section or division are required to review all contract documents.
- D. Bidders of all or any portions of this section or division, by furnishing a bid on a portion of the prime contract are indicating that they have received all contract documents and coordinated services provided under their portion of the work with the prime bidder; they are indicating that they have expressed any pertinent questions (which would result from a detailed, thorough review of the entire set of contract documents) to the prime bidder in accordance with Division 01 requirements, prior to bidding.
- E. All timely, pertinent, questions provided in writing prior to bids, in accordance with Division 01 requirements, will be clarified, defined, or otherwise explained in written addendum and / or addendums prior to bids, in accordance in Division 01 requirements.
- F. It is not the intention of these contract documents to leave any issue relating to coordination between trades or sub-contractors vaguely defined. The intention is to define all issues, coordination matters, equipment requirements, sizes, routing, etc. to the satisfaction of the prime bidder, prior to receipt of bids.
- G. Bidders of all or any portions of this section or division, by virtue of the submission of a bid to the prime bidder, are indicating that they have reviewed the entire set of contract documents with due diligence and regard for the Owner's desire for a comprehensive and complete bid proposal; that they have expressed all concerns or questions requiring clarification on matters of coordination between trades and/or sub-contractors; that they have expressed any such concerns or questions in writing in accordance with Division 01 requirements.
- H. Prime bidders, by submission of a comprehensive bid on the project are indicating that the subcontractors selected in their bid have complied with all Division 01 requirements, that they have indicated in writing, prior to bidding, all questions or concerns requiring clarification and/or explanation and have documented any and all specific exclusions involving work that would generally be considered to be work of their trade. The prime bidder shall coordinate all work so that anything excluded by the bidder of all or any portions of this section or division, have been addressed prior to bids in one of the following manners:
 - 1. The work has been confirmed, by the prime bidder, to be work of another trade or subcontractor (whose proposal is also being accepted).
 - a. Clarification of the matter has been made through the prime design professional via written addendum and is clearly and mutually

understood by the prime bidder and the party raising the issue/question, or seeking clarification.

- b. The work has been accepted as the responsibility of the Contractor directly.

1.4 POST-BID VALUE ENGINEERING (V/E):

- A. Value Engineering (V/E) defined: For purposes of Division 23 Specifications, in accordance with all Division 01 Requirements and all Terms and Conditions of proposed contract between Owner and Contractor, Value Engineering (V/E) shall be defined as a “post bid” process, whereby the apparent low bidder (having submitted a proposal in strict accordance with Project Contract Documents, that exceeds the Owner’s available funds for construction [AFC] for this specified project offers proposed changes (“Value Engineering”) to the work. This proposed value engineering may alter or adjust aforementioned contract document requirements in exchange for financial and/or other consideration (in response to a specific request by the Owner/Owner’s Representative).
- B. Value Engineering may not be considered, prior to scheduled receipt and review of Bid Proposals by the Owner and an official written request from the Owner/Owner’s Representative expressing the Owner’s desire to consider value engineering items.
- C. While it may be in the project Owner’s interest to consider the first cost money saving that may be generated via alternatives and options generated via participation in Value Engineering, Division 23 contractor shall realize that substantive offers of Value Engineering (V/E), if accepted by the Owner, constitute a design-build agreement (offer and acceptance) with the owner, and drastically change the design concept of the project, as developed by the Professional of Record identified on the Contract Documents.
- D. Should Contractor offer, and the owner accept value engineering options that alter aspects of the system design, equipment, performance and/or performance verification or monitoring of respective systems, Contractor shall provide duly licensed professional engineering consultants working on behalf of the Contractor (including sub-contractors and equipment vendors/manufacturers) to review, approve and take professional responsibility for performance and suitability of V/E hybrid systems, materials or operational changes related to respective V/E items. The Contractor’s licensed professional engineering consultants and the Contractor assume any and all responsibility for the design and suitability in terms of performance, of hybrid systems installed, as Contractor’s Professional of Record, absolving the original project Professional of Record (identified on the original Contract Documents, released for the original project Bid/Negotiation) from responsibility for the V/E hybrid systems portion of the work.
- E. Division 23 Contractor, via the offer and acceptance of value engineering items on the project agrees to provide professional engineering design services and take full and complete responsibility for the hybrid design. Further, the Contractor’s (V/E

Items) professional of record (either employees, or independent consultants to the Contractor) through the offer and acceptance of V/E items, agree to indemnify and hold harmless the project owner, the owner's original A/E team (Professional of Record on behalf of the owner for the original Contract Documents) their heirs and assigns in regard to the V/E changes and their impact on the Division 23 systems altered, affected or modified, in whole or in part. The Professional of Record shown on the original Contract Documents in regard to the systems altered, adjusted, revised, modified or otherwise affected by the value engineering items implemented, shall be absolved of design responsibility as a result of implementation of V/E items, and their original use of Engineering Seals used for original Contract Documents, shall not apply.

1.5 MATERIAL AND EQUIPMENT

- A. Specific reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may at his option use any article, device, product, material, fixture, form or type of construction which in the judgment of the Engineer expressed in writing is equal to that specified.
- B. Coordinate and properly relate all Work of this Division to building structure and work of all other trades.
- C. Visit premises and become thoroughly familiar with existing conditions. Advise Engineer/Owner of any discrepancies prior to Bid Date in accordance with Division 00.
- D. Provide storage and protection for all equipment and materials in accordance with requirements of Division 00 and Division 01. Replace any equipment and materials damaged by improper handling, storage, or protection, at no additional cost to Owner.
- E. Keep premises clean in accordance with requirements of Division 00 and Division 01.

1.6 DRAWINGS AND SPECIFICATIONS

- A. The specific intent of these Contract Documents is to provide the various systems, equipment, etc. to the Owner complete and in a thoroughly calibrated and functional condition.
- B. The Drawings shall not be construed as shop drawings. In the event of a possible interference with piping or equipment of another trade, items requiring set grade and elevations shall have precedence over other items. Should any major interference develop, immediately notify the owner and Engineer.

- C. In laying out Work, refer to Contract Documents at all times in order to avoid interference and undue delays in the progress of the Work.

1.7 CODES AND REGULATIONS

- A. Work shall be in full accord with the most stringent interpretation of the State Sanitary Code, local ordinances, building codes, and other applicable national, local, and state regulations.
- B. Equipment shall conform to requirements and recommendations of the National Bureau of Fire Underwriters and National Fire Protection Association (NFPA).
- C. Items provided under this Division shall comply with the American National Standards Institute (ANSI) "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People," ANSI A 117.1
- D. In the possible event of conflict between codes or regulations and Contract Documents, notify the Engineer immediately. Codes and Standards represent minimum requirements. These specifications may exceed requirements in various codes and standards.

1.8 FEES, PERMITS, AND TAXES

- A. Obtain and pay for permits required for the Work of this Division. Pay fees in connection therewith, including necessary inspection fees.
- B. Pay any and all taxes levied for Work of this Division, including municipal and/or state sales tax where applicable.

1.9 MANUFACTURER'S DIRECTIONS

- A. Install and operate equipment and material in strict accord with manufacturer's installation and operating instructions. The manufacturer's instructions shall become part of the Contract Documents and shall supplement Drawings and Specifications.

1.10 SUBMITTAL DATA

- A. Submit shop drawings, project data, and samples in accordance with requirements of Division 01.
- B. Shop drawings shall consist of published ratings or capacity data, detailed construction drawings for fabricated items, wiring and control diagrams, performance curves, installation instructions, manufacturer's installation drawings, and other pertinent data. Submit drawings showing revisions to equipment layouts due to use of alternate or substitute equipment.

- C. Where approved manufacturers and suppliers of equipment, materials, etc. are unable to fully comply with Contract Document requirements, specifically call such deviations to attention of Engineer on submittals. Type deviations on a separate sheet; underlined statements or notations on standard brochures, equipment fly sheets, etc. will not be accepted.
- D. Approval of submittals shall not relieve Contractor from furnishing required quantities and verifying dimensions. In addition, approval shall not waive original intent of Contract Documents.
- E. Failure to obtain written approval of equipment shall be considered sufficient grounds for rejection of said equipment regardless of the stage of completion of the project.

1.11 PROJECT RECORD DOCUMENTS

- A. Keep Project Record Documents in accordance with requirements of Division 00 and/or Division 01.
- B. During construction period, keep accurate records of installations made under this Division, paying particular attention to major interior and exterior underground and concealed piping, ductwork, etc.

1.12 EXCAVATING AND BACKFILLING

- A. Provide excavating and backfilling necessary for Work of this Division. Comply with provisions of Division 31, Earth Work, if applicable.
- B. Trenches shall be inspected by Code Authorities and/or Owner's Representative before and after piping is laid. Give Owner's Representative 24-hour notice for each inspection. If any trenches are filled without Owner's Representative inspection and as subsequently found to be deficient, the trenches shall be uncovered.
- C. Inspected, and then re-filled, if requested by Owner's Representative.
- D. Provide minimum 18 inches of cover or in compliance with local published frost line data (if greater than 18 inches) to finish grades or paving at water piping.
- E. For piping, provide bell holes at trench bottom to assure uniform bearing. Accurately grade trench bottoms by instrument before laying any pipe.
- F. Protect and maintain trenches in dry condition until piping has been inspected and approved. Immediately after approval, backfill trenches in tamped layers.
- G. Compact fill to satisfaction of E and/or Owner's Representative.

1.13 CUTTING AND PATCHING

- A. Comply with requirements of Division 00 and Division 01 regarding cutting and patching. Locate and timely install sleeves as required to minimize cutting and patching.
- B. Cutting, fitting, repairing, patching, and finishing of Work shall be done by craftsmen skilled in their respective trades. Where cutting is required, cut in such a manner as not to weaken structure, partitions, or floors. Holes required to be cut must be cut or drilled without breaking out around the holes. Where patching is necessary in finished areas of the building, the Owner/Engineer will determine the extent of such patching and refinishing.
- C. Repairing Roadways and Walks: Coordinate all roadway work with authorities having jurisdiction. Cut and/or bore under roadways for connection of utilities as required. Coordinate work through Contractor. Where this Contract cuts or breaks roadways, or walks to lay the piping, he shall repair or replace these sections to match existing, unless specifically identified as the responsibility of others.

1.14 GUARANTEE

- A. The Contractor shall guarantee all materials, equipment and workmanship for a period of one (1) year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc. necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters. Warranties exceeding one (1) year are hereinafter specified with individual pieces of equipment.

PART 2 - PRODUCTS

2.1 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Furnish manufacturers operating and maintenance instructions, parts lists and sources of supply for replacements in accordance with Division 01.
- B. Provide the following operations and maintenance data:
 - 1. Complete sets of final and correct shop drawings, maintenance and replacement parts manuals, and operating instructions, for equipment supplied.
 - 2. Bind each set within a common binder. Index and organize with a table of contents, to permit quick and convenient reference.
 - 3. Provide a minimum of five (5) days of instruction in operation and maintenance of equipment to Owner's Representative maintenance force. Design a 2-week period, convenient to Owner's Representative, during which qualified personnel, including manufacturers' technicians and authorized

factory trainers shall be available for Engineers/Owner's Representative instruction.

2.2 RECORD DRAWINGS

- A. Provide "Record Drawings" in accordance with the Division 01, General Requirements, indicating in a neat and accurate manner a complete record of all revisions of the original design of the work.
 - 1. Include all changes and provide for an accurate record, on reproductions of the Contract drawings or on appropriate shop drawings, all deviations between the work shown and work installed.
- B. Submit for approval bound sets of the required drawings, manuals and operating instructions.

2.3 IDENTIFICATION MARKINGS

- A. General: Apply identification tags, markers, etc. after insulation and field painting are completed.

PART 3 - EXECUTION

3.1 COORDINATION AND LAYOUT

- A. Study Drawings and Specifications to insure completeness of work required.
 - 1. Include supplementary items normal to manufacturers' requirements or standard accepted trade practices as necessary to complete work, though not specifically indicated or specified.
- B. Examine materials to which work is to be applied and notify the Engineers/Owner's Representative, in writing, of any conditions existing which are detrimental to proper and expeditious installation of work.
 - 1. Starting of work shall be construed as acceptance of conditions.

3.2 MAINTENANCE OF EQUIPMENT AND SYSTEM PRIOR TO FINAL ACCEPTANCE

- A. Maintain all installed equipment and systems in accordance with the manufacturer's published instructions, until final acceptance by the Engineers/Owner's Representative, and take such measures as necessary to insure adequate protection of all equipment and materials during delivery, storage, installation, operating and shut-down conditions.

1. This responsibility shall include all provisions required to meet the conditions incidental to the delays pending final test of systems and equipment.
 2. Maintain and periodically clean all equipment until final acceptance.
- B. After installation of systems has been completed, operate the system to determine the capability of the equipment and controls to conform to the requirements of the drawings and specifications prior to performance testing.

3.3 DAMAGED EQUIPMENT

- A. Any and all equipment, parts, components, etc., provided under this division which is damaged by the Contract or which is received in damaged condition during shipping, transit, handling, or during installation shall be replaced. Dented, or damaged non-structural equipment jackets or surface casings such as but not limited to water heater jackets, boiler jackets, chiller insulation jackets, etc., shall either be repaired or replaced at the option of the Owner's Representative. If repaired, the finished product shall match original equipment exactly.

3.4 EQUIPMENT INSTALLATION

- A. Equipment startup.
1. Contractor shall provide qualified start-up personnel, certified by equipment manufacturer, to inspect and approve equipment and to supervise the operating tests of the equipment. System commissioning shall be performed in accordance with ASHRAE standards.
- B. Equipment and system test operation.
1. Note: Equipment and system test operation is separate and apart from additional requirements of training and demonstration. Refer to individual sections for requirements regarding training and demonstration. Notify the Owner's Representative in advance of beginning the equipment and system test operation. All equipment testing/demonstration shall be performed in the presence of the Engineer/Owner's Representative. A minimum of seven (7) days notice is required before equipment and system testing.
 2. Each piece of equipment shall be operated in its system as long as required to provide proper functioning.
 3. Perform an operating test of each complete system for twenty-four hours continuous operation as a minimum, or as long as required to provide coordination and proper functioning of all related systems and controls.
 4. The operating criteria for each test shall be determined in advance with the Owner's Representative approval whenever seasonal conditions shall not produce a full design load on any equipment or system.
 5. Certify to the Owner's Representative that all equipment is functioning properly.

6. Should the apparatus fail to meet the Contract requirements, adjust, repair or replace all defective or inoperative parts and again conduct the complete performance tests.

3.5 WORKMANSHIP

- A. Perform all work in a practical, neat and workmanlike manner with mechanics skilled in work, and using the best practices of the trade involved.
- B. Workmanship or materials not meeting with requirements of the specifications and drawings and satisfaction of the Engineers/Owner's Representative shall be rejected and immediately replaced in an acceptable manner, without additional cost to the Engineer/Owner's Representative.

3.6 USE OF PREMISES AND CLEANING

- A. Remove and dispose of all waste materials and rubbish due to all construction operations under the Contract, except as otherwise noted, and keep the building free from rubbish and dirt caused by his and/or his Sub-Contractors' employees.
 1. During the entire progress of the work, rubbish removal shall be made frequently so as to prevent any potential safety or health hazard.
- B. Upon completion of the work, remove all protection, paint, putty, and other stains from all fixtures and glass and leave the premises thoroughly broom cleaned.

3.7 CUTTING, ALTERING AND PATCHING

- A. Provide all cutting, chasing, drilling, altering and rough patching required for the work of this division.
- B. Do all shoring, bracing, cutting, patching, piecing out, filling in, repairing and refinishing of all present work as made necessary by the alteration and the installation of new work.
- C. All holes and openings occurring in the existing floors after equipment, partitions, floors, steel work, conduits and pipes are removed or installed shall be closed up with materials similar to the adjacent work.
- D. Include all cutting, repairing and patching in connection with the work that may be required to make the several parts come together properly and fit it to receive or be received by the work of other trades, as shown on the drawings and/or specified, or reasonably implied by the drawings and specifications.
- E. All repairing, patching, piecing-out, filling-in, restoring and refinishing shall be neatly done by mechanics skilled in their trade to leave same in condition satisfactory to the Engineers/Owner's Representative.

- F. Materials and their methods of application for patching shall comply with applicable requirements of the specifications.
 - 1. Materials and workmanship not covered by the specifications and items of work exposed to view adjoining existing work to remain shall conform to similar materials and workmanship existing in or adjacent to the spaces to be altered.
- G. Cutting, repairing and patching shall include all items shown on the drawings, specified in the specifications or required by the installation of new work or the removal of existing work.
- H. Remove partitions, walls, suspended ceilings, etc., as necessary to perform the required alterations or new construction work.
 - 1. Avoid damage to construction and finishes that are to remain.
- I. Protect and be responsible for the existing building, facilities and improvements if any.
 - 1. Any disturbance or damage to the work, the existing building, and improvements, or any impairments of facilities resulting from the construction operations, shall be promptly rectified, with the disturbed, damaged, or impaired work, restored, repaired or replaced at no extra cost.
- J. All alterations which are not indicated on the drawings nor specified herein but necessary to make good existing work disturbed by reason of the work shall be restored to a condition satisfactory to the Engineers/Owner's Representative.
- K. All holes in masonry floors and walls are to be core drilled.
- L. Disturbed concrete and /or cement floor areas shall be patched with approved type latex mortar.
 - 1. When cement mortar is used for patching, the surfaces shall be depressed a minimum depth of one inch (1").
- M. Reinstall all weather protection work in waterproof manner.
- N. Temporary openings.
 - 1. All temporary openings cut in walls, floors or ceilings for pipe or duct work shall be closed off with transite or an equally non-combustible material except when mechanics are actually working at the particular opening.

END OF SECTION 23 00 10

SECTION 23 00 20 – BASIC MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions) and Division 00 and 01 as appropriate, apply to the Work specified in this Section.
- B. Refer to all Sections, as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding all work.

1.2 SCOPE OF WORK

- A. This Section specifies the basic requirements for mechanical installations and includes requirements common to more than one section of Division 23. It expands and supplements the requirements specified in sections of Division 01.

1.3 ACCESSIBILITY

- A. Install equipment and materials to provide required access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing. Verify exact location and placement of all access panels with/through Architect prior to any equipment rough-in.

1.4 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment specifications in Divisions 23 for rough-in requirements.

1.5 MECHANICAL INSTALLATIONS

- A. Coordinate mechanical equipment and materials installation with other building components.
- B. Verify all dimensions by field measurements.
- C. Arrange for chases, slots, and openings in other building components to allow for mechanical installations.

- D. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing-in the building.
- E. Coordinate the cutting and patching of building components to accommodate the installation of mechanical equipment and materials.
- F. Where mounting heights are not detailed or dimensioned, install mechanical services and overhead equipment to provide the maximum headroom possible.
- G. Install mechanical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
- H. Coordinate the installation of mechanical materials and equipment above ceilings with suspension system, light fixtures, and other installations.

1.6 CUTTING PATCHING AND SEALING OF PENETRATIONS

- A. This Article specifies the cutting and patching of mechanical equipment, components, and materials to include removal and legal disposal of selected materials, components, and equipment.
- B. Refer to the Division 01 Section: CUTTING AND PATCHING for general requirements for cutting and patching.
- C. Refer to Division 26 Section for BASIC ELECTRICAL REQUIREMENTS for requirements for cutting and patching electrical equipment, components, and materials.
- D. Do not endanger or damage installed Work through procedures and processes of cutting and patching.
- E. Arrange for repairs required to restore other work, because of damage caused as a result of mechanical installations.
- F. No additional compensation will be authorized for cutting and patching Work that is necessitated by ill-timed, defective, or non-conforming installations.
- G. Perform cutting, fitting, and patching of mechanical equipment and materials required to:
 - 1. uncover Work to provide for installation of ill-timed Work;
 - 2. remove and replace defective Work;
 - 3. remove and replace Work not conforming to requirements of the Contract Documents;

4. remove samples of installed Work as specified for testing;
 5. install equipment and materials in existing structures;
 6. upon written instructions from the Architect, uncover and restore Work to provide for Architect observation of concealed Work.
- H. Cut, remove and legally dispose of selected mechanical equipment, components, and materials as indicated.
- I. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
- J. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

1.7 MECHANICAL SUBMITTALS

- A. Refer to the Conditions of the Contract (General and Supplementary) and Division 01 Section: Submittal Procedures for submittal definitions, requirements, and procedures.
- B. Submittal of bound shop drawings, product data, and samples will be accepted only when submitted by the Contractor. Data submitted from subcontractors and material suppliers directly to the Architect will not be processed.

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Refer to the Instructions to Bidders for requirements in selecting products.

2.2 PRODUCT LISTING

- A. Prepare listing of major mechanical equipment and materials for the project. A sample schedule is included at the end of this Section to complete this requirement.
- B. Provide all information requested.
- C. Submit this listing as a part of the submittal requirement specified in the Division 01.
- D. Provide products which are compatible within systems and other connected items.

2.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.

- B. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage.

2.4 RECORD DOCUMENTS

- A. Refer to the Division 01 Section: Closeout Procedures for requirements. The following paragraphs supplement the requirements of Division 01.
- B. Mark Specifications to indicate approved substitutions, Change Orders, actual equipment and materials used.

2.5 OPERATION AND MAINTENANCE DATA

- A. Refer to the Division 01 Section for Project Closeout or Operation and Maintenance Data for procedures and requirements for preparation and submittal of maintenance manuals.
- B. In addition to the information required by Division 01 for Maintenance Data, include the following information:
 - 1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
 - 2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
 - 3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
 - 4. Servicing instructions and lubrication charts and schedules.
- C. Use multiple binders if a single binder would exceed 2-1/2 inches in thickness; arrange the data in the same sequence as the specification sections; delete or mark through extraneous data.
- D. Provide tab pages with metal or plastic reinforced holes to separate each major item or closely related group of items with typed item names on the tabs. Supply a table of contents at the beginning of each volume listing at items, the manufacturers and the name, address and phone number of the nearest authorized service representative.
- E. A copy of the completed manual shall be submitted to the Contracting Officer one week before the user instruction for perusal. This copy will be returned to the Contractor with the user, comments. These comments shall be incorporated in the final copies of the manual. The Contractor shall obtain a signed receipt for the manual.

F. All contents shall be project specific, typewritten.

2.6 WARRANTIES

- A. Refer to individual equipment specifications for warranty requirements.
- B. Compile and assemble the warranties specified in Division 23, into a separated set of vinyl covered, three ring binders, tabulated and indexed for easy reference.
- C. Provide complete warranty information for each item to include product or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

2.7 CLEANING

- A. Refer to the Division 01 Section for general requirements for final cleaning.

PART 3 - EXECUTION

3.1 WARRANTIES

- A. Refer to the Division 01 Section for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.
- B. Compile and assemble the warranties specified in Division 23, into a separated set of vinyl covered, three ring binders, tabulated and indexed for easy reference.
- C. Provide complete warranty information for each item to include product or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

END OF SECTION 23 00 20

SECTION 23 09 00 – BUILDING AUTOMATION SYSTEM

PART 1 - GENERAL

1.1.1.1 SUMMARY

- A. This Section includes controls equipment and components.
- B. This Section includes an Energy Reporting and Data Analytics software package.

1.1.1.2 ABBREVIATIONS

- A. AAC: Advanced Application Controller
- B. AHU: Air Handling Unit.
- C. ALN: Automation Level Network
- D. ASC: Application Specific Controller
- E. ASHRAE: American Society of Heating Refrigerating and Air-Conditioning Engineers
- F. BACnet SC: Building Automation Control Network Secure Connect
- G. BAS: Building Automation System
- H. BC: Building Controller
- I. BIBB: BACnet Interoperability Building Blocks
- J. BIM: Building Information Modeling
- K. BMS: Building Management System.
- L. CFM: Cubic Feet per Minute.
- M. DCIM: Data Center Infrastructure Management
- N. DCV: Demand Controlled Ventilation
- O. DDC: Direct digital controls
- P. EIA: Electronics Industries Alliance

- Q. EMI: Electro-Magnetic Interference
- R. EP: Electric-to-Pneumatic
- S. EPMS: Electrical Power Monitoring System
- T. FAS: Fire Alarm System.
- U. FLN: Floor Level Network
- V. FCU: Fan Coil Unit
- W. HMI: Human Machine Interface
- X. HVAC: Heating, Ventilating and Air Conditioning.
- Y. IEEE: Institute of Electrical and Electronic Engineers
- Z. I/O: Input/Output
- AA. IP: Internet Protocol
- BB. IT: Information Technology
- CC. LAN: Local area network.
- DD. LCD: Liquid Crystal Display
- EE. LED: Light Emitting Diode
- FF. MER: Mechanical Equipment Room.
- GG. MLN: Management Level Network
- HH. MS/TP: Master-slave/token-passing.
- II. NEMA: National Electric Manufacturers' Association
- JJ. NFPA: National Fire Protection Association
- KK. OEM: Operator Equipment Manufacturer
- LL. PC: Personal Computer
- MM. PICS: Protocol Implementation Conformance Statement
- NN. PID: Proportional Integral Derivative.
- OO. POT: Portable Operators Terminal.

- PP. RAM: Random Access Memory
- QQ. RFI: Radio Frequency Interference
- RR. RTD: Resistance Temperature Device
- SS. SNMP: Simple Network Management Protocol
- TT. TAB: Testing and Balancing
- UU. TCP: Transfer Control Protocol
- VV. UDP: User Datagram Protocol
- WW. UL: Underwriters Laboratories
- XX. UPS: Uninterruptable Power Supply
- YY. VAV: Variable Air Volume
- ZZ. VFD: Variable Frequency Drive.
- AAA. WAN: Wide Area Network.

1.1.1.3 DEFINITIONS

- A. BACnet: An industry standard data communication protocol for Building Automation and Control Networks. Refer to the latest version of AHSRAE standard 135.
- B. BACnet Secure Connect: As an addendum to the BACnet protocol, it is a secure, encrypted datalink layer that is specifically designed to meet the requirements of managed IP infrastructures.
- C. Scope Terminology
 - 1. Provide = Furnish equipment, engineer, program and install
 - 2. Furnish = Furnish equipment, engineer and program
 - 3. Mount = securely fasten or pipe
 - 4. Install = mount and wire
 - 5. Wire = wire only

1.1.1.4 WORK INCLUDED

- A. The BAS Contractor shall provide a complete and operational system that will perform the sequences of operation as described herein.

- B. Furnish a complete distributed direct digital control system in accordance with this specification section. This includes all system controllers, logic controllers, and all input/output devices. Items of work included are as follows:
 - 1. Provide a submittal that meets the requirements below for approval.
 - 2. Coordinate installation schedule with the mechanical contractor and general contractor.
 - 3. Provide installation of all panels and devices unless otherwise stated.
 - 4. Provide power for panels and control devices unless otherwise stated.
 - 5. Provide all low voltage control wiring for the DDC system.
 - 6. Provide miscellaneous control wiring for HVAC and related systems regardless of voltage.
 - 7. Provide engineering and technician labor to program and commission software for each system and operator interface. Submit commissioning reports for approval.
 - 8. Provide testing, demonstration and training as specified below.

- C. The installation of the control system shall be performed under the direct supervision of the controls manufacturer with the shop drawings, flow diagrams, bill of materials, component designation, or identification number and sequence of operation all bearing the name of the manufacturer.

- D. Provide Energy Reporting and Data Analytics software package.

1.1.1.5 QUALITY ASSURANCE

- A. Codes
 - 1. Perform all wiring in accordance with Division 26, NEC, local codes and Owner's requirements.
 - 2. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - 3. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilation Systems."
 - 4. Comply with ASHRAE 135-2010 BACnet: A Data Communication Protocol for Building Automation and Control Networks.
 - 5. Comply with BACnet Secure Connect Communication: A secure, encrypted datalink layer that is specifically designed to meet the requirements of managed IP infrastructures.
 - 6. Comply with ASHRAE 90.1- Energy Standard for Buildings Except Low-Rise Residential Buildings.
 - 7. All equipment shall be UL listed and approved and shall meet with all applicable NFPA standards, including UL 916 - PAZX Energy Management Systems,
 - a. Provide written approvals and certifications after installation has been completed.
 - 8. All electronic equipment shall conform to the requirements of FCC Regulation, Part 15, Governing Radio Frequency Electromagnetic Interference and be so labeled.

9. The manufacturer of the building automation system shall provide documentation supporting compliance with ISO-9002 (Model for Quality Assurance in Production, Installation, and Servicing) and ISO-14001 (The application of well-accepted business management principles to the environment). The intent of this specification requirement is to ensure that the products from the manufacturer are delivered through a Quality System and Framework that will assure consistency in the products delivered for this project.
- B. Qualifications
1. Installing contractor shall be in the business of installing and servicing DDC controls for mechanical systems, temperature and ventilation control, environmental control, lighting control, access and security, life safety and energy management as their primary business.
 2. Installer Qualifications: An experienced installer who is the authorized representative of the automatic control system manufacturer for both installation and maintenance of controls required for this Project.
 3. Engineering, drafting, programming, and graphics generation shall be performed by Siemens qualified engineers and technicians directly employed by the Building Automation System Contractor.
 4. Supervision, checkout and commissioning of the system shall be by the local branch engineers and technicians directly employed by the Building Automation System Contractor. They shall perform commissioning and complete testing of the BAS system.
- C. The BAS contractor shall maintain a service organization consisting of factory trained service personnel and provide a list of ten (10) projects, similar in size and scope to this project, completed within the last five years.
- D. Final determination of compliance with these specifications shall rest solely with the Engineers and Owner who will require proof of prior satisfactory performance.
- E. For any BAS system and equipment submitted for approval, the BAS contractor shall state what, if any, specific points of system operation differ from these specifications.
- F. All portions of the system must be designed, furnished, installed, commissioned and serviced by manufacturer approved, factory trained employees.
- G. The system shall have a documented history of compatibility by design for a minimum of 15 years. Future compatibility shall be supported for no less than 10 years. Compatibility shall be defined as the ability for any existing control system component including but not limited to building controllers, advanced application controllers, application specific, personal operator workstations and portable operator's terminals, to be connected and directly communicate with any new BAS system equipment without bridges, routers or protocol converters.

1.1.1.6 DELIVERY, STORAGE, AND HANDLING

- A. Factory-Mounted Components: Where control devices specified in this Section are indicated to be factory mounted on equipment, arrange for shipping of control devices to unit manufacturer.
- B. Deliver, store, protect, and handle products to site under provisions of the contract Documents. Coordinate all site deliveries with Construction project Manager.
- C. Protect products from construction operations, dust, and debris, by storing materials inside, protected from weather in a conditioned space.

1.1.1.7 COORDINATION

- A. Coordinate IP drops, network connections, user interfaces, firewall, etc with Owner's IT representative.
- B. Coordinate location of thermostats, humidistats, panels, and other exposed control components with plans and room details before installation.
- C. Coordinate equipment with Division 28 "Fire Alarm" to achieve compatibility with equipment that interfaces with that system.
- D. Coordinate power for control units and operator workstation with electrical contractor.
- E. Coordinate equipment with provider of starters and drives to achieve compatibility with motor starter control coils and VFD control wiring.
- F. Coordinate scheduling with the mechanical contractor and general contractor. Submit a schedule for approval based upon the installation schedule of the mechanical equipment.
- G. Coordinate installation of taps, valves, airflow stations, etc. with the mechanical contractor.

PART 2 - PRODUCTS

2.1.1.1 SYSTEM DESCRIPTION

- A. The Building Automation System (BAS) contractor shall furnish and install a networked system of HVAC controls. The contractor shall incorporate direct digital control (DDC) for central plant equipment, building ventilation equipment, supplemental heating and cooling equipment, and terminal units.

- B. Provide networking to new DDC equipment using industry accepted communication standards. System shall utilize BACnet communication according to ANSI/ASHRAE standard 135-2010 for interoperability with smart equipment, for the main IP communication trunk to the BAS Server and for peer-to-peer communication between DDC panels and devices. The system shall not be limited to only standard protocols, but shall also be able to integrate to a wide variety of third-party devices and applications via drivers and gateways.
- C. Provide standalone controls where called for on the drawings or sequences.
- D. Provide an Energy Reporting and Data Analytics packages described herein.
- E. The BAS shall be the Siemens DESIGO CC system as manufactured by Siemens Industry, Inc.

2.1.1.2 BUILDING AUTOMATION SYSTEM NETWORK

- A. All networked control products provided for this project shall be comprised of an industry standard open protocol internetwork. Communication involving control components (i.e. all types of controllers and operator interfaces) shall conform to ASHRAE 135-2010 BACnet standard. Networks and protocols proprietary to one company or distributed by one company are prohibited.
- B. Access to system data shall not be restricted by the hardware configuration of the building management system. The hardware configuration of the BMS network shall be totally transparent to the user when accessing data or developing control programs.
 - 1. Software applications, features, and functionality, including administrative configurations, shall not be separated into several network control engines working together.
- C. BAS Server shall be capable of simultaneous direct connection and communication with BACnet/SC, BACnet/IP, OPC and TCP/IP corporate level networks without the use of interposing devices.
- D. Any break in Ethernet communication from the server to the controllers on the Primary Network shall result in a notification at the server.
- E. Any break in Ethernet communication between the server and standard client workstations on the Primary Network shall result in a notification at each workstation.
- F. The network architecture shall consist of three levels of networks:
 - 1. The Management Level Network (MLN) shall utilize BACnet/IP over Ethernet along with other standardized protocol, such as web services, html, JAVA, SOAP, XML, etc., to transmit data to non-BAS software applications and databases. The BAS Server and Operator Workstations shall reside on this level of the network architecture.

2. The Automation Level Network (ALN) shall utilize BACnet/IP over Ethernet. It shall connect BACnet Building Controllers to the BAS Server and Operator Workstations. Controllers for central plant equipment and large infrastructure air handlers shall reside on the ALN backbone BACnet/IP network. The building's Ethernet LAN shall be utilized for the ALN backbone and all ALN devices shall be connected to the building's LAN. Coordinate IP drops with Owner. All ALN devices shall support BACnet/SC or be BACnet/SC-ready at minimum.
 3. The Floor Level Network shall utilize BACnet/IP over Ethernet or BACnet MS/TP over RS-485 to connect all of the DDC-controlled terminal heating and cooling equipment on a floor or in a system that are controlled with BACnet Advanced Application Controllers or BACnet Application Specific Controllers. FLN devices are networked to a router that connects to the Automaton Level Network backbone.
- G. BAS controllers utilizing BACnet/SC and that reside on a BACnet/SC network shall support the following:
1. System controllers shall be native-BACnet/SC or shall be BACnet/SC-ready by future firmware upgrade to provide data encryption utilizing secure Websocket protocol with TLS V1.3 (WSS) functioning on TCP/IP.
 2. System controllers shall be native-BACnet/SC or shall be BACnet/SC-ready by future firmware upgrade to provide device authentication of those BACnet/SC devices by utilizing the X.509 International Telecommunication Union standard defining the format of PKI certificates.
 3. System controllers shall utilize two (2) BACnet/SC hubs per BACnet network for logical function. A primary hub is required for communication to occur on the BACnet/SC network. A secondary failover hub shall be required to ensure communication can resume in the case of primary hub failure.
 - a. BACnet/SC hubs shall be embedded devices on the BACnet/SC network.
 - b. BACnet/SC hub-capable controllers shall support routing between different BACnet data link types such as BACnet/SC-to-BACnet/IP routing.
 - c. BACnet/SC controllers with BACnet/SC hub functionality must support a minimum of 100 node connections per hub.
 4. System controllers shall support BACnet/SC node, or BACnet/SC hub+node functionality (natively or with future firmware upgrade) for the system to function.
 5. BACnet/SC must support Certificate Authority (CA) and Certificate Management
 - a. BAS provider must provide software tools for Certificate Authority and Certificate Management.

- b. The software tool must be made available to interact with the customer's IT department infrastructure by exchanging certificates and CSR (certificate signing request) for certificate management of the BACnet/SC system for the life of the building automation system.
 - c. The BACnet/SC solution must allow for an internal-to-the-organization Certificate Authority (self-signed certificates) utilizing a software tool method capable of generating, signing, and provisioning certificates to the BAS vendor's devices, and revoking certificates completely on its own.
 - d. The BACnet/SC Certificate Management must allow for interaction with a trusted 3rd party Certificate Authority (CA) for customers. The BAS vendor provided software tool for generating certificates and provisioning them to the vendor's devices must be able to generate a CSR (Certificate Signing Request) and be able to export the required common Root Certificate (aka Issuer Certificate) on a file level to be signed by a trusted 3rd party certificate authority of the customer's preference as well as be able to import the signed certificate and provision it to the vendor's devices along with the required unique Operational Certificates (aka Client Certificates).
 - e. Certificate Management must allow for interoperability with 3rd party vendor BACnet/SC certificate management methods and allow for CA migration (CA1 -> CA2).
 - f. The certificates validity period shall be configurable in the vendor's certificate management tool to comply with customer security requirements. This shall be configurable for a minimum of 1 week or years to a maximum of 25 years.
 - g. The vendor specific BACnet/SC configuration and management tool from each and every BACnet/SC vendor on the project as well as the corresponding project database containing the Root Certificate must be provided to the customer for ongoing certificate management as well as vendor coordination on the project.
- H. Provide a router for each RS-485 subnetwork to connect them to the base building backbone level network. The router shall connect BACnet MS/TP subnetworks to BACnet over Ethernet. Routers shall be capable of handling all of the BACnet BIBBs that are listed for the controller that reside on the subnetwork.
- I. The Building Level Controllers shall be able to support subnetwork protocols that may be needed depending on the type of equipment or application. Subnetworks shall be limited to :
- 1. BACnet MS/TP
 - 2. Desigo CC FLN
 - 3. Modbus

- J. BACnet MSTP Setup rules
 - 1. Addressing for the MSTP devices shall start at 00 and continue sequentially for the number of devices on the subnetwork.
 - 2. No gaps shall be allowed in the addresses.
 - 3. Set the MaxMaster property to the highest address of the connected device.
 - 4. MaxMaster property shall be adjusted when devices are added to the subnetwork.

- K. Provide all communication media, connectors, repeaters, bridges, switches, and routers necessary for the internetwork.

- L. Controllers and software shall be BTL listed at the time of installation.

- M. The system shall meet peer-to-peer communication services such that the values in any one BACnet Building Controller or BACnet Advanced Application Controller can be read or changed from all other controllers without the need for intermediary devices. The software shall provide transparent transfer of all data, control programs, schedules, trends, and alarms from any one controller through the internetwork to any other controller, regardless of subnetwork routers.

- N. Systems that use variations of BACnet using Point-to-Point (PTP) between controllers, gateways, bridges or networks that are not peer-to-peer are not allowed.

- O. Remote Communications: Provide a TCP/IP compatible communication port for connection to the Owner's network for remote communications. Provide coordination with the Owner for addressing and router configuration on both ends of the remote network.

- P. The system shall be installed with a 10% spare capacity on each subnetwork for the addition of future controllers.

- Q. On each floor, wing or major mechanical room provide an Ethernet RJ45 connection that allows connection to the BACnet network. An open port shall always be available and shall not require any part of the network to be disconnected. The location shall be accessible to the base building personnel and not in a location where the tenant can restrict the access.

- R. Distributed Control Requirements:
 - 1. The loss of any one DDC controller shall not affect the operation of other HVAC systems, only for the points connected to the DDC controller.
 - 2. The system shall be scalable in nature and shall permit expansion of both capacity and functionality through the addition of sensors, actuators, DDC Controllers, and operator devices.
 - 3. System architectural design shall eliminate dependence upon any single device for alarm reporting and control execution. Each DDC Controller shall operate independently by performing its own specified control, alarm management, operator I/O, and data collection. The failure of any single component or network

- connection shall not interrupt the execution of any control strategy, reporting, alarming and trending function, or any function at any operator interface device.
4. DDC Controllers shall be able to access any data from, or send control commands and alarm reports directly to, any other DDC Controller on the network without dependence upon a central processing device. DDC Controllers shall also be able to send alarms to multiple operator workstations without dependence upon a central or intermediate processing device.
 5. Operators shall have the ability to make database changes at the central system server while operator workstations are on-line without disrupting other system operations.
 6. The DDC control panel shall be mounted in the same mechanical room as the equipment being controlled, or an adjacent utility room.
 7. Multiple systems can be programmed on the same controller as long as they are in the same room. Systems on separate floors shall have separate controllers.
 8. VAV boxes subnetworks shall be connected to the AHU controller that feeds those boxes. If multiple subnetworks are needed, then the VAV shall be grouped into subnetworks in an orderly method, such as per floor, per wing, etc.
 9. Remote sensors shall be wired to the control panel of the equipment it is controlling, not across the network.
 10. Signals to remote motor control centers shall be hard wired to the control panel, not across the network.
 11. Terminal units shall each have their own controller. Only exceptions are:
 - a. Groups of reheat coils
 - b. Groups of exhaust fans
 - c. Groups of chilled beams serving same zone or several adjacent zones

2.1.1.3 BACNET ADVANCED WORKSTATION SOFTWARE

A. Interface Description

1. The software shall provide, as a minimum, the following functionality:
 - a. Real-time graphical viewing and control of the BMS environment.
 - b. Reporting of both real-time and historical information.
 - c. Scheduling and override of building operations.
 - d. Collection and analysis of historical data.
 - e. Point database editing, storage and downloading of controller databases.
 - f. Configuration of and navigation through default and personalized hierarchical "tree" views that include workstation and control system objects.
 - g. Event reporting, routing, messaging, and acknowledgment.
 - h. Definition and construction of dynamic color graphic displays.
 - i. Online, context-sensitive help, including an index, glossary of terms, and the capability to search help via keyword or phrase.
 - j. On-screen access to User Documentation, via online help or PDF-format electronic file.
 - k. Automatic database backup at the operator interface for database changes initiated at Building Controllers.

1. Display dynamic trend data graphical plot.
 - 1) Must be able to run multiple plots simultaneously.
 - 2) Each plot must be capable of supporting 10 pts/plot minimum.
 - 3) Must be able to command points from selection on dynamic trend plots.
 - 4) Must be able to plot real-time data without prior configuration.
 - 5) Must be able to plot both real-time and historical trend data simultaneously.
- m. Program editing
- n. Transfer trend data to third-party spreadsheet software
- o. Scheduling reports
- p. Operator Activity Log
2. Operator interface software shall minimize operator training through the use of user-friendly and interactive graphical applications.
3. Users must be able to build multiple, separate, personalized hierarchical “tree” views that represent the workstation, control systems, geographical facility layouts, and mechanical equipment relationships.
4. 256-character point identification (names) must be supported to provide clearly descriptive identification.
5. On-line help must be available.
6. The user interface shall display relevant information for a selection in multiple panes of a single window without the need for opening multiple overlapping windows on the desktop
7. Provide a graphical user interface that shall minimize the use of keyboard through the use of a mouse or similar pointing device, with a "point and click" approach to menu selection and a “drag and drop” approach to inter-application navigation.
8. Software navigation shall be user friendly by utilizing “forward & back” capability between screens and embedded links to graphics, documents, drawings, trends, schedules, as well as external documents (.doc, .pdf, .xls, etc.) or web addresses that are related to any selected object.
9. Primary selection of objects in the operator interface software shall be available from user defined hierarchical Views, from graphics, or from events in an Event List.
10. Secondary selection of objects in the operator interface software shall be available from links to any objects or external documents related to the primary selection.
11. Links to information related to any selected objects shall be displayed in a consistent manner and automatically defined based on where an object is used in the system.
12. The operator workstation shall be capable of displaying web pages and common document formats (.doc, .xls, .pdf) within the operator workstation application.
13. The software shall provide a multi-tasking type environment that allows the user to run several applications simultaneously.
14. System database parameters shall be stored within an object-oriented database.
15. Standard Windows applications shall run simultaneously with the BMS software.

16. The operator shall be able to work in Microsoft Word, Excel, and other Windows based software packages, while concurrently annunciating on-line BMS alarms and monitoring information.
17. Provide automatic backup and restore of all Building Controller databases on the workstation hard disk.
18. System configuration, programming, editing, graphics generation shall be performed on-line from the operator workstation software.
19. User shall be able to edit point configuration of any configurable BACnet point that resides in a devices that supports external editing.
20. The software shall also allow the user to configure the alarm management strategy for each point.
21. Users shall have the ability to view the program(s) that is\are currently running in a Building Controller. The display shall mark the program lines with the following: disabled, comment, unresolved, and trace bits.

B. Certifications and Approvals

1. BAS software shall have been tested against the following norms and standards:
 - a. BACnet Revision 1.13, certified by BACnet Testing Laboratory as BACnet Advanced Workstation Software (BTL B-AWS)
 - b. IT security compliant with the ISA-99/IEC 62443 Security Level: SL1
 - c. OPC DA V2.05a and V3.0 Server, certified by the OPC Foundation certification program
 - d. UL-listed to UL864 9th edition Standard for Control Units and Accessories (when installed on a UL-approved computer)

C. Client-Server Connectivity

1. Client sessions must be allowed to run on the server and on other devices connected to the server via Intranet, Extranet, or Internet connections.
2. Internet connections, ISP services, as well as necessary firewalls or proxy servers shall be provided by the owner as required to support remote access features.
3. The following client options must be supported
 - a. Installed Client.
 - 1) Software application installed from installation media on to the client machine.
 - 2) Installed client software must be configurable to allow it to run in a Closed Mode such that the BAS software can lock down the client machine and prevent users without permission from minimizing the application or running other Windows applications that might cover the BAS software interface.
 - 3) Communication between the server and Installed Clients must be monitored so that any break in communication between the server and an installed client results in notification at the Server and Installed Client machine
 - 4) Installed client machines communicate directly with the BAS server
 - b. Web Client.

- 1) Software that runs in a browser on the client machine as a Full Trust client application.
- 2) Connected to the BAS software server via Microsoft IIS Server.
- c. Windows App.
 - 1) Software application downloaded from the BAS server to run on the client machine like an installed application
 - 2) Application must be automatically updated whenever new apps are available at the server.
 - 3) Connected to the BAS software server via Microsoft IIS Server.
4. Each of the client options shall provide the same functionalities including operation and configuration capabilities.

D. Access Rights and User Privileges

1. Access to any client user session must be password protected.
2. Users shall be able to create local user accounts specific to the application software.
3. Users shall be able to link application user accounts to Active Directory user accounts for consistent management with domain user accounts.
4. Operator-specific password access protection shall be provided to allow the administrator/manager to limit users' workstation control, display and data base manipulation capabilities as deemed appropriate for each user, based upon an assigned user name and password.
5. Operator privileges shall follow the operator to any workstation logged onto.
6. The administrator or manager shall be able to further limit operator privileges based on which console an operator is logged on to.
7. The administrator or manager shall be able to grant discrete levels of access and privileges, per user, for each point, graphic, report, schedule, and BMS workstation application.

E. Activity Logging

1. The operator interface software shall maintain a log of the actions of each individual operator.
2. The software shall provide an application that allows querying based on object name, operator, action, or time range.
3. The software shall provide the ability to generate reports showing operator activity based on object name, operator, action, or time range.

F. Graphics Application

1. All graphics shall be available with the same look and functionality whether they are displayed at an installed client console or in a browser.
2. User shall be able to add/delete/modify system graphics for floor plan displays and system schematics for each piece of mechanical equipment (including, air handling units, chilled water systems, hot water boiler systems, and room level terminal units) from standard user interface without the need of any external or specialized tools.
3. The software shall include all necessary tools and procedures for the user to create their own graphics.

4. The software shall provide the user the ability to display real-time point values by animated motion or custom picture control visual representation.
5. The software shall provide animation that depicts movement of mechanical equipment, or air or fluid flow.
6. The software shall provide users the ability to depict various positions in relation to assigned point values or ranges.
7. The software shall provide the ability to add custom gauges and charts to graphic pages.
8. The software must include a library of at least 400 standard control application graphics and symbols for visualizing common mechanical systems, including fans, valves, motors, chillers, AHU systems, standard ductwork diagrams, piping, and laboratory symbols.
9. The Graphics application shall include a set of standard Terminal Equipment controller application-specific background graphic templates. Templates shall provide the automatic display of a selected Terminal Equipment controller's control values and parameters, without the need to create separate and individual graphic files for each controller.
10. The Graphics application shall be capable of automatically assigning the appropriate symbol for an object (point) selected to be displayed on the graphic based on what the object represents (fan, duct sensor, damper, etc.) when the object is placed on a graphic.
11. The Graphics application shall allow a user to manually override the automatically assigned symbol for an object when a different symbol is desired.
12. The user shall have the ability to add custom symbols to the symbol library.
13. The software shall permit the importing of AutoCAD or scanned pictures for use in graphics.
14. Graphics must be automatically associated to any points or system objects that are rendered on the graphic, so that selection of a system object will allow a user to simply navigate to any associated graphic, without the need for manual association.
15. The software must allow users to command points directly off graphics application.
16. Graphic display shall include the ability to depict real-time point values dynamically with text or animation.
17. Navigation through various graphic screens shall be optionally achieved through a hierarchical "tree" structure
18. Graphics viewing shall include dynamic pan zoom capabilities.
19. Graphics viewing shall include the ability to switch between multiple layers with different information on each layer.
20. Graphics shall include a decluttering capability that allows layers to be programmatically hidden and displayed based on zoom level.
21. Graphics shall be capable of displaying the status of points that have been overridden by a field HAND switch, for points that have been designed to provide a field HAND override capability.
22. The software must provide the ability to create dashboard views consisting of gauges and charts that graphically display system and/ or energy performance.

G. System Performance

1. Comply with the following performance requirements:
 - a. Graphic Display: Display graphic with minimum 20 dynamic points with current data within 5 seconds.
 - b. Graphic Refresh: Update graphic with minimum 20 dynamic points with current data within 5 seconds.
 - c. Object Command: Reaction time of less than 5 seconds between operator command of a binary object and device reaction.
 - d. Object Scan: Transmit change of state and change of analog values to control units or workstation within 5 seconds.
 - e. Alarm Response Time: Annunciate alarm at workstation within 2 seconds. Multiple workstations must receive alarms within five seconds of each other.
 - f. Program Execution Frequency: Programmable controllers shall execute DDC PI control loops, and scan and update process values and outputs at least once per second.
 - g. Reporting Accuracy and Stability of Control: Report values and maintain measured variables within tolerances as follows:
 - 1) Water Temperature: Plus or minus 1 deg F.
 - 2) Water Flow: Plus or minus 5 percent of full scale.
 - 3) Water Pressure: Plus or minus 2 percent of full scale.
 - 4) Space Temperature: Plus or minus 1 deg F.
 - 5) Ducted Air Temperature: Plus or minus 1 deg F.
 - 6) Outside Air Temperature: Plus or minus 2 deg F.
 - 7) Dew Point Temperature: Plus or minus 3 deg F.
 - 8) Temperature Differential: Plus or minus 0.25 deg F.
 - 9) Relative Humidity: Plus or minus 2 percent.
 - 10) Airflow (Pressurized Spaces): Plus or minus 3 percent of full scale.
 - 11) Airflow (Measuring Stations): Plus or minus 5 percent of full scale.
 - 12) Airflow (Terminal): Plus or minus 10 percent of full scale.
 - 13) Air Pressure (Space): Plus or minus 0.01-inch wg.
 - 14) Air Pressure (Ducts): Plus or minus 0.1-inch wg.
 - 15) Carbon Monoxide: Plus or minus 5 percent of reading.
 - 16) Carbon Dioxide: Plus or minus 50 ppm.
 - 17) Electrical: Plus or minus 5 percent of reading.

H. Reports

1. The software must allow reports shall be executed on demand.
2. The software must allow reports shall be executed via pre-defined schedule.
3. As a minimum, the system shall allow the user to easily obtain the following types of reports:
 - a. A general listing of all or selected points in the network
 - b. A status report showing present value and alarm status
 - c. List of all points currently in alarm
 - d. List of all points currently in override status
 - e. List of all disabled points
 - f. System diagnostic reports including, list of Building panels on line and communicating, status of all Building terminal unit device points

- g. List of alarm strategy definitions
- h. List of Building Control panels
- i. Point totalization report
- j. Point Trend data listings
- k. Initial Values report
- l. User activity report
- m. Event history reports

I. Scheduling

1. The software shall provide a calendar type format for simplification of time and date scheduling and overrides of building operations.
2. The software shall support the definition of BACnet schedules that are defined at the workstation and are downloaded to Building Controller to ensure time equipment scheduling when PC is off-line, such that the operating software is not required to execute time scheduling. The software must provide the following capabilities for BACnet scheduling capabilities as a minimum:
 - a. Fully support all BACnet Schedule, Calendar, and Command objects.
 - b. Daily and Weekly schedules
 - c. Ability to combine multiple points into a logical Command Groups for ease of scheduling (e.g., all Building 1 lights)
 - d. Ability to schedule for a minimum of up to ten (10) years in advance.
3. The software shall support the definition of schedules that are configured and executed to run at the workstation, to support scheduling of workstation software activities and to support field systems that do not include internal scheduling mechanisms. The software must provide the following capabilities for BACnet scheduling capabilities as a minimum:
 - a. Schedule predefined reports
 - b. Schedule Trend collections
 - c. Schedule automated system backups
 - d. Schedule commands to be sent to field panels
 - e. Daily and weekly schedules
 - f. Setting up and executing Holiday schedules
 - g. Ability to combine multiple points into a logical Command Groups for ease of scheduling (e.g., all Building 1 lights)
 - h. Ability to schedule for a minimum of up to ten (10) years in advance.
4. The software shall support the definition of Desigo CC Equipment Schedules Objects that are defined at the workstation and are downloaded to Building Controller to ensure time equipment scheduling when PC is off-line, such that the operating software is not required to execute time scheduling. The software must provide the following capabilities for BACnet scheduling capabilities as a minimum:
 - a. Desigo CC equipment schedule Zones
 - b. Desigo CC equipment schedule Events
 - c. Configuration of Daily, Weekly, Monthly schedules
 - d. Configuration of Replacement Days

5. The software shall provide the ability for users to override regular weekly schedules through menu selection, graphical mouse action or function key.
6. The software shall provide a timeline view, showing the results of any number of combined selected workstation and field panel controller schedules for an overview of facility operation.

J. Trending

1. Provide trending capabilities that allow the user to easily monitor and preserve records of system activity over an extended period of time.
2. Any system point may be trended automatically at time-based intervals or change of value, both of which shall be user-definable.
3. Trend data shall be collected and stored on hard disk for future diagnostics and reporting.
4. Automatic Trend collection may be scheduled at regular intervals through the same scheduling interface as used for scheduling of equipment.
5. System shall support trending in the same device as the monitor point or in an external device.
6. The software must support configuration of panels that have a trending level threshold, above which the data will be automatically uploaded to the BMS server to prevent overwriting the data in the field panel. The trending level will be user defined in % of available space (e.g., automatically upload when the trend buffer is at 75% of allocated space).
7. Trend data reports shall be provided to allow the user to view all trended point data.
8. Trend data reports may be customized to include individual points or predefined groups of selected points.
9. The software shall allow the user to view real-time trend data on trend graphical plot displays.
 - a. A minimum of ten points may be plotted
 - b. A combination of real-time and historical data may be plotted
 - c. Dynamic graphs shall continuously update point values
 - d. At any time the user may redefine sampling times or range scales for any point
 - e. The user may pause the display and take "snapshots" of plot screens to be stored on the workstation disk for future recall and analysis
 - f. Exact point values may be viewed on the Trend plot
 - g. Trend graphs may be printed
 - h. Operator shall be able to command points by selecting them on the trend plot. Operator shall be able to zoom in on a specific time range within a plot.
 - i. The Trend Viewer must allow users to configure separate left and right axis for easier differentiation of point values.
 - j. The Trend Viewer must allow users to display historical data for the same group of points at different times simultaneously for easy comparison of system behavior over time.

K. Event Management

1. Event Notification shall be presented to each workstation in a tabular format application, and shall include the following information for each event: name, value, event time and date, event status, priority, acknowledgement information, and alarm count.
2. Only events for which the logged on user has privileges to view shall be displayed on each workstation.
3. The software shall provide the ability to users to limit the list of events displayed at each workstation (e.g. only show fire events at this workstation, no matter who is logged on)
4. Each event shall have the ability to sound an audible notification based on the category of the event.
5. Event List shall have the ability to list and sort the events based on event status, point name, ascending or descending activation time.
6. Directly from the Event List, the user shall have the ability to acknowledge, silence the event sound, print, or erase each event.
7. The interface shall provide the option to inhibit the erasing of active acknowledged events, until they have returned to normal status.
8. The user shall have the ability to navigate to all information related to a selected point in order to command, launch an associated graphic or trended graphical plot, or run a report on a selected point directly from the Event List.
9. Each event shall have a direct link from the Event List to further user-defined point informational data.
10. The user shall have the ability to also associate real-time electronic annotations or notes to each event.
11. Software shall provide the option to configure detailed operating procedures that guide a user through predetermined standard operating procedures for handling critical events. Users shall be able to log completion of each operating step as it is performed.

L. Remote Notification (RENO)

1. Workstations shall be configured to send out messages to numeric pagers, alphanumeric pagers, SMS (Simple Messaging Service, text messaging) Devices, and email accounts based on a point's alarm condition.
2. Email notification must support POP3, IMAP, and SMTP with SSL/TSL
3. Communication with external software must be encrypted.
4. There shall be no limit to the number of points that can be configured for remote notification of alarm conditions and no limit on the number of remote devices which can receive messages from the system.
5. On a per point basis, system shall be configurable to send messages to an individual or group and shall be configurable to send different messages to different remote devices based on alarm message priority level.
6. System must be configurable to send messages to an escalation list so that if the first device does not respond, the message is sent on to the next device after a configurable time has elapsed.
7. Workstation shall have the ability to send manual messages allowing an operator to type in a message to be sent immediately.

8. Workstation shall have a feature to send a heartbeat message to periodically notify users that they have communication with the system.

M. External Data Access

1. The software shall provide the ability to expose configuration properties and real-time values through CSV files, OPC DA, OPC UA, or REST-based Web Services.
2. The software shall provide the ability for external applications to change configuration and real-time values through OPC DA, OPC UA, or REST-based Web Services.
3. The software shall provide the ability for external applications to access historical Trend data through CSV files or REST-based Web Services.
4. External data access must be secured using the level of permissions configured for users and operator workstations.
5. Web service interfaces must allow for exchanging data (object's values, events and trend series) between workstation and external applications such as facility management systems, enterprise applications, mobile applications or other value-added services.
6. Documentation describing web services interfaces must be included to allow external developers to write applications that leverage the data exchange.

N. Licensing

1. Software licensing must be allowed to be bound to a dongle or to physical PC hardware.
2. User licenses from all client types shall be from a common pool of client licenses. Licenses for installed and browser-based clients shall not be in separate pools.
3. Provide the number of client licenses as called for here or in the Sequence of Operations.

O. Data Security

1. The BAS software must allow that all communication paths between clients and the server are encrypted and protected against replay attacks as well as data manipulation.
2. Any runtime data transfer between the system server and Web Server (IIS) must be allowed to be encrypted by Desigo CC.
3. Communication between any Web Server (IIS) and the Web Clients must be allowed to be encrypted.
4. Passwords must be handled with encrypted storage and transmission
5. The software must support the use of public domain algorithms for cryptographic functions, including AES, DiffieHellmann, RSA, and SHA-2. No self-coded algorithms shall be allowed.
6. All symmetrical encryption must use 256 bit AES or stronger.
7. All asymmetrical encryption must use 2048 bit or stronger.
8. The software must support the use of commercial certificates for securing client-server communications.
9. The software must support the use of self-signed certificates to allow local deployments without the overhead of obtaining commercial certificates.

10. When using self-signed certificates, the owner of the Desigo CC system is responsible for maintaining their validity status, and for manually adding them to and removing them from the list of trusted certificates.
11. The BAS software shall be compatible with the following Virus Scanners:
 - a. Kaspersky
 - b. Avira
 - c. McAfee
 - d. Bitdefender
 - e. TrendMicro Office Scan

P. Virtualization

1. The BAS software must be compatible with following Virtualization software packages:
 - a. VMware®:
 - 1) Virtualization platform: VSphere 6.0 or higher
 - 2) Fault-tolerant software: ESXi 6.0b managed by VCenter Server Appliance v6.0.0 or higher
 - b. Stratus®:
 - 1) Virtualization platform: KVM for Linux CentOS v7.0 or higher
 - 2) Fault-tolerant software: everRun Enterprise 7.2 or higher
 - 3) Virtualization platform: Citrix XenServer 6.0.2 or higher
 - 4) Fault-tolerant software: everRun MX 6.2 or higher

Q. Subsystem Connectivity

1. The BAS application software must be capable of connecting simultaneously to multiple control systems and data sources.
2. Interface software shall simultaneously communicate with and share data between multiple Ethernet-connected building level networks.
3. The BAS application software must support the following standard protocols:
 - a. BACnet IP (standard Revision 1.13)
 - b. OPC (OLE for Process Control) OPC DA 2.05, 3.0
 - c. Modbus TCP
 - d. SNMP (Agent V1 and V2)
 - e. Siemens Desigo CC
 - f. Siemens XNET
4. Any break in system controller communication must result in a notification at the server.

R. BACnet

1. The Operator Workstation Software shall be capable of BACnet IP communications.
2. The Operator Workstation Software shall have demonstrated interoperability during at least one BTL Interoperability Workshop.
3. The Operator Workstation Software shall have demonstrated compliance to BTL B-AWS device classification through BTL listing as specified in ANSI/ASHRAE 135 under revision 1.13 or higher.

4. The BAS software shall meet the BACnet device profile of an Advanced Workstation Server (B-AWS) and Operator Workstation (B-OWS) and shall support the following BACnet BIBBs:
 - a. Data Sharing
 - 1) DS-RP-A Data Sharing-ReadProperty-A
 - 2) DS-RP-B Data Sharing-ReadProperty-B
 - 3) DS-RPM-A Data Sharing-ReadPropertyMultiple-A
 - 4) DS-RPM-B Data Sharing-ReadPropertyMultiple-B
 - 5) DS-WP-A Data Sharing-WriteProperty-A
 - 6) DS-WP-B Data Sharing-WriteProperty-B
 - 7) DS-WPM-A Data Sharing-WritePropertyMultiple-A
 - 8) DS-COV-A Data Sharing-ChangeofValue-A
 - 9) DS-COVP-A Data Sharing – ChangeofValueProperty-A
 - 10) DS-V-A Data Sharing - View - A
 - 11) DS-AV-A Data Sharing - Advanced View - A
 - 12) DS-M-A Data Sharing - Modify - A
 - 13) DS-AM-A Data Sharing - Advanced Modify - A
 - b. Scheduling
 - 1) SCHED-VM-A Scheduling-View and Modify-A
 - 2) SCHED-AVM-A Scheduling-Advanced View and Modify-A
 - 3) SCHED-WS-A Scheduling-Weekly Schedule-A
 - c. Alarm and Event Management
 - 1) AE-N-A Alarm and Event-Notification-A
 - 2) AE-ACK-A Alarm and Event-ACK-A
 - 3) AE-LS-A Alarm and Event-LifeSafety - A
 - 4) AE-VM-A Alarm and Event Management - View and Modify - A
 - 5) AE-AVM-A Alarm and Event Management - Advanced View and Modify - A
 - 6) AE-VN-A Alarm and Event Management - View Notifications - A
 - 7) AE-AVN-A Alarm and Event Management - Advanced View Notifications - A
 - d. Trending
 - 1) T-V-A Trending-Viewing and Modifying Trends-A
 - 2) T-ATR-A Trending-Automated Trend Retrieval-A
 - 3) T-AVM-A Trending-Advanced View and Modify -A
 - e. Network Management
 - 1) NM-CE-A Network Management-Connection Establishment-A
 - f. Device Management
 - 1) DM-DDB-A Device Management-Dynamic Device Binding-A
 - 2) DM-DDB-B Device Management-Dynamic Device Binding-B
 - 3) DM-DOB-A Device Management-Dynamic Object Binding-A
 - 4) DM-DOB-B Device Management-Dynamic Object Binding-B
 - 5) DM-DCC-A Device Management-DeviceCommunicationControl-A
 - 6) DM-TM-A Device Management-Text Message-A
 - 7) DM-MTS-A Device Management-Manual Time Synchronization-A

- 8) DM-ATS-A Device Management-Automatic Time Synchronization-A
 - 9) DM-TS-A Device Management-TimeSynchronization-A
 - 10) DM-UTC-A Device Management-UTCTimeSynchronization-A
 - 11) DM-RD-A Device Management-ReinitializeDevice-A
 - 12) DM-BR-A Device Management-Backup and Restore-A
 - 13) DM-LM-A Device Management-List Manipulation-A
 - 14) DM-LM-B Device Management-List Manipulation-B
 - 15) DM-OCD-A Device Management-Object Creation and Deletion-A
 - 16) DM-ANM-A Device Management-Automatic Network Mapping-A
 - 17) DM-ADM-A Device Management-Automatic Device Mapping-A
5. The BAS Server and Workstations shall support the following Data Link Layers:
 - a. BACnet IP Annex J
 - b. BACnet IP Annex J Foreign Device
 - c. ISO 8802-3, Ethernet (Clause 7)
 6. The BAS Server and Workstations shall be able to interact with all of the BACnet objects in the controllers. In addition, the software shall be able to support the following objects as they relate to features in the workstation software:
 - a. Calendar – Creatable, Deletable
 - b. Command – Creatable, Deletable
 - c. Event Enrollment – Creatable, Deletable
 - d. Notification Class – Creatable, Deletable
 - e. Schedule - Creatable, Deletable
 7. The BAS Server and Workstations shall support transmitting and receiving segmented messages.
 8. The BAS Server and Workstation shall have the capability to be the BACnet/IP Broadcast Management Device (BBMD) and support foreign devices.

2.1.1.4 ENERGY REPORTING AND DATA ANALYTICS SOFTWARE PLATFORM

- A. Acceptable Manufacturers
 1. Siemens Industry, Inc – Advantage Navigator Software
- B. Acceptable Installers
 1. Installer and programmers shall be factory trained representatives of the manufacturer of the software.
- C. Provide software to accumulate, log, compile and display energy consumption data and related parameters and measures.
- D. Provide an automated reporting software package which will allow utilization of data collected from a sub-metering system and data network. The system should address the following areas:
 1. Utility bill tracking
 2. Account tracking
 3. Savings and analysis

4. Weather Data
 5. Weather Normalization
 6. Reporting
 7. Interval data tracking including meters and equipment data
 8. Automated Energy Star benchmarking and greenhouse gas emissions. Provides a portfolio Comparison and facility ratings trending. Ability to integrate with Energy Star Automated Benchmarking System and generate multi site Energy Star ranking reports as well as individual site trending of monthly Energy Star score.
 9. Web-based hosted solution
 10. Customization and Interfaces
- E. The software shall integrate to devices provided in other sections of this specification. The contractor shall refer to other sections for the scope of the devices to be integrated into this software, including: [edit to match the project]
1. Division 23 Building Automation System
 2. Division 23 Sequences of operations
 3. Division 23 Gas sub meters
 4. Division 23 Water sub meters
 5. Division 23 Utility meters
 6. Division 26 Electrical panel boards (if specified with smart meters)
 7. Division 26 Lighting controls (based on networked to one location and data available via BACnet/IP protocol)
 8. Division 26 Electric meters
- F. Coordinate networking, security, and user access to the Web Server interface with the customer's IT representative. Internet connections, ISP services, firewalls or proxy servers shall be provided by the owner as required to support the Web access feature.
- G. Functionality Requirements
1. User Functionality
 - a. The system shall support multiple user roles in which permissions and access to functions can be defined on a customer basis as described in User Setup.
 - b. The system shall support a user licensing system.
 2. Reliability
 - a. The system shall have measures in place to ensure reliability. This includes but is not limited to 99.x% uptime, a backup of all databases, and redundant servers.
 - b. The system shall have a staging and quality control environment to ensure system reliability.
 - c. The hosting servers shall be on UPS power supply for a minimum of 100 minutes.
 - d. The hosting facility shall be monitored by personnel 24/7, including the facility, server hardware, and software applications.
 - e. The hosting facility shall demonstrate strict security access.

- f. The hosting facility shall demonstrate that the servers operate in a well controlled and protected environment including temperature and humidity control, fire detection, water protection and server safe fire extinguishing.
- 3. Development
 - a. The system shall have a continuous development process with ongoing version releases to support continual system enhancements and the addition of new features.
- 4. Data Quality and Import / Export
 - a. The system must have measures in place to ensure the reliability and quality of data. This includes but is not limited to Automated Meter Reset Adjustment features.
 - b. The system shall have the ability to normalize data for weather by meeting ASHRAE VBDD (Variable-Based Degree Day) method
 - c. The system shall incorporate a staging environment and have a quality control process to ensure consistency and accuracy of data.
 - d. The system shall be able to support the import of data from external sources. This includes Utility Bill data – which shall be disaggregated and normalized, manual entry of data, and any interval trend data including meters and BAS points.
 - e. The system shall have the ability to receive and monitor data on a 1, 5, 15, 30, and 60 minute resolution.
 - f. The system shall have the ability to import and prorate utility bill data by calendar month.
 - g. The system shall have an interface allowing users to manually enter data.
 - h. The system shall have the ability to import any interval trend data including but not limited to meters and BAS points.
 - i. The system shall provide external data accessibility through a REST (Representational State Transfer) API service.
 - j. The system shall allow users to export data from the system.
 - k. At the termination of the service, all data shall be owned by the customer
- 5. General Functionality
 - a. Data within the energy management system shall be owned by the customer.
 - b. The system shall have supported at least 1000 buildings in order to prove the scalability of the system.

H. Security

- 1. The application and database servers shall operate in a “demilitarized zone” (DMZ), meaning that the application is protected by firewalls from the internet as well as general access by the provider, software maker and the host’s intranet.
- 2. Passwords shall be disabled after 5 login attempts with incorrect password.
- 3. Passwords shall require a minimum of 6 characters
- 4. Data transfers between your PC / browser and Advantage Navigator shall be protected with 256-bit SSL encryption
- 5. The system shall use e-mail validation to reset a forgotten password
- 6. The system shall support the use of data validation certificates
- 7. The system shall support strong authentication via SMS one-time passwords

I. Reporting Requirements

1. The system shall provide the following ad-hoc reporting capabilities
 - a. The system shall allow data to be displayed in multiple chart types. At a minimum it shall support the following charts:
 - 1) Line
 - 2) Bar
 - 3) Stepped Area
 - 4) Area
 - 5) Carpet Plot (Ability to show each day on the x axis and each hour of the day on the y axis. Each cell provides an automated color coding that indicates the intensity of energy usage of the data point)
 - 6) Stepped line
 - b. The system shall allow multiple data points to be overlaid on a single chart.
 - c. The system shall allow the user to save any pre-configured ad-hoc reporting view.
 - d. The system shall allow the user to compare data sets between user selectable time frames using multiple meters including a rolling most recent period or a fixed period.
 - e. Data Export
 - 1) The system shall allow the user to export charts in graphical formats including but not limited to PNG, JPG or PDF.
 - 2) The system shall allow the user to export charts in text format including but not limited to CSV.
 - f. Chart manipulation
 - 1) The system shall allow the user to drag and drop data points.
 - 2) The system shall allow the user to zoom in and zoom out on charts.
 - 3) The system shall allow the user to view data in a tabular format.
 - 4) The system shall allow the user to view at least four charts simultaneously.
 - 5) The system shall allow multiple X or Y axis in a single chart.
 - 6) The system shall allow the user to show/hide the X or Y axis.
 - 7) The system shall allow the user to change the scale on the X or Y axis.
 - 8) The system shall allow the user to select colors displayed in each chart.
 - 9) The system shall allow the user to change the chart type.
 - 10) The system shall allow the user to stack bar and area chart types.
2. The system shall provide the following reporting delivery capabilities:
 - a. Report access via a web-based interface
 - b. E-mailed delivery of standardized reports to the customer via a web-based scheduling interface
 - c. Allow users to schedule recurring automated e-mail of standardized reports to an unlimited number of e-mail addresses
 - d. Allow users to save report parameters for easy access of favorite reports
3. The system shall include the following report types and KPIs as listed in Report Types.

4. The system shall have Environmental Reporting including but not limited to EPA EGRID factors and manual entry of Emission Factors.
5. The system shall allow the user to export data and charts in HTML, XLS, CSV, PDF and PPT.
6. The system shall provide the ability to automate reporting on data quality issues

J. Technical Requirements

1. Remote Access
 - a. The system shall provide secure remote access that is Certified ISO / IEC 27001.
2. Management Dashboard
 - a. Google Maps with integrated Geo Pin functionality allowing the user to Toggle KPIs Geo Pin Location based on at least three color coded thresholds definable per individual location
 - b. A site ranking system based on energy use index (EUI), energy cost index (ECI), CO2 per square foot, energy consumption versus prior year, cost versus prior year, CO2 versus prior year, energy consumption versus budget, energy star score ranking
 - c. The dashboard shall provide the ability to trend data over time
3. User Interface
 - a. The system shall be hosted in a centrally located data center.
 - b. The system shall be accessible via a web browser.
 - c. The system shall allow unlimited concurrent users.
 - d. The system shall allow administrators to assign different security access by user role as specified in User Setup.
 - e. The system shall provide a tree view system supporting multiple tree view structures and orientations.
 - f. The system shall support a tree view system at least six levels deep.
 - g. The system shall support property inheritance of tree node properties.
4. Language Requirements
 - a. The system shall support at least 20 languages.
 - b. The system shall support 2 bit (nvar) characters.
 - c. The system shall support languages left to right and right to left as necessary.
5. Unit Requirements
 - a. The system shall support both Imperial and Metric units.
 - b. The system shall allow the user to toggle units for select reports.
6. General Technical Requirements
 - a. The system shall allow the software setup and configuration process to be conducted all through a web based interface without any non-web based tools required.
 - b. The system shall allow aggregation through property inheritance in tree structure for knowledge meters.
 - c. The system shall support properties of a building showing both square feet and geo coordinates.
 - d. The system shall support the ability to track consumption and cost budgets versus actual.

- e. The system shall support the ability to track consumption and cost baseline versus actual. This provides the ability to compare energy consumption and cost against a baseline
- f. The system shall provide the ability to display on and off peak usage, day vs. night usage, demand charges, customer charges based on actual rate tariff.
- g. The system shall provide average cost of consumption.

K. User Setup

1. The system shall provide capability to set up specific users with corresponding capabilities according to need or security. At minimum provide the following setup types:
 - a. Super User
 - 1) The Super User shall have all rights and access to all functions that are offered by the software application. Only one user per customer may have this role. However, the Super User will be able to Add Super User Substitutes who automatically have the same rights as the actual Super User.
 - b. Partner User
 - 1) Super Users may Add Partners. The partner role enables Super Users to delegate entire branches (e.g. a building pool) of their tree view to a partner (e.g. to a regional manager within the same organization, or to an external facility management service provider). This gives the Partner User full access rights for the node assigned to him or her, including all of the lower-level nodes and meters it contains.
 - 2) The Partner User has the same rights as the Super User on the delegated node, but can only display the part of the tree view assigned to him or her. The Partner User has an own user management facility, and is therefore able to Add new users (of type Basic User and Advanced User, see next page) and assign nodes to them (within the given part of the tree view).
 - 3) Such Partner Users are invisible to Super Users outside of the partner company. Like the Super User, Partner Users can Add Super User Substitutes but they do not have the authorization to add additional Partners.
 - c. Advanced User
 - 1) Each node in the tree view (site, building, etc.) can be assigned to an Advanced User who has the following rights:
 - a) Reading rights - Example: generate and subscribe to reports, display meter lists
 - b) Writing rights - Example: Add new buildings and meters, or enter metering data
 - 2) Deleting rights - Example: delete values, meters or nodes for which the user is the contact person. Note: When a User deletes a meter, the meter and all entered values are automatically moved to the "deleted meters" node (the Super User's "recycle bin"). Therefore, the Super User has the possibility to finally delete meters, or to restore them.

- d. Basic User
 - 1) Alternatively, each node can be assigned to a Basic User who has the following rights:
 - a) Reading rights - Example: generate and subscribe to reports, display meter lists
 - b) Writing rights - Enter and edit meter readings only (no meter exchange)
 - c) Deleting rights - Delete individual meter readings only

L. Report Types

- 1. The software shall support the following report types:
 - a. Load Profiles (Arrangement of all load levels over time)
 - 1) Daily Max kW
 - 2) Monthly Max kW
 - 3) # of Occ. Of peak load
 - 4) Trend of a single KPI
 - 5) Daily Avg kW
 - 6) Demand
 - 7) Monthly Avg kW
 - 8) Daily Total kWh
 - 9) Gas
 - 10) Monthly Total kWh
 - 11) Daily Avg kWh
 - 12) Steam
 - 13) Monthly Avg kWh
 - 14) On Peak
 - 15) Temperatures
 - 16) Off Peak
 - 17) Fuel / Oil
 - 18) % Breakdown by load
 - 19) Chilled Water
 - 20) Flow
 - 21) Frequency (Any trend data from a BAS System)
 - b. Operational Analysis
 - 1) Daily Max
 - 2) Daily Min
 - 3) Total usage
 - 4) Daily Avg Usage
 - c. Performance Indicators
 - 1) Opportunity Score - Ranked by opportunity to reduce energy use
 - 2) Target Energy Use Intensity
 - d. Consumption
 - 1) Daily Max
 - 2) Total portfolio energy usage
 - 3) Total portfolio emissions usage
 - 4) Electricity

- 5) Absolute and pct breakdown of energy usage (electricity)
 - 6) Spikes
 - 7) Total and Average (electricity)
 - 8) Total
 - 9) Total portfolio cumulative energy usage
 - 10) Daily Min
 - 11) Energy Use Intensity
 - 12) Emissions Use Intensity
 - 13) Demand
 - 14) Gas
 - 15) Average and r-value correlation (Electricity vs. outside air temp)
 - 16) Total usage
 - 17) Average energy usage
 - 18) Average emissions usage
 - 19) Steam
 - 20) Gaps and missing data
 - 21) Daily Avg Usage
 - 22) Fuel
 - 23) Temperatures
 - 24) Fuel / Oil
 - 25) Chilled Water
 - 26) Flow
 - 27) Target Energy Use Intensity
 - 28) Yearly Energy use intensity
 - 29) Prior Yr Abs Deviation
 - 30) Prior Yr Abs Deviation
 - 31) Prior Yr % Deviation
- e. Emissions
- 1) Total portfolio emissions usage
 - 2) Emissions Use Intensity
 - 3) Average emissions usage
- f. Chilled Water Reports
- 1) Daily Max tons
 - 2) Total usage
 - 3) Daily Avg tons
 - 4) Daily Total ton-hr
 - 5) Daily Avg ton-hr
 - 6) On Peak
 - 7) Off Peak
 - 8) % Breakdown by load
- g. Steam Reports
- 1) Daily Max tons
 - 2) Total usage
 - 3) Daily Avg tons
 - 4) Daily Total ton-hr

- 5) Daily Avg ton-hr
- 6) On Peak
- 7) Off Peak
- 8) % Breakdown by load
- h. Energy Budgeting
 - 1) Electricity
 - 2) Demand
 - 3) Gas
 - 4) Steam
 - 5) Temperatures
 - 6) Fuel / Oil
 - 7) Chilled Water
 - 8) Budget
 - 9) Deviation absolute
 - 10) Deviation % (Ability generate a report with multiple sites and rank by % deviation from a budget)
- i. Cost Analysis / Budgeting
 - 1) Total portfolio energy cost
 - 2) Energy cost Intensity
 - 3) Average energy cost
 - 4) Electricity
 - 5) Demand
 - 6) Gas
 - 7) Steam
 - 8) Fuel / Oil
 - 9) Chilled Water
 - 10) Budget
 - 11) Deviation absolute
 - 12) Deviation %
- j. Energy Star / Weather Normalization
 - 1) Energy Star Score
 - 2) Total consumption (Electricity & Gas)
 - 3) Weather normalized consumption (System shall support a Variable-Base Degree Day Model (VBDD) program to automatically calculate a customized Balance Point Temperature for each site.)
 - 4) absolute deviation from prior year
 - 5) % deviation from prior year
- k. Critical Environments (if such as system is included in the project)
 - 1) % of ventilation in occupied mode due to Baseline airflow, cooling and ventilation
 - 2) % of ventilation in the Unoccupied mode due to baseline airflow, cooling and ventilation
 - 3) Air Volume and reheat valve position
 - 4) % of Satisfactory Temperature
 - 5) Savings in CFM and currency

- 6) Statement of Performance criteria
- 7) Air volume reduction
- 8) Target Hood Ratio Benchmark
- 9) % of Satisfactory Exhaust Volume
- 10) % of Satisfactory Exhaust Volume
- 11) % of Satisfactory Directional Airflow
- 12) % of Satisfactory Ventilation
- l. Chiller Plant Optimization (if such as system is included in the project)
 - 1) Plant Efficiency (kW/Ton)
 - 2) Target Savings
 - 3) Actual Savings
 - 4) Total Operating Hours
 - 5) Total Chilled Water usage
 - 6) Savings: Actual vs. Predicted
- m. Site ranking by customized building attributes
 - 1) Energy use index (EUI)
 - 2) Energy cost index (ECI)
 - 3) Total CO2
 - 4) Energy consumption versus prior year
 - 5) Cost versus prior year
 - 6) Energy consumption versus budget
 - 7) Energy cost versus budget
 - 8) Energy star score

2.1.1.5 DIRECT DIGITAL CONTROLLER SOFTWARE

- A. Provide a full capability user license to the owner for the operator to be able to see, modify, create, upload, download and save control programs to the DDC controllers.
- B. The software program shall be provided as an integral part of DDC Controllers and shall not be dependent upon any higher level computer or another controller for execution.
- C. The software shall be provided with an interactive HELP function to assist operators with syntax, abbreviations, commands and saving programs.
- D. Point naming and communication format:
 - 1. All points, panels, and programs shall be identified by a 30-character name. All points shall also be identified by a 16-character point descriptor. The same names shall be displayed at both Building Controller and the Operator Interface.
 - 2. All digital points shall have a consistent, user-defined, two-state status indication with 8 characters minimum (e.g., Summer, Enabled, Disabled, Abnormal).
 - 3. The Building Controller Software shall be capable of BACnet communications. The BACnet Building Controller (B-BC) shall have demonstrated interoperability during at least one BTL Interoperability Workshop, have demonstrated compliance

to BTL through BTL listing and shall substantially conform to BACnet Building Controller (B-BC) device profile as specified in ANSI/ASHRAE 135-2004, Annex L.

E. System Security

1. User access shall be secured using individual security passwords and user names.
2. Passwords shall restrict the user to the objects, applications, and system functions as assigned by the system manager.
3. Building Controllers shall be able to assign a minimum of 50 passwords access and control priorities to each point individually. The logon password (at any Operator Interface or portable operator terminal) shall enable the operator to monitor, adjust and control only the points that the operator is authorized for. All other points shall not be displayed at the Operator Interface or portable terminal. Passwords and priorities for every point shall be fully programmable and adjustable.
4. User Log On/Log Off attempts shall be recorded.
5. The system shall protect itself from unauthorized use by automatically logging off following the last keystroke. The delay time shall be user-definable.
6. Use of workstation resident security as the only means of access control is not an acceptable alternative to resident system security in the DDC controller software.

F. User Defined Control Applications: The applications software shall program DDC routines to meet the sequences of operations.

1. Building Controllers shall have the ability to perform energy management routines including but not limited to time of day scheduling, calendar-based scheduling, holiday scheduling, temporary schedule overrides, start stop time optimization, automatic daylight savings time switch over, night setback control, enthalpy switch over, peak demand limiting, temperature-compensated duty cycling, heating/cooling interlock, supply temperature reset, priority load shedding, and power failure restart.
2. The Building Controllers shall have the ability to perform the following pre tested control algorithms:
 - a. Two position with differential control and time delays
 - b. Floating control
 - c. Proportional control
 - d. Proportional plus integral control
 - e. Proportional, integral, plus derivative control
 - f. Automatic tuning of control loops
 - g. Model-free adaptive control
 - h. Start Stop Time Optimization
3. Controllers shall be able to execute custom, job-specific processes defined by the user, to automatically perform calculations and special control routines.
4. Each controller shall support plain language text comment lines in the operating program to allow for quick troubleshooting, documentation, and historical summaries of program development.

G. Peer-to-peer access to other DDC controllers

1. It shall be possible to use any actual or virtual point data or status, any system calculated data, a result from any process, or any user-defined constant in any controller in the system.
2. Any process shall be able to issue commands to points in any and all other controllers in the system.
3. Processes shall be able to generate operator messages and advisories to other operator I/O devices. A process shall be able to directly send a message to a specified device or cause the execution of an advanced annunciation feature, such as:
 - a. Generate a report
 - b. Annunciate an alarm
 - c. Issue a text message or email

H. Alarm Management

1. Alarm management shall be provided within the controller software to monitor and direct alarm information to operator devices.
2. Each Building Controller shall perform distributed, independent alarm analysis, minimize network traffic and prevent alarms from being lost. At no time shall the Building Controllers ability to report alarms be affected by either operator or activity at a PC workstation, local I/O device or communications with other panels on the network.
3. Conditional alarming shall allow generation of alarms based upon user defined multiple criteria.
4. An Alarm “shelving” feature shall be provided to disable alarms during testing. (Pull the Plug, etc.).
5. Binary Alarms. Each binary alarm object shall be set to alarm based on the operator-specified state. Provide the capability to automatically and manually disable alarming.
6. Analog Alarms. Each analog alarm object shall have both high and low alarm limits. Alarming must be able to be automatically and manually disabled.
7. All alarm shall include the point's user-defined language description and the time and date of occurrence.
8. Alarm reports and messages shall be routed to user-defined list of operator workstations, or other devices based on time and other conditions. An alarm shall be able to start programs, print reports, be logged in the event log, generate custom messages, and display graphics.
9. The user shall be able to add a 200-character alarm message to each alarm point to more fully describe the alarm condition or direct operator response. Each Building Controller shall be capable of storing a library of at least 50 alarm messages. Each message may be assigned to any number of points in the Controller.
10. Operator-selected alarms shall be capable of initiating a trigger to an advanced annunciation, such as text, email, etc.
11. An alarm history log shall report the start of the alarm condition, acknowledgement by a user and return of the alarm to normal condition.

I. Scheduling:

1. Provide a comprehensive menu driven program to automatically start and stop designated multiple objects or events in the system according to a stored time.
2. Schedules shall reside in the building controller and shall not rely on external processing or network.
3. It shall be possible to define a group of objects as a custom event (i.e., meeting, athletic activity, etc.). Events can then be scheduled to operate all necessary equipment automatically.
4. For points assigned to one common load group, it shall be possible to assign variable time delays between each successive start and/or stop within that group.
5. The operator shall be able to define the following information:
 - a. Time, day
 - b. Commands such as on, off, auto, etc.
 - c. Time delays between successive commands.
 - d. There shall be provisions for manual overriding of each schedule by an authorized operator.
6. It shall be possible to schedule calendar-based events up to one year in advance based on the following:
 - a. Weekly Schedule. Provide separate schedules for each day of the week. Each of these schedules should include the capability for start, stop, optimal start, optimal stop, and night economizer. When a group of objects are scheduled together as an Event, provide the capability to adjust the start and stop times for each member.
 - b. Exception Schedules. Provide the ability for the operator to designate any day of the year as an exception schedule. Exception schedules may be defined up to a year in advance. Once an exception schedule is executed, it will be discarded and replaced by the standard schedule for that day of the week.

J. Peak Demand Limiting (PDL):

1. The Peak Demand Limiting (PDL) program shall limit the consumption of electricity to prevent electrical peak demand charges.
2. PDL shall continuously track the amount of electricity being consumed, by monitoring one or more electrical kilowatt-hour/demand meters. These meters may measure the electrical consumption (kWh), electrical demand (kW), or both.
3. PDL shall sample the meter data to continuously forecast the demand likely to be used during successive time intervals.
4. If the PDL forecasted demand indicates that electricity usage is likely to exceed a user preset maximum allowable level, then PDL shall automatically shed electrical loads.
5. Once the demand peak has passed, loads that have been shed shall be restored and returned to normal control.

K. Temperature-compensated duty cycling

1. User defined conditions shall be able to initiate a Duty Cycle Control Program.
2. The Duty Cycle Control Program (DCCP) shall be configured to periodically stop and start loads according to various patterns.

3. The loads shall be cycled such that there is a net reduction in both the electrical demands and the energy consumed.
- L. Automatic Daylight Savings Time Switchover. The system shall provide automatic time adjustment for switching to/from Daylight Savings Time.
 - M. Night setback control. The system shall provide the ability to automatically adjust setpoints for night control.
 - N. Enthalpy switchover (economizer). The Building Controller Software (BCS) shall control the position of the air handler relief, return, and outside air dampers. If the outside air dry bulb temperature falls below changeover setpoint the BCS will modulate the dampers to provide 100 percent outside air. The user will be able to quickly change over to an economizer system based on dry bulb temperature and will be able to override the economizer cycle and return to minimum outside air operation at any time.
 - O. Control Loop Algorithm
 1. Provide a PID (proportional-integral-derivative) closed-loop control algorithm with direct or reverse action and anti-windup. The algorithm shall calculate a time-varying analog value that is used to position an output or stage a series of outputs. The controlled variable, setpoint, and weighting parameters shall be accessible from the operator workstation.
 - P. Adaptive Loop Tuning
 1. Building Controllers shall also provide high resolution sampling capability for verification of DDC control loop performance. Documented evidence of tuned control loop performance shall be provided on a monthly, seasonal, quarterly, annual period.
 2. For Model-Free Adaptive Control loops, evidence of tuned control loop performance shall be provided via graphical plots or trended data logs. Graphical plots shall minimally include depictions of setpoint, process variable (output), and control variable (e.g., temperature). Other parameters that may influence loop control shall also be included in the plot (e.g., fan on/off, mixed-air temp).
 3. For PID control loops, operator-initiated automatic and manual loop tuning algorithms shall be provided for all operator-selected PID control loops. Evidence of tuned control loop performance shall be provided via graphical plots or trended data logs for all loops.
 - a. In automatic mode, the controller shall perform a step response test with a minimum one-second resolution, evaluate the trend data, calculate the new PID gains and input these values into the selected LOOP statement.
 - b. Loop tuning shall be capable of being initiated either locally at the Building Controller, from a network workstation or remotely using dial-in modems. For all loop tuning functions, access shall be limited to authorized personnel through password protection.

- Q. Logic programming: Provide a software routine that can build ladder logic to control using many conditional statements.
1. The logic programming syntax shall be able to combine ladder logic with other software features, such as combining status, scheduling, PDL and alarm conditions into one conditional decision.
 2. Logic programming shall be able to reference conditions in any other controller in the system.
- R. Staggered Start:
1. This application shall prevent all controlled equipment from simultaneously restarting after a power outage. The order in which equipment (or groups of equipment) is started, along with the time delay between starts, shall be user definable in an application and shall not require written scripts or ladder logic.
 2. Upon the resumption of power, each Building Controller shall analyze the status of all controlled equipment, compare it with normal occupancy scheduling and turn equipment on or off as necessary to resume normal operations.
- S. Totalization Features:
1. Run-Time Totalization. Building Controllers shall automatically accumulate and store run-time hours for all digital input and output points. A high runtime alarm shall be assigned, if required, by the operator.
 2. Consumption totalization. Building Controllers shall automatically sample, calculate and store consumption totals on a daily, weekly or monthly basis for all analog and digital pulse input type points.
 3. Event totalization. Building Controllers shall have the ability to count events such as the number of times a pump or fan system is cycled on and off. Event totalization shall be performed on a daily, weekly or monthly basis for all points. The event totalization feature shall be able to store the records associated with events before reset.
- T. Data Collection:
1. A variety of historical data collection utilities shall be provided to manually or automatically sample, store, and display system data for all points.
 2. Building Controllers shall store point history data for selected analog and digital inputs and outputs:
 3. Any point, physical or calculated may be designated for trending. Any point, regardless of physical location in the network, may be collected and stored in each Building Controllers point group.
 4. Two methods of collection shall be allowed: either by up to four pre-defined time intervals or upon a pre-defined change of value. Sample intervals of 1 minute to 7 days shall be provided.
 5. Each Building Controller shall have a dedicated RAM-based buffer for trend data and shall be capable of storing a minimum of 10,000 data samples.
 6. Trend data shall be stored at the Building Controllers and uploaded to the workstation when retrieval is desired. Uploads shall occur based upon either user-

defined interval, manual command or when the trend buffers are full. All trend data shall be available for use in third-party personal computer applications.

2.1.1.6 BACNET BUILDING CONTROLLERS

- A. Provide all necessary hardware for a complete operating system as required. The Building Controller shall be able to operate as a standalone panel and shall not be dependent upon any higher level computer or another controller for operation.
- B. Basis of design is Siemens PX Modular and Compact Controllers (PXC).
- C. This controller shall have the BTL listing and meet the BACnet device profile of a Building Controller (B-BC) and shall support the following BACnet BIBBs:
 - 1. Data Sharing
 - a. Data Sharing-Read Property-Initiate, Execute (DS-RP-A,B)
 - b. Data Sharing-Read Property Multiple- Initiate, Execute (DS-RPM-A,B)
 - c. Data Sharing-Write Property- Initiate, Execute (DS-WP-A,B)
 - d. Data Sharing-Write Property Multiple- Execute (DS-WPM-B)
 - e. Data Sharing-COV- Initiate, Execute (DS-COV-A,B)
 - f. Data Sharing-COV-Unsolicited- Initiate, Execute (DS-COVU-A,B)
 - 2. Scheduling
 - a. Scheduling-Internal- Execute (SCHED-I-B)
 - b. Scheduling-External- Execute (SCHED-E-B)
 - 3. Trending
 - a. Trending-Viewing and Modifying Trends - Initiate (T-VMT-A)
 - b. Trending-Viewing and Modifying Trends Internal- Execute (T-VMT-I-B)
 - c. Trending-Viewing and Modifying Trends-External- Execute (T-VMT-E-B)
 - d. Trending-Automated Trend Retrieval- Execute (T-ATR-B)
 - 4. Network Management
 - a. Network Management-Connection Establishment- Initiate (NM-CE-A)
 - 5. Alarming
 - a. Alarm and Event-Notification- Initiate (AE-N-A)
 - b. Alarm and Event-Notification Internal- Execute (AE-N-E-B)
 - c. Alarm and Event-Notification External- Execute (AE-N-E-B)
 - d. Alarm and Event-ACK- Initiate, Execute (AE-ACK-A,B)
 - e. Alarm and Event –Alarm Summary- Execute (AE-ASUM-B)
 - f. Alarm and Event –Enrollment Summary- Execute (AE-ESUM-A,B)
 - g. Alarm and Event –Information- Initiate, Execute (AE-ESUM-A,B)
 - 6. Device Management
 - a. Device Management-Dynamic Device Binding- Initiate, Execute (DM-DDB-A,B)
 - b. Device Management-Dynamic Object Binding- Initiate, Execute (DM-DOB-A,B)
 - c. Device Management-Device Communication Control- Execute (DM-DCC-B)

- d. Device Management-Private Transfer- Initiate, Execute (DM-PT-A,B)
 - e. Device Management-Text Message- Initiate, Execute (DM-TM-A,B)
 - f. Device Management-Time Synchronization- Execute (DM-TS-B)
 - g. Device Management-Reinitialize Device- Execute (DM-RD-B)
 - h. Device Management-Backup and Restore- Execute (DM-RD-B)
 - i. Device Management-List Manipulation- Execute (DM-RD-B)
 - j. Device Management-Object Creation and Deletion- Execute (DM-OCD-B)
7. The Building Level Controller shall support the following Data Link Layers:
 - a. BACnet IP Annex J
 - b. BACnet IP Annex J Foreign Device
 - c. MS/TP Master (Claus 9)
 8. The Building Level Controller shall be able to interact with all of the BACnet objects in the controllers. In addition, the software shall be able to support the following objects as they relate to features in the workstation software:
 - a. Calendar – Creatable, Deletable
 - b. Command – Creatable, Deletable
 - c. Event Enrollment – Creatable, Deletable
 - d. Notification Class – Creatable, Deletable
 - e. Schedule - Creatable, Deletable
 9. The Building Level Controller shall support transmitting and receiving segmented messages.
 10. The Building Level Controller shall have the capability to be the BACnet/IP Broadcast Management Device (BBMD) and support foreign devices.
 11. The Building Level Controller shall have the capability to act as a BACnet router between MS/TP subnetworks and BACnet/IP.
- D. This level of controller shall be used for the following types of systems:
1. Chiller plant systems
 2. Heating plant systems
 3. Cooling Towers
 4. Pumping systems
 5. VAV air handlers
 6. Air handlers over 15,000 cfm
 7. Systems with over 24 input/output points
 8. Rooftop systems
- E. Computing power and memory minimum:
1. A 32-bit, stand-alone, multi-tasking, multi-user, real-time 100MHz digital control microprocessor module.
 2. Inputs shall be 16-bit minimum analog-to-digital resolution
 3. Outputs shall be 10-bit minimum digital-to-analog resolution
 4. Memory module (24 Megabyte, minimum) to accommodate all Primary Control Panel software requirements, including but not limited to, its own operating system and databases (see Controllers Software section), including control processes, energy management applications, alarm management applications, historical/trend

data for points specified, maintenance support applications, custom processes, operator I/O, dial-up communications.

5. Real time clock and battery
 6. Data collection/ Data Trend module sized for 10,000 data samples.
 7. Flash Memory Firmware: Each Building Level Control Panel shall support firmware upgrades without the need to replace hardware.
- F. Onboard or Modular hardware and connections:
1. Primary Network communication module, if needed for primary network communications.
 2. Secondary Network communication module, if needed for secondary network communications.
 3. RJ45 port 10/100Mbaud
 4. RS485 ports for subnetworks and point expansion
 5. Man to Machine Interface port (MMI)
 6. USB Port
- G. Input and Output Points Hardware
1. Input/output point modules as required including spare capacity.
 2. Input/output point modules shall have removable terminal blocks.
 3. Monitoring of the status of all hand-off-auto switches.
 4. Monitoring of all industry standard types of analog and digital inputs and outputs, without the addition of equipment to the primary control panel.
 5. Local status indication for each digital input and output for constant, up-to-date verification of all point conditions without the need for an operator I/O device. Each primary control panel shall perform diagnostics on all inputs and outputs and a failure of any input or output shall be indicated both locally and at the operator workstation.
 6. Graduated intensity LEDs or analog indication of value for each analog output.
- H. Code compliance
1. Approvals and standards: UL916; CE; FCC
 2. Provide UL864-UUKL where called for in the sequences of operations.
- I. Accessories:
1. Appropriate NEMA rated metal enclosure.
 2. Power supplies as required for all associated modules, sensors, actuators, etc.
- J. The operator shall have the ability to manually override automatic or centrally executed commands at the primary control panels via local, point discrete, on-board hand/off/auto operator override switches. If on board switches are not available, provide separate control panels with HOA switches. Mount panel adjacent to primary control panel. Provide hand/off/auto switch for each digital output, including spares.
- K. Each Building Level Control Panel shall continuously perform self-diagnostics on all hardware modules and network communications. The System Level Control Panel shall

provide both local and remote annunciation of any detected component failures, low battery conditions or repeated failure to establish communication with any system.

- L. Panel setup, point definitions and sequencing diagrams shall be backed up on EEPROM memory.
- M. Power loss. In the event of the loss of power, there shall be an orderly shutdown of all Building Controllers to prevent the loss of database or operating system software. Non-volatile memory shall be incorporated for all critical controller configuration data and battery backup shall be provided to support the real-time clock and all volatile memory for a minimum of 30 days.
- N. Building Level control panels shall provide at least two serial data communication ports for operation of operator I/O devices such as industry standard printers, operator terminals, modems and portable laptop operator's terminals. Primary control panels shall allow temporary use of portable devices without interrupting the normal communications, operation of permanently connected modems, printers or terminals.
- O. Building Level Controllers shall have the capability to serve as a gateway between Modbus subnetworks and BACnet objects. Provide software, drives and programming.
- P. Isolation shall be provided at all primary control panel terminations, as well as all field point terminations to suppress induced voltage transients consistent with IEEE Standards 587-1980.
- Q. Spare Capacity: Provide enough inputs and outputs to handle the equipment shown to be "future" on drawings and 10% more of each point type. Provide all hardware modules, software modules, processors, power supplies, communication controllers, etc. required to ensure adding a point to the spare point location only requires the addition of the appropriate sensor/actuator and field wiring/tubing.
- R. Environment.
 - 1. Controller hardware shall be suitable for the anticipated ambient conditions.
 - 2. Controllers used outdoors and/or in wet ambient conditions shall be mounted within waterproof enclosures and shall be rated for operation at 0°C to 49°C (32°F to 120°F).
 - 3. Controllers used in conditioned space shall be mounted in dust-proof enclosures and shall be rated for operation at 0°C to 49°C (32°F to 120°F).
 - 4. Controller hardware shall be optionally suitable for rooftop environments.
- S. Immunity to power and noise.
 - 1. Controller shall be able to operate at 90% to 110% of nominal voltage rating and shall perform an orderly shutdown below 80% nominal voltage.
 - 2. Operation shall be protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W at 1 m (3 ft).

3. Isolation shall be provided at all primary network terminations, as well as all field point terminations to suppress induced voltage transients consistent with:
 - a. RF-Conducted Immunity (RFCI) per ENV 50141 (IEC 1000-4-6) at 3V.
 - b. Electro Static Discharge (ESD) Immunity per EN 61000-4-2 (IEC 1000-4-2) at 8 kV air discharge, 4 kV contact.
 - c. Electrical Fast Transient (EFT) per EN 61000-4-4 (IEC 1000-4-4) at 500V signal, 1 kV power.
 - d. Output Circuit Transients per UL 864 (2,400V, 10A, 1.2 Joule max).
4. Isolation shall be provided at all Building Controller's AC input terminals to suppress induced voltage transients consistent with:
 - a. IEEE Standard 587 1980
 - b. UL 864 Supply Line Transients
 - c. Voltage Sags, Surge, and Dropout per EN 61000-4-11 (EN 1000-4-11)

2.1.1.7 BACNET ADVANCED APPLICATION CONTROLLERS

- A. Provide all necessary hardware for a complete operating system as required. The Advanced Application level control panel shall be able to operate as a standalone panel and shall not be dependent upon any higher level computer or another controller for operation.
- B. Basis of design is Unitary Equipment Controller (PXCxx-UCM).
- C. The Advanced Application Controller Software shall be capable of BACnet communications. The BACnet Advanced Application Controller (B-AAC) shall have demonstrated compliance to BTL through BTL listing and shall substantially conform to BACnet Advanced Application Controller (B-AAC) device profile as specified in ANSI/ASHRAE 135-2004 or ANSI/ASHRAE 135-2008. Supported BIBBS shall include:
 1. Data Sharing
 - a. Data Sharing-Read Property-Initiate, Execute (DS-RP-A,B)
 - b. Data Sharing-Read Property Multiple- Initiate, Execute (DS-RPM-A,B)
 - c. Data Sharing-Write Property- Initiate, Execute (DS-WP-A,B)
 - d. Data Sharing-Write Property Multiple- Execute (DS-WPM-B)
 - e. Data Sharing-COV- Initiate, Execute (DS-COV-A,B)
 2. Scheduling
 - a. Scheduling-Internal- Execute (SCHED-I-B)
 3. Trending
 - a. Trending-Viewing and Modifying Trends Internal- Execute (T-VMT-I-B)
 - b. Trending-Automated Trend Retrieval- Execute (T-ATR-B)
 4. Network Management
 - a. Network Management-Connection Establishment- Initiate (NM-CE-A)
 5. Alarming
 - a. Alarm and Event-Notification Internal- Execute (AE-N-I-B)
 - b. Alarm and Event-ACK- Initiate, Execute (AE-ACK-A,B)

- c. Alarm and Event –Enrollment Summary- Execute (AE-ESUM-B)
- d. Alarm and Event –Information- Execute (AE-INFO-B)
- 6. Device Management
 - a. Device Management-Dynamic Device Binding- Initiate, Execute (DM-DDB-A,B)
 - b. Device Management-Dynamic Object Binding- Initiate, Execute (DM-DOB-A,B)
 - c. Device Management-Device Communication Control- Execute (DM-DCC-B)
 - d. Device Management-Time Synchronization- Execute (DM-TS-B)
 - e. Device Management-Reinitialize Device- Execute (DM-RD-B)
 - f. Device Management-Backup and Restore- Execute (DM-BR-B)
 - g. Device Management-List Manipulation- Execute (DM-LM-B)
 - h. Device Management-Object Creation and Deletion- Execute (DM-OCD-B)
- 7. The Advanced Application Controller shall be able to interact with all of the BACnet objects in the controllers. In addition, the software shall be able to support the following objects as they relate to features in the workstation software:
 - a. Calendar – Creatable, Deletable
 - b. Command – Creatable, Deletable
 - c. Event Enrollment – Creatable, Deletable
 - d. Notification Class – Creatable, Deletable
 - e. Schedule - Creatable, Deletable
- 8. The Advanced Application Controller shall support transmitting and receiving segmented messages.

D. Communication:

- 1. BAS Network: The Advanced Application Controller shall support the following Data Link Layers:
 - a. MS/TP Master
- 2. Serial Communication: Temporary use of portable devices shall not interrupt the BAS communication, nor the normal operation of permanently connected printers or terminals.
 - a. Provide at least one EIA-232C serial data communication port for operation of operator I/O devices such as industry standard printers, operator terminals, and portable laptop operator's terminals.
 - b. A USB port shall alternatively be available to support local HMI tools connection.

E. Software

- 1. The software programs specified in this section shall be provided as an integral part of Advanced Application Controllers and shall not be dependent upon any higher level computer or another controller for execution.
- 2. Advanced Application Controllers shall have the ability to perform energy management routines including but not limited to
 - a. scheduling, calendar-based scheduling, holiday scheduling, temporary schedule overrides

- b. automatic daylight savings time switch over
 - c. night setback control
 - d. economizer switch over using enthalpy, dry bulb or a combination
 - e. peak demand limiting,
 - f. temperature-compensated duty cycling
 - g. heating/cooling interlock
 - h. supply temperature reset
 - i. priority load shedding
 - j. power failure restart
3. The software shall have a routine for automatic tuning of control loops
 4. System Security in the Field Panel
 - a. User access shall be secured using individual security passwords and user names.
 - b. Passwords shall restrict the user to the objects, applications, and system functions as assigned by the system manager.
 - c. The system shall protect itself from unauthorized use by automatically logging off following the last keystroke. The delay time shall be user-definable.
 - d. Use of workstation resident security as the only means of access control is not an acceptable alternative to resident system security in the field panel.
 5. User Defined Control Applications:
 - a. Controllers shall be fully-programmable. Controllers shall execute custom, job-specific sequences to automatically perform calculations and special control routines. Factory installed or pre-configured sequences shall only be allowed if they exactly match the sequence specified herein.
 - b. Programs shall combine control logic, control loop algorithms, and energy management routines
 - c. Each controller shall support plain language text comment lines in the operating program to allow for quick troubleshooting, documentation, and historical summaries of program development.
 - d. Controller shall provide a HELP function key, providing enhanced context sensitive on-line help with task oriented information from the user manual.

F. Adaptive Loop Control.

1. Each AAC controller shall come standard with an Adaptive Control Loop Algorithm
 - a. Tuning parameter shall automatically adjust for non-linear applications
2. Model-Free Adaptive (MFA) algorithm
 - a. The algorithm shall not require modeling of the non-linear system in order to maintain control at all points of the non-linear load.
 - b. The controlled variable, setpoint, and weighting parameters shall be user-selectable.
3. Output shall be analog or shall stage a series of outputs.
4. Adaptive Control shall take the place of Proportional, Proportional + Integral, and PID type algorithms for non-linear applications. Adaptive Control routines shall :
 - a. Improve response time

- b. Improve System efficiency
 - c. Improve Stability
 - d. Result in Consistent outputs
 - e. Reduce cycling and repositioning
 - f. Reduce wear and tear on actuators
5. Adaptive control shall auto-adjust to compensate for
 - a. mode changes
 - b. load changes
 - c. seasonal changes
 - d. Heating and cooling changeover
 - e. Heating or cooling capacity changes on the primary side
 - f. Flow changes on the primary or secondary side
 - g. Airflow changes across coil
 - h. Flow across a heat exchanger
 6. Adaptive control shall auto-adjust to compensate for
 - a. Non-linear coils and heat exchangers
 - b. Hot water and chilled water reset routines
 - c. Water flow reset routines
 - d. Duct Static reset routines
 7. Auto-Tune PID loops are not acceptable substitutions.
 8. If Adaptive Loop Control is not available, then the BAS contractor shall provide re-tuning of the control loops for coils and heat exchangers for each of the following conditions:
 - a. Low heating supply water, high heating supply water
 - b. Low load on steam coil, high load on steam coil
 - c. Chilled water coil, non dehumidification and condensing
 - d. Chilled water coil, low airflow, high airflow, economizer
 - e. Dual temperature systems tune for heating and cooling modes
 - f. Each of 4 seasons
- G. This level of controller shall be used for the following types of systems:
1. Systems with custom sequences that meet all of the criteria below:
 2. No primary pumping systems
 3. Secondary Pumping systems that are remote from Central Plants
 4. Air handlers up to 15,000 cfm
 5. Systems up to 20 input/output points
 6. Room control sequences that cannot be achieved with an application specific controller
 7. BAS Network or Architecture or Sequences do not require the system to be on an IP network
 8. No systems that require integration to meters, VFDs or other smart equipment
 9. Integration to smart thermostats is allowed
- H. Input/Outputs
1. Inputs shall be 16-bit minimum digital resolution
 2. Outputs shall be 10-bit minimum digital resolution

3. The following I/O port types shall be available on the controller
 - a. Universal Input (software configurable):
 - 1) Digital Input choices:
 - a) Pulse Accumulator
 - b) Contact Closure Sensing
 - c) Dry Contact/Potential Free inputs only
 - d) Digital Input (10 ms settling time)
 - e) Counter inputs up to 20 Hz, minimum pulse duration 20 ms (open or closed)
 - 2) Analog Input Choices:
 - a) 0-10 Vdc
 - b) 4-20 mA
 - c) 1K Ni RTD @ 32°F (Siemens, JCI, DIN Ni 1K)
 - d) 1K Pt RTD (375 or 385 alpha) @ 32°F
 - e) 10K NTC Type 2 or Type 3 Thermistor
 - f) 100K NTC Type 2 Thermistor
 - b. Universal Input or Output (software configurable):
 - 1) All of the above input types
 - 2) Analog Output Types:
 - a) 0 to 10 Vdc @ 1 mA max
 - c. Super Universal Input or Output (software configurable):
 - 1) All of the above input types
 - 2) All of the above output types
 - 3) Super digital output type:
 - a) 0 to 24 Vdc, 22 mA max. (for controlling pilot relay)
 - 4) Super Analog Output Choices:
 - a) 0 to 20 mA @ 650 Ω max.
 4. Provide software configurable I/O ports such that a programmer make a port either an input or an output
- I. Each System Level Control Panel shall, at a minimum, be provided with:
1. Appropriate NEMA rated metal enclosure.
 2. A 32-bit, multi-tasking, real-time 100 MHz digital control microprocessor with plug-in, enclosed processors.
 3. Each Advanced Application Controller shall have sufficient memory, a minimum of 24 megabyte, to support its own operating system and databases, including control processes, energy management applications, alarm management applications, historical/trend data for points specified, maintenance support applications, custom processes, and operator I/O.
 4. Real time clock and battery
 5. Data collection/ Data Trend module sized for 10,000 data samples.
 6. Power supplies as required for all associated modules, sensors, actuators, etc.
 7. Monitoring of all industry standard types of analog and digital inputs and outputs, without the addition of equipment to the primary control panel.
 8. Local status indication for each digital input and output for constant, up-to-date verification of all point conditions without the need for an operator I/O device.

9. Each control panel shall perform diagnostics on all inputs and outputs and a failure of any input or output shall be indicated both locally and at the operator workstation.
 10. Graduated intensity LEDs or analog indication of value for each analog output.
- J. Power loss. In the event of the loss of power, there shall be an orderly shutdown of all controllers to prevent the loss of database or operating system software. Non-volatile memory shall be incorporated for the operating system software and firmware.
1. Controller shall be able to operate at 90% to 110% of nominal voltage rating and shall perform an orderly shutdown below 80% nominal voltage.
 2. Brownout protection and power recovery circuitry protect the controller board from power fluctuations.
 3. Battery backup shall be provided to support the real-time clock for 10 years
 4. The program and database information stored SDRAM memory shall be battery backed for a minimum of 30 days and up to 60 days. This eliminates the need for time consuming program and database re-entry in the event of an extended power failure.
- K. Database Restore: Each AAC controller shall automatically save the latest programmed database. The controller shall be able to automatically restore a lost or corrupt database without involvement from the operator.
- L. Each System Level Control Panel shall continuously perform self-diagnostics on all hardware modules and network communications. The System Level Control Panel shall provide both local and remote annunciation of any detected component failures, low battery conditions or repeated failure to establish communication with any system.
- M. Each Control Panel shall support firmware upgrades without the need to replace hardware.
- N. System Level control panels shall provide at least two RS-232C serial data communication ports for operation of operator I/O devices such as operator terminals, and additional memory. Control panels shall allow temporary use of portable operator interface devices without interrupting the normal communications.
- O. Immunity to noise.
1. Operation shall be protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W at 1 m (3 ft).
 2. Isolation shall be provided at all primary network terminations, as well as all field point terminations to suppress induced voltage transients consistent with:
 - a. RF-Conducted Immunity (RFCI) per ENV 50141 (IEC 1000-4-6) at 3V.
 - b. Electro Static Discharge (ESD) Immunity per EN 61000-4-2 (IEC 1000-4-2) at 8 kV air discharge, 4 kV contact.
 - c. Electrical Fast Transient (EFT) per EN 61000-4-4 (IEC 1000-4-4) at 500V signal, 1 kV power.
 - d. Output Circuit Transients per UL 864 (2,400V, 10A, 1.2 Joule max).

3. Isolation shall be provided at all Advanced Application Controller's AC input terminals to suppress induced voltage transients consistent with:
 - a. IEEE Standard 587 1980
 - b. Voltage Sags, Surge, and Dropout per EN 61000-4-11 (EN 1000-4-11)

P. Agency Compliance

1. UL UL916 PAZX (all models)
2. UL916 PAZX7 (all models)
3. FCC Compliance CFR47 Part 15, Subpart B, Class B

Q. Spare Capacity: Provide enough inputs and outputs to handle the equipment shown to be "future" on drawings and 10% more of each point type. Provide all hardware modules, software modules, processors, power supplies, communication controllers, etc. required to ensure adding a point to the spare point location only requires the addition of the appropriate sensor/actuator and field wiring/tubing.

2.1.1.8 INTEGRATION GATEWAYS

- A. The Building Automation System shall establish a seamless interconnection with other building, electrical and/or mechanical subsystems as well as other manufacturers control systems. List of systems may be specified in the sequences, on the drawings or in the specifications. These systems shall be controlled, monitored and graphically operated with the same software used for all other control modules.
- B. System Information. All system information specified in the I/O Point Summary and related documents shall be available to the BAS server.
- C. This contactor shall include labor and material for communicating and displaying at the BAS Interfaces points from packaged equipment and building subsystems that are specified to be BACnet and are required in the sequence of operations.
- D. Hardware:
 1. The integration software driver shall reside on a Building Controller or on a dedicated DDC gateway device designed to provide seamless, two-way translation between two or more standard or non-standard protocols.
 2. Provide Data Link\Physical Layer communication ports as necessary to match the communication available from the 3rd part equipment manufacturer. Configurations including EIA-232, EIA-485, and Ethernet.
 3. In addition to BACnet, the protocol gateway shall also support other protocols including Modbus, J-Bus and other protocols as specified herein for electrical/mechanical subsystems.
 4. The gateway shall have at least two communication ports. One shall be for communication between native BACnet controllers residing on the controller network. The other port(s) shall have the ability to be configured for different protocols.

- E. The protocol gateway shall provide full custom programmability of the data flowing between the networks using the same software used for the Building Controllers as specified herein. The system shall have the ability to create custom building control strategies using global data between networks.

2.1.1.9 CONTROL PANELS

- A. Controllers in mechanical rooms shall be mounted in NEMA 1 enclosures.
- B. Controllers in areas where moisture is a concern shall be mounted in NEMA 12 enclosures.
- C. Controllers installed outdoors shall be mounted in NEMA 4X enclosures. Provide heaters where freezing temperatures are normally experienced.
- D. Mount on walls at an approved location or provide a free standing rack.
- E. Panels shall be constructed of 16 gauge, furniture-quality steel, or extruded-aluminum alloy, totally enclosed, with hinged doors and keyed lock and with ANSI 61 gray polyester-powder painted finish, UL listed. Provide common keying for all panels.
- F. Provide power supplies for control voltage power.
- G. Dedicate 1 power supply to the DDC controller. Other devices shall be on a separate power supply, unless the power for the control device is derived from the controller terminations.
- H. Power supplies for controllers shall be a transformer with a fuse or circuit breaker. Power supplies for other devices can be plain transformers.
- I. All power supplies for 24V low voltage wiring shall be class 2 rated and less than 100VA. If low voltage devices require more amps, then provide multiple power supplies. If a single device requires more amps, then provide a dedicated power supply in a separate enclosure and run a separate, non-class 2 conduit to the device.
- J. Surge transient protection shall be incorporated in design of system to protect electrical components in all DDC Controllers and operator's workstations.
- K. All devices in a panel shall be permanently mounted, including network switches, modems, media converters, etc.
- L. Provide a pocket to hold documentation.

PART 3 - EXECUTION

3.1.1.1 EXAMINATION

- A. The project plans shall be thoroughly examined for control device and equipment locations. Any discrepancies, conflicts, or omissions shall be reported to the architect/engineer for resolution before rough-in work is started.
- B. The contractor shall inspect the site to verify that equipment may be installed as shown. Any discrepancies, conflicts, or omissions shall be reported to the engineer for resolution before rough-in work is started.
- C. The contractor shall examine the drawings and specifications for other parts of the work. If head room or space conditions appear inadequate—or if any discrepancies occur between the plans and the contractor’s work and the plans and the work of others—the contractor shall report these discrepancies to the engineer and shall obtain written instructions for any changes necessary to accommodate the contractor’s work with the work of others.

3.1.1.2 INSTALLATION

- A. Provide all relays, switches, and all other auxiliaries, accessories and connections necessary to make a complete operable system in accordance with the sequences specified. All field wiring shall be by this contractor.
- B. Install controls so that adjustments and calibrations can be readily made. Controls are to be installed by the control equipment manufacturer.
- C. Mount surface-mounted control devices on brackets to clear the final finished surface on insulation.
- D. Install labels and nameplates on each control panel listing the name of the panel referenced in the graphics and a list of equipment numbers served by that panel.

3.1.1.3 GRAPHIC DISPLAY GENERATION

- A. All software shall be capable of providing color graphics. All software shall include a graphical viewing and control environment and definition and construction of dynamic color graphic displays.
- B. Provide a main default screen showing the basic layout of the building. Each color graphic screen shall have transfer links to allow the building operator to transfer between system associated screens (both forward and backward), as well as a transfer link back to the main default screen.

- C. Basic CAD floor plans with layers for walls, windows, low pressure ductwork only, supply diffusers and room numbers shall be provided for all CV, VAV, and FPVAV terminal units. Floor plans shall show the location of each space temperature sensor with a dashed line to the associated terminal unit. Display in real time the difference between the space temperature and the current setpoint.
1. Display the
 - a. cooling %,
 - b. heating % (if applicable)
 - c. current CFM of each terminal unit.
 2. Provide a transfer link for each terminal unit to allow the operator to access the flow graphic for each individual terminal unit. Use a different color to shade the background area for each part of a floor plan graphic served by a different air handling unit.
- D. Thermal floor plan graphics:
1. Show heating and cooling zones throughout the building in a range of colors (minimum 5) that provide a visual display of temperatures relative to their respective setpoints. The colors shall be updated dynamically as zones' comfort conditions change. Locations of space sensors shall also be shown for each zone. Floor plan humidity's shall be represented similarly to zone temperatures. Setpoint adjustment and color band displays shall be provided as a tool for user adjustment.
 2. These full screen plans shall be accessible by rolling over the floor on the building elevation rendering. This will provide the viewer a quick and accurate overview of which zones are at setpoint, near setpoint, or need attention.
 3. The viewer may then click on any zone to be brought to the terminal unit that is related to that zone. Rolling over any zone will bring up the zone description and temperature in a pop-up flag. Flags are used to keep the zone information legible regardless of how small the zone is depicted on the plan
 4. All floor plans shall be vector based to allow for zooming in and out of floor plans without pixelization.
 5. If zone lighting controls are tied into the BAS, then produce the same floor viewing and control for lights.
 6. If a Web-based graphical interface is specified, then the floor plan graphics shall be accessible through the Web Browser Interfaces.
- E. All control set points shall be easily adjustable from the system's color graphic screen by operators with the proper access level. Each controlled point on the BAS operator workstation color graphic screens shall have the set point indicated along with the actual controlled variable reading (preferred set point on top and actual reading on bottom). All points shall indicate the associated engineering unit. All analog outputs points shall indicate engineering units such as "%-open" or "%-closed" as required by the application. All normally-closed or normally-open points shall indicate the normal position (such as "N.C." or "N.O." next to the controlled device).

- F. Provide system color graphics for each HVAC system and for each electrical, plumbing and/or piping system that is monitored and/or controlled by the BMS. Provide scaled floor plans indicating equipment location, service, and system data as required.
- G. Provide color graphic floor plan displays and system schematics for each piece of mechanical equipment, including but not limited to air handling units, chilled water systems and hot water systems to optimize system performance analysis and speed alarm recognition.
- H. The operator interface shall allow users to access the various system schematics and floor plans via a graphical penetration scheme, menu selection or text-based commands.
- I. Dynamic temperature values, humidity values, flow values and status indication shall be shown in their actual respective locations and shall automatically update to represent current conditions without operator intervention.
- J. The windowing environment of the operator interface shall allow the user to simultaneously view several graphics at a time to analyze total building operation or to allow the display of a graphic associated with an alarm to be viewed without interrupting work in progress.
 - 1. Provide libraries of pre-engineered screens and symbols depicting standard air handling unit components (e.g., fans, cooling coils, filters, dampers, etc.), complete mechanical systems (e.g., constant volume-terminal reheat, VAV, etc.) and electrical symbols.
 - 2. Graphical displays can be created to represent any logical grouping of system points or calculated data based upon building function, mechanical system, building layout or any other logical grouping of points which aids the operator in the analysis of the facility.
- K. Provide an automatically updated, dynamic display of the site-specific BMS architecture indicating the status of primary and secondary controllers.
- L. Provide a separate dynamic display page of each HVAC (AHU, AC, chiller, cooling tower, fuel oil, etc.), electrical, and/or plumbing system connected to the BMS.
- M. Provide a separate dynamic display page of each piece of terminal equipment (VAV box, fan coil unit, etc.) connected to the BMS.
- N. Provide an additional dynamic, graphic display pages as required by the operating staff to further assist in daily system operations.
- O. Graphics shall incorporate all system integration points communicated via hardware or software gateways and/or interfaces. Origin of information shall be transparent to the operator and shall be controlled, displayed, trended, etc. as if the points were hardwired to the BMS.

- P. Each graphic shall have a “BACK” button and a “HOME” or “MAIN” button located in the same location on all graphics.
- Q. The operator shall be able to clearly distinguish the difference between the following types of points on a graphic either by color, shape, icon or text label:
 - 1. Real-time sensor reading
 - 2. Setpoint
 - 3. Manually set vs. program set Setpoint
 - 4. Real-time output reading
 - 5. Manually Overridden or commanded output vs program set output
 - 6. Status feedback from a piece of equipment vs the output command
- R. Make appear links to additional information associated with the system on the graphic, such as:
 - a. Controls as-built schematics and wiring diagrams
 - b. As-built Sequence of Operation
 - c. Mechanical drawings
 - d. Electrical drawings
- S. Integration graphics shall be representative of personnel standing in front of equipment. The graphics for equipment specified in the Building Systems Integration paragraph shall be representative of the manufacturers’ local display panel and each shall be completely operable from the computer workstation.
- T. Lighting Control System User Interface:
 - 1. Floor plan Graphics: Provide interface for area-level lights status, level, occupancy mode, preset scene, and ability to override all.
 - 2. Room Graphics: Provide interface for zone-level lights status, level, occupancy mode, preset scene, light level (photocell), light level setpoint, and ability to override all.
 - 3. Schedule Interface: Time clock schedule commands to the Lighting Control System shall be managed by the BAS System. Provide interface for schedule mode input for each time clock area, with mode feedback.
 - 4. Alarm Management: BAS System shall manage collection and distribution of alarms from Lighting Control System. Provide interface for any system or device alarm, including lamp or ballast failures (as available), panel failures, or network failures.
 - 5. Trend/History Management: BAS System shall collect and manage historical trend logs for Lighting Control System points.

3.1.1.4 ELECTRICAL WIRING SCOPE

- A. This contractor shall be responsible for power that is not shown on the electrical drawings, to controls furnished by this contractor. If power circuits are shown on the electrical drawings, this contractor shall continue the power run to the control device. If

power circuits are not shown, this contractor shall coordinate with the electrical contractor to provide breakers at distribution panels for power to controls. This contractor is then responsible for power from the distribution panel.

1. Coordinate panel locations. If enclosures for panels are shown on the electrical drawings, furnish the enclosures according to the electrician's installation schedule.
- B. This contractor shall not be responsible for power to control panels and control devices that are furnished by others, unless it is part of the control interlock wiring.
- C. Refer to Coordination section for what devices this contractor is responsible to mount and which are turned over to others to mount.
- D. This contractor shall be responsible for wiring of any control device that is furnished as part of this section of specification.
- E. Interlock wiring shall be run in separate conduits from BAS associated wiring.
- F. Provide network wiring for equipment that is called to be integrated to the BAS.

3.1.1.5 ELECTRICAL WIRING AND CONNECTION INSTALLATION

- A. All low voltage control wiring shall be class 2. Control wiring that is not class 2 shall be run in separate conduits from class 2 wiring.
- B. Floor level network wiring between terminal units can be combined with thermostat and other low voltage wiring in the same conduit. All other network wiring shall be in dedicated conduits.
- C. Install raceways, boxes, and cabinets according to Division 26 Section "Raceways and Boxes."
- D. Install building wire and cable according to Division 26 Section "Conductors and Cables."
- E. Installation shall meet the following requirements:
 1. Conceal cable and conduit, except in mechanical rooms and areas where other conduit and piping are exposed.
 2. Install exposed cable in raceway or conduit.
 3. Install concealed cable using plenum rated cable.
 4. Bundle and harness multiconductor instrument cable in place of single cables where several cables follow a common path.
 5. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.
 6. Number-code or color-code conductors for future identification and service of control system, except local individual room control cables.
 7. All wiring in lab areas shall be in conduit.

8. All unsupported risers shall be rigid steel conduit. Supported risers shall be EMT.
- F. Rigid conduit shall be steel, hot dip galvanized, threaded with couplings, ¾ inch minimum size, manufactured in accordance with ANSI C-80-1. Electrical metallic tubing (EMT) with compression fittings or intermediate metallic conduit (IMC) may be used as conduit or raceway where permitted by the NEC.
- G. Concealed control conduit and wiring shall be provided in all spaces except in the Mechanical Equipment Rooms and in unfinished spaces. Install in parallel banks with all changes in directions made at 90 degree angles.
- H. Install conduit adjacent to machine to allow service and maintenance.
- I. Connect manual-reset limit controls independent of manual-control switch positions. Automatic duct heater resets may be connected in interlock circuit of power controllers.
- J. Connect hand-off-auto selector switches to override automatic interlock controls when switch is in hand position.
- K. Ground equipment.

3.1.1.6 COMMUNICATION WIRING

- A. All cabling shall be installed in a neat and workmanlike manner. Follow manufacturer's installation recommendations for all communication cabling.
- B. Do not install communication wiring in raceway and enclosures containing Class 1 wiring.
- C. Maximum pulling, tension, and bend radius for cable installation, as specified by the cable manufacturer, shall not be exceeded during installation.
- D. Contractor shall verify the integrity of the entire network following the cable installation. Use appropriate test measures for each particular cable.
- E. Cable bundling:
 1. RS485 cabling run open air in accessible areas can be bundled with other class 2 low voltage cabling.
 2. RS485 cabling run between terminal units in conduits above ceilings or under floors or in inaccessible areas can be bundled with other class 2 low voltage cabling.
 3. RS485 cabling run between floors shall be in a communication only conduit.
 4. RS485 conduit run long distances between utility rooms or between buildings shall be in a communication only conduit.
 5. Ethernet cabling shall be in a communication only conduit.
 6. Ethernet and RS485 can be run together.

7. Fiber optics can be run with Ethernet and RS485 cabling as long as the conduit is bent to fiber optic standards and junction boxes are sized for fiber optic use.

F. RS485 Cabling

1. RS485 cabling shall be used for BACnet MS/TP networks.
2. RS485 shall use low capacitance, 20-24 gauge, twisted shielded pair.
3. The shields shall be tied together at each device.
4. The shield shall be grounded at one end only and capped at the other end.
5. Provide end of line (EOL) termination devices at each end of the RS485 network or subnetwork run, to match the impedance of the cable, 100 to 120ohm.

G. Ethernet Cabling

1. Ethernet shall not be run with any Class 1 or low voltage Class 2 wiring.
2. CAT6, unshielded twisted pair (UTP) cable shall be used for BAS Ethernet.
3. Solid wire shall be used for long runs, between mechanical rooms and between floors. Stranded cable can be used for patch cables and between panels in the same mechanical room up to 50 feet away.
4. When the BAS Ethernet connects to an Owner's network switch, document the port number on the BAS As-builts.

H. Fiber-Optic Cabling

1. Maximum pulling tensions as specified by the cable manufacturer shall not be exceeded during installation. Post-installation residual cable tension shall be within cable manufacturer's specifications.
2. All cabling and associated components shall be installed in accordance with manufacturers' instructions. Minimum cable and unjacketed fiber bend radii, as specified by cable manufacturer, shall be maintained.
3. All terminations shall to be made into a patch panel, designed for such use. Free air terminations with patch panels are prohibited.

- I. When a cable enters or exits a building, a lightning arrestor must be installed between the lines and ground. The lightning arrestor shall be installed according to the manufacturer's instructions.

- J. All runs of communication wiring shall be unspliced length when that length is commercially available.

- K. All communication wiring shall be labeled to indicate origination and destination data.

- L. Grounding of coaxial cable shall be in accordance with NEC regulations article on "Communications Circuits, Cable, and Protector Grounding."

3.1.1.7 IDENTIFICATION

- A. Permanent warning labels shall be affixed to all equipment that can be automatically started by the DDC system.

1. Labels shall use white lettering (12-point type or larger) on a red background.
 2. Warning labels shall read as follows: C A U T I O N This equipment is operating under automatic control and may start or stop at any time without warning. Switch disconnect to “Off” position before servicing.
- B. Permanent warning labels shall be affixed to all motor starters and all control panels that are connected to multiple power sources utilizing separate disconnects.
1. Labels shall use white lettering (12-point type or larger) on a red background.
 2. Warning labels shall read as follows: C A U T I O N This equipment is fed from more than one power source with separate disconnects. Disconnect all power sources before servicing.
- C. Control Equipment and Device labeling:
1. Labels and tags shall match the unique identifiers shown on the as-built drawings.
 2. All Enclosures shall be labeled to match the as-built drawing by either control panel name or the names of the DDC controllers inside.
 3. All sensors and actuators not in occupied areas shall be tagged.
 4. Airflow measurement arrays shall be tagged to show flow rate range for signal output range, duct size, and pitot tube AFMS flow coefficient.
 5. Duct static pressure taps shall be tagged at the location of the pressure tap.
 6. Each device inside enclosures shall be tagged.
 7. Terminal equipment need only have a tag for the unique terminal number, not for each device. Match the unique number on:
 - a. First, the design drawings, or
 - b. Second, the control as-builts, or
 - c. Third, the DDC addressing scheme
 8. Tags on the terminal units shall be displayed on the Operator Workstation Graphics.
- D. Tags shall be mechanically printed on permanent adhesive backed labeling strips, 12 point height minimum.
- E. Manufacturers’ nameplates and UL or CSA labels are to be visible and legible after equipment is installed.
- F. Identification of Wires
1. Tag each wire with a common identifier on each end of the wire, such as in the control panel and at the device termination.
 2. Tag each network wire with a common identifier on each end.
 3. Tag each 120V power source with the panel and breaker number it is fed by.
- G. Identification of Conduits:
1. Identify the low voltage conduit runs as BAS conduit, power feeds not included.
 2. Identify each electric box, junction box, utility box and wiring tray with a blue paint mark or blue permanent adhesive sticker.
 3. For conduit runs that run more than 8 ft between junction boxes in 1 room, place a blue identifier at least every 8 feet.

4. Place a blue identifier on each side of where a conduit passed through a wall or other inaccessible path.
5. Identify all BAS communication conduits the same as above.

3.1.1.8 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.
 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove malfunctioning units, replace with new units, and retest.
 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment, and retest.
 3. Calibration test controllers by disconnecting input sensors and stimulating operation with compatible signal generator.
- B. Engage a factory-authorized service representative to perform startup service.
- C. Replace damaged or malfunctioning controls and equipment.
 1. Start, test, and adjust control systems.
 2. Demonstrate compliance with requirements, including calibration and testing, and control sequences.
 3. Adjust, calibrate, and fine tune circuits and equipment to achieve sequence of operation specified.

END OF 23 09 00

SECTION - 23 09 05 SIEMENS DESIGO MIGRATION

PART 1 - GENERAL

1. Introduction & Program Overview

The Siemens MEC and MBC Fast Forward Program is designed to modernize and upgrade existing Building Management System (BMS) infrastructure. This program focuses on enhancing system capabilities, improving integration, and leveraging advanced Siemens technologies, specifically migrating legacy components to Desigo CC and PXC series platforms. The goal is to provide a more robust, efficient, and future-proof building automation solution.

PART 2 - SUMMARY

2. Program Objectives

The primary objectives of this Fast Forward Program are to:

- Transition legacy Apogee panels to the Desigo CC platform for centralized and advanced control.
- Upgrade selected existing P2 panels to BACnet communication protocol for improved interoperability.
- Modernize older MBC and MEC controllers to the PXC series, enhancing performance and functionality.
- Provide a fully installed, programmed, and commissioned system with comprehensive documentation.
- Significantly enhance data visibility and reporting capabilities through Desigo CC.
- Ensure the owner's team is proficient in operating the new system and that the investment is protected by a standard warranty.
- Securely decommission the legacy Apogee system from the customer's network.
- Provide a full network diagram and identification of all campus connections.

PART 3 - EXECUTION

3.0. Scope of Work & Deliverables

This program encompasses a complete solution, from hardware upgrades to software configuration and documentation. The scope includes:

3.1. Hardware & Firmware Upgrades

- Panels - Migrated from Apogee to Desigo CC:

- This involves the physical replacement or upgrade of existing Apogee panels.
- Integration and configuration of these panels within the Desigo CC building management platform.
- Ensuring seamless data flow and control functionality within Desigo CC.
- PXC Panels Firmware Flashed to current version required for Desigo:
 - Firmware upgrade for selected existing PXC to current Desigo communication.
 - Verification of communication and integration with the overall BMS.
- MBC to PXC Modular Migration Kits:
 - Supply and installation of migration kits to upgrade existing MBC controllers to the PXC series.
 - This includes necessary hardware, wiring modifications, and configuration.
- MEC to PXC Modular Migration Kits:
 - Supply and installation of 18 migration kits to upgrade existing MEC controllers to the PXC series.
 - This includes necessary hardware, wiring modifications, and configuration.

3.2. Desigo CC Integration & Data Points

This section details the critical data and device integration efforts within the Desigo CC platform:

- Panel Integration: All new or flashed BACnet panels will be added to Desigo CC, ensuring centralized control and monitoring capabilities.
- FLN Devices Connected to Desigo CC: Integration of Field Level Network (FLN) devices directly into the Desigo CC system, ensuring their data and control capabilities are accessible.
- Physical I/O Points Added to Desigo CC: Configuration and mapping of 1,969 new physical Input/Output (I/O) points within Desigo CC, expanding the system's monitoring and control capacity.
- Points Renamed and Added to Desigo CC: A total of 2,577 existing points will be renamed as necessary and added to the Desigo CC database, ensuring logical and consistent naming conventions.

- Trend Views Migrated/Added to Desigo CC: Migration or creation of 1,103 trend views within Desigo CC to provide historical data logging and analysis for key system parameters.
- Custom Reports Created for Desigo CC: Development of custom reports within Desigo CC to meet specific operational, energy management, or compliance reporting requirements.

3.3. Graphics & User Interface

This section outlines the graphic development and conversion efforts for the Desigo CC user interface:

- Graphic Pages Converted Directly from Apogee to Desigo CC: Existing graphic pages from the Apogee system will be directly converted and integrated into Desigo CC, maintaining visual continuity where appropriate.
- Graphics Upgraded for Desigo CC: Graphic pages will undergo significant upgrades and enhancements to leverage Desigo CC's advanced visualization capabilities, improving user experience and operational clarity.

3.4. IT Data Drops

- Contractor shall install a data drop next to each Siemens BAS panel identified in the bid documents. Contractor shall provide a single gang surface mounted box with a CAT 6 compatible RJ45 jack and cover plate. Contractor shall run a CAT plenum rated cable from the nearest data closet to each new data drop location.
- NSU IT department will set up a VPN for Siemens to allow for their BAS system connectivity throughout the campus.

3.5. Installation & Configuration

- Complete Installation:
 - Physical installation of all new/upgraded hardware components (panels, migration kits) as specified.
 - Ensuring all connections are secure and meet Siemens installation standards.
- Programming and Database Transfer:
 - Development and implementation of control logic programming for the new PXC series controllers and Desigo CC.
 - Migration of existing operational databases and configurations to the new platforms, ensuring continuity of building operation.

- Thorough testing of all programmed sequences and control strategies.

3.6. Documentation & Project Management

- Submittals and As-Built Drawings:
 - Provision of comprehensive submittal documentation for review and approval prior to installation.
 - Delivery of accurate as-built drawings reflecting the final installed system for owner's records and future maintenance.
 - Control drawings, and system graphics.
- Project Management, Design, Start-up, Programming:
 - Project Management: Overall planning, coordination, scheduling, risk management, sequence of work including a work phasing plan to minimize disruption of campus HVAC operations, and stakeholder communication throughout the program lifecycle.
 - Design: Detailed engineering design for system integration, panel layouts, and control strategies.
 - Start-up: Initial power-up, configuration, and testing of all new and upgraded equipment.
 - Programming: Development and implementation of all necessary control programs and sequences.

3.7. Training

- Operator Training: Provision of four (4) dedicated training sessions for a total of sixteen (16) total hours of dedicated training for owner's personnel on the operation, navigation, and basic troubleshooting of the new Desigo CC and PXC series systems. This training will cover key functionalities, alarm management, trend analysis, and report generation.

3.8. Commissioning

- Commissioning: Comprehensive testing and verification of the entire system to ensure it operates according to design specifications and achieves desired performance.
- Commissioning of the system will be done by Siemen's and not an independent 3rd party commissioning agent.
- Commissioning of system:

- Pre-Migration Activities
 - Failed point logs
 - Network health reporting * Requires site IT support
- Post – Migration Activities
 - Verify failed point logs
 - Verify network health reports * Requires site IT support
 - 10% of all points on graphic's to be verified with customer

3.9. System Decommissioning

- Legacy Apogee Disconnection: The existing Siemens Apogee system will be disconnected from the customer's network after the completion of the operator training specified in Section 3.6. This ensures a smooth transition and minimizes potential operational disruptions.

3.10. Assumptions

This proposal is based on the following key assumptions:

- Siemens Personnel: All work associated with this Siemens MEC and MBC Fast Forward Program will be performed exclusively by qualified Siemens employees.
- Existing Infrastructure Reuse: The project assumes the reuse of existing conduit and wiring infrastructure. Any requirements for new conduit or wiring runs beyond minor modifications will be considered an out-of-scope change.
- Existing End Devices: The project assumes the reuse of existing valves, actuators, dampers, and other end devices. Any replacement or upgrade of these components is not included in this scope.
- Labor Hours: All labor for the specified work will be performed during regular business hours (e.g., Monday-Friday, 8:00 AM - 5:00 PM). Work required outside of these hours (e.g., nights, weekends, holidays) will be subject to additional charges and must be approved in advance.
- Site Access: Unimpeded access to all necessary areas of the facility will be provided during scheduled work times.
- Owner Responsibilities: The owner will provide necessary network access, IT support, and any required permits or licenses not explicitly covered by Siemens. Additionally, the owner is responsible for providing AutoCAD drawings for new graphics.

3.11. Technical Approach (High-Level)

The program will follow a phased approach, typically including:

1. Detailed Design & Submittals: Finalizing system architecture and obtaining approvals.
2. Hardware Procurement & Staging: Ordering and preparing equipment.
3. Installation & Wiring: Physical installation of panels and migration kits.
4. Programming & Database Transfer: Configuring controllers and Desigo CC.
5. Start-up & Testing: Initial power-on and functional checks.
6. Commissioning & Optimization: Comprehensive system testing and fine-tuning for optimal performance.
7. Documentation & Training: Providing as-built drawings and operator training.
8. System Decommissioning: Disconnecting legacy systems.

3.12. Project Timeline

A detailed project schedule will be developed upon project initiation, outlining key milestones, dependencies, and durations for each phase.

3.13. Roles & Responsibilities

Specific roles and responsibilities for both Siemens and the client will be defined in a separate project plan or kick-off meeting.

3.14. Standard Warranty

- Hardware: All new Siemens hardware supplied and installed as part of this program will carry a standard one (1) year manufacturer's warranty from the date of substantial completion. This warranty covers defects in materials and workmanship.
- Workmanship: Siemens warrants its installation and programming workmanship for a period of one (1) year from the date of substantial completion. This warranty covers issues directly related to the quality of the installation and configuration services provided.
- Exclusions: The warranty does not cover damage caused by misuse, accidents, unauthorized modifications, acts of nature, or normal wear and tear. Consumable items are also excluded.

3.15. Licenses and Passwords

- A total of four (4) licenses shall be provided at the completion of the project.
- All passwords shall be provided to the user at the completion of the project.

3.16. Software

- Desigo CC will be updated to latest software version by completion of project.

END OF SECTION 23 09 05

BUILDING AUTOMATION SYSTEM (BAS) REPAIRS & UPGRADES FOR NORTHWESTERN STATE UNIVERSITY

PROJECT#: 01-107-24-05
F.01004613
JLCB ITEM # 227



ASSOCIATED DESIGN GROUP, INC.
3909 W Congress Street, Suite 201
Lafayette, Louisiana 70506
Phone: (337) 234-5710
Email: adginc@adginc.org

ADG PROJECT NUMBER: 25062

NORTHWESTERN STATE UNIVERSITY:

President: James T Genovese
Director of Purchasing: Ashley Grayson

Bid Documents
February 13, 2026



005	Infirmery/Health Services and University Police	046	Warehouse	089	Health and Human Performance Building	On-Campus Student Housing
008	National Center for Preservation Tech. & Training	050	Print Shop	090	Bienvenu Hall	A University Columns
010	Warren Easton Hall	051	Prudhomme Hall	091	Arnold J. Kilpatrick President's Residence	B University Place I
011	Alumni Center	052	Dodd Hall	092	Eugene P. Watson Memorial Library	C University Place II
015	Russell Hall	053	St. Denis Hall	106	Recreation Complex Pavilion	D Varnado Hall
017	Caspari Hall	054	Williamson Hall	108	Walter Ledet Track Complex	On-Campus Student Organization Buildings
018	Harry "Rags" Turpin Stadium	055	Student Services Center	111	Jack Fisher Tennis Complex	E Baptist Collegiate Ministry (BCM)
019	Trisler Power Plant	058	Caddo Hall	114	Athletic Fieldhouse	F Kappa Sigma House
025	A.A. Fredericks Fine Arts Center	067	Prather Coliseum	115	Brown-Stroud Baseball Field	G Phi Mu House
025A	Creative and Performing Arts (CAPA) Annex	071	Roy Hall	119	Facility Services Complex	H Sigma Sigma Sigma House (opening during 2012-13 year)
026	Wellness, Recreation and Activity Center (WRAC)	074	Iberville Cafeteria	120	Collins Pavilion	I Sigma Sigma Sigma House (current)
028	Nesom Natatorium	077	Friedman Student Union Building	126	NSU Crew Boathouse	J Tau Kappa Epsilon House
030	South Hall	079	Culinary Arts Annex	130	Equine Center	K Alpha Omicron Pi House
031	James A. Noe Military Science Building	081	John S. Kyser Hall	140	Lady Demon Softball Field	
042	Morrison Hall (Scholars' College)	085	Grounds and Automotive Facility	145	Lady Demon Soccer Complex	
043	Fournet Hall	086	Post Office			
044	Family and Consumer Science Building	088	Teacher Education Center			

SHEET INDEX

- M-1 Building Plan & Panel Schedules (Chiller Station No.2, Consumer Science, & E.P. Watson Library)
- M-2 Building Plan & Panel Schedules (Field House, & Fournet Hall)
- M-3 Building Plan & Panel Schedules (Health & P.E., Iberville Dining Hall, John Kyser Hall, & Morrison Hall)
- M-4 Building Plan & Panel Schedules (New Fine Arts, Prather Coliseum, Roy Hall & AA Fredericks)
- M-5 Building Plan & Panel Schedules (Russell Hall & Teachers ED Chiller Plant, Warren Easton Chiller Plant & E.P. Watson Library Chiller Plant)
- M-6 Building Plan & Panel Schedules (Student Union Bldg. East Caspari & Chiller No.1)
- M-7 Building Plan & Panel Schedules (Teachers ED Bldg.)
- M-8 Building Plan & Panel Schedules (Biology (Bienvenue Hall), & WRAC)
- M-9 Building Plan & Panel Schedules (WRAC)
- M-10 Building Plan & Panel Schedules (Biology, Warren Easton Hall, St. Denis, Power Plant, & Prather New Chiller)
- M-11 Building Plan & Panel Schedules (Student Services, & Williamson)

NORTHWESTERN STATE UNIVERSITY CAMPUS MAP

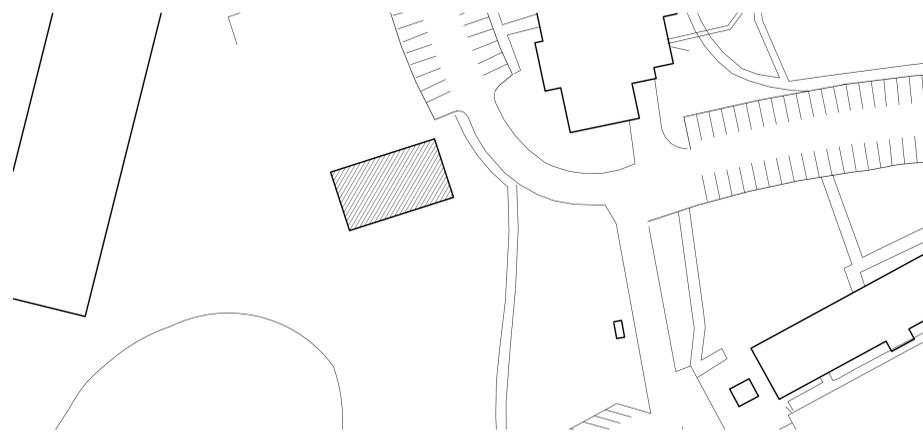
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August 22, 2012



BID DOCUMENTS
BUILDING AUTOMATION SYSTEM (BAS)
UPGRADES & REPAIRS
NORTHWESTERN STATE UNIVERSITY
 NATCHITOCHEES, LOUISIANA

State of Louisiana Project No. 01-107-24-05, F. 01004613



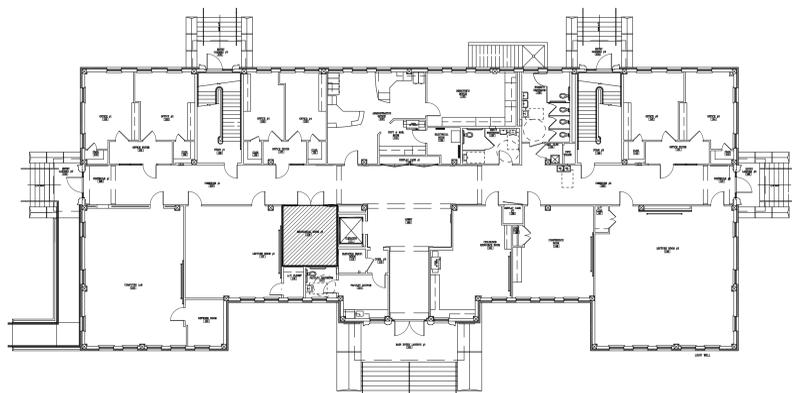
1 Chiller Station No.2 - Reference Plan

No Scale

BUILDING NAME = CHILLER STATION 2									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	CHILLER ST. 2	9	MBC	RM. 1	FIBER CONVERTER	FAST FORWARD	X		1

NOTES:

1) THE NEW PANEL WILL BE P2 ETHERNET. EXISTING IP DROP WILL BE RESUED.



2 Consumer Science - Reference Plan - 1st Floor

No Scale

BUILDING NAME = CONSUMER SCIENCE									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	CONSUMER SCIENCE 1ST FLR	30	MEC	RM. 116	NO PORT	FAST FORWARD		X	1

NOTES:

1) THESE PANELS WILL BE CONVERTED P2 ETHERNET PANELS. ONE (1) NEW IP DROP WILL BE NEEDED FOR THIS NETWORK.



3 Consumer Science - Reference Plan - 2nd Floor

No Scale

BUILDING NAME = CONSUMER SCIENCE									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	CONSUMER SCIENCE 2ND FLR	31	MEC	RM. 217	253EM	FAST FORWARD	X		1

NOTES:

1) THESE PANELS WILL BE CONVERTED P2 ETHERNET PANELS. ONE (1) NEW IP DROP WILL BE NEEDED FOR THIS NETWORK.



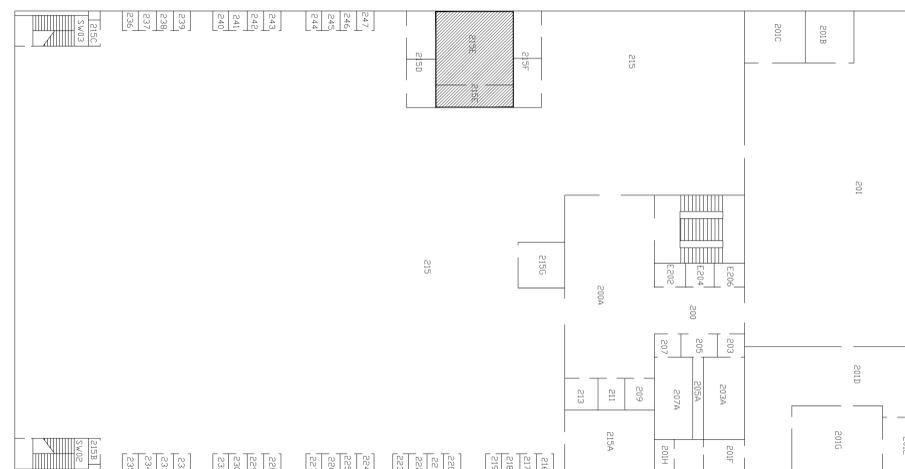
4 E.P. Watson Library - Reference Plan - 1st Floor

No Scale

BUILDING NAME = E.P. WATSON LIBRARY									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	WATSON.AH1	-	PXC	RM. 110	-	FLASH	X		1

NOTES:

1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



5 E.P. Watson Library - Reference Plan - 2nd Floor

No Scale

BUILDING NAME = E.P. WATSON LIBRARY									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	WATSON.AH2	-	PXC	RM. 215E	-	FLASH	X		1

NOTES:

1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



6 E.P. Watson Library - Reference Plan - 3rd Floor

No Scale

BUILDING NAME = E.P. WATSON LIBRARY									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	WATSON.AH3	-	PXC	RM. 317B	-	FLASH	X		1

NOTES:

1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.

Date Issued: February 13, 2026

Drawn By: DEP

Checked By: RCC

File Name: 25062 M-1.dwg

Revision: _____ Date: _____

Drawing Title: **BUILDING PANEL SCHEDULES & SCOPE OF WORK**

Professional Seal: _____ Sheet No. _____



M-1

BID DOCUMENTS
BUILDING AUTOMATION SYSTEM (BAS)
UPGRADES & REPAIRS
NORTHWESTERN STATE UNIVERSITY
 NATCHITOCHEES, LOUISIANA

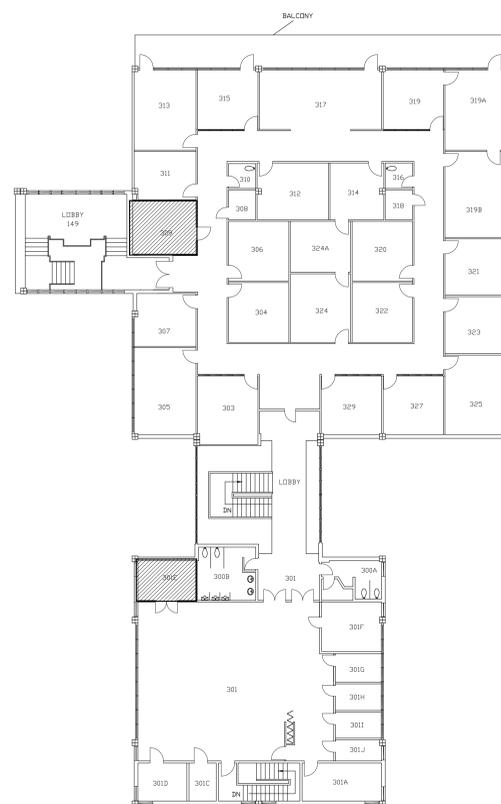
State of Louisiana Project No. 01-107-24-05, F. 01004613



1. Field House - Reference Plan - 1st Floor
 No Scale

BUILDING NAME = FIELD HOUSE - (NOT PART OF THIS PROJECT)									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	FIELD HOUSE	--	MBC	RM. 108A	214	FAST FORWARD	X		1
P2 RS-485	FIELD HOUSE	27	MBC	RM 121	--	FAST FORWARD		X	1

NOTES:
 1) THE NEW PANEL WILL REMAIN P2 RS-485



2. Field House - Reference Plan - 3rd Floor
 No Scale

BUILDING NAME = FIELD HOUSE - (NOT PART OF THIS PROJECT)									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	FIELD HOUSE	--	MBC	RM. 301E	--	FAST FORWARD		X	1
P2 RS-485	FIELD HOUSE	--	MBC	RM 309	--	FAST FORWARD		X	1

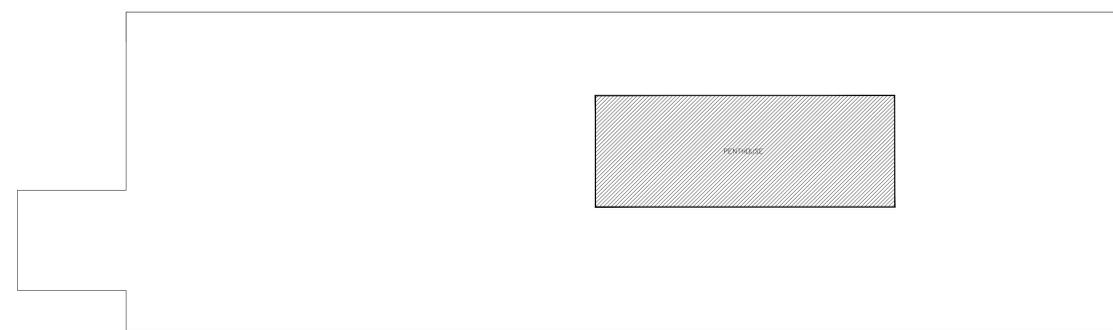
NOTES:
 1) THE NEW PANEL WILL REMAIN P2 RS-485



3. Fournet Hall - Reference Plan - 1st Floor
 No Scale

BUILDING NAME = FOURNET HALL									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	FH NODE 01	1	PXC24	RM 139 MECH RM.	NO PORT	FLASH		X	1

NOTES:
 1) THESE PANELS WILL BE CONVERTED/REPLACED WITH P2 ETHERNET. ONE (1) NEW IP DROP WILL BE NEEDED FOR THIS NETWORK.



4. Fournet Hall - Reference Plan - Rooftop Penthouse
 No Scale

BUILDING NAME = FOURNET HALL									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	FOURNET	6	MBC	PENTHOUSE	--	FAST FORWARD		X	1

NOTES:
 1) THESE PANELS WILL BE CONVERTED/REPLACED WITH P2 ETHERNET.

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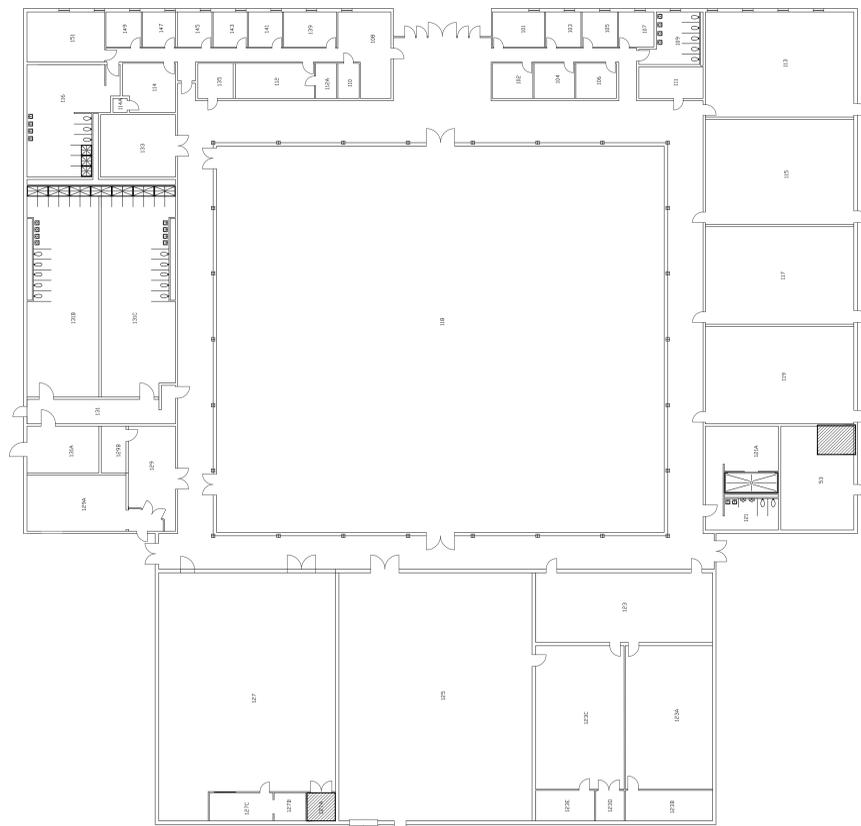
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M-2

BID DOCUMENTS
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UPGRADES & REPAIRS
NORTHWESTERN STATE UNIVERSITY
NATCHITOCHEES, LOUISIANA

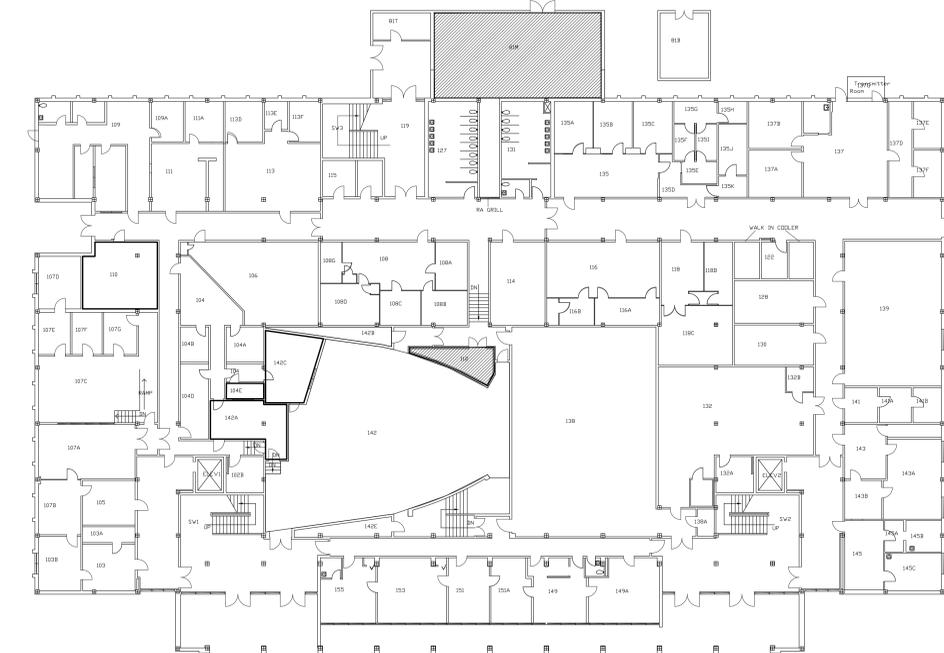
State of Louisiana Project No. 01-107-24-05, F. 01004613



1. Health & P.E. - Reference Plan - 1st Floor
No Scale

BUILDING NAME = HEALTH & PE									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	HEALTH & P.E. MBC17	17	MBC	PLANT	-	FAST FORWARD		X	1
P2 RS-485	HEALTH & P.E. RBC23	23	MBC	ATTIC	UNKNOWN	FAST FORWARD	X		1

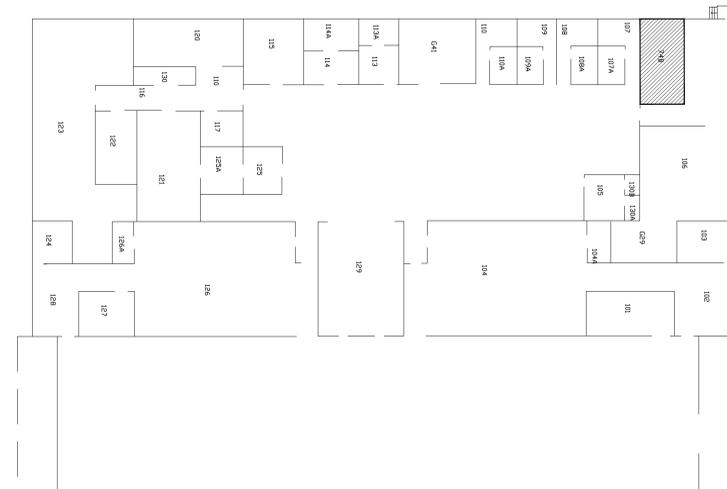
NOTES:
1) THE NEW PANEL WILL REMAIN P2 ETHERNET



3. John Kyser Hall - Reference Plan - 1st Floor
No Scale

BUILDING NAME = JOHN KYSER HALL									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	JOHN S. KYSER HALL	8	MBC	RA GRILLE ROOM (RM 112)	EM 36	FAST FORWARD		X	1
P2 ETHERNET	KYSER HALL	-	MEC	RM 61M	EM 310	FLASH	X		1

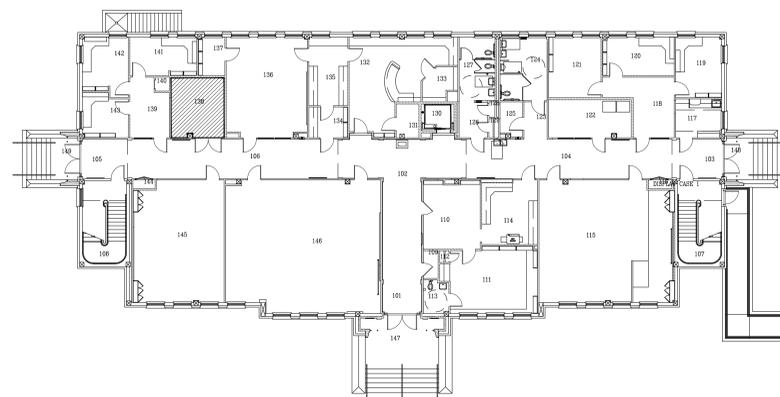
NOTES:
1) THE NEW PANEL WILL BE P2 ETHERNET.



2. Iberville Dining Hall - Reference Plan - 1st Floor
No Scale

BUILDING NAME = IBERVILLE DINING HALL									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	IBERVILLE	16	MBC	RM 74B	BOILER ROOM	FAST FORWARD		X	1

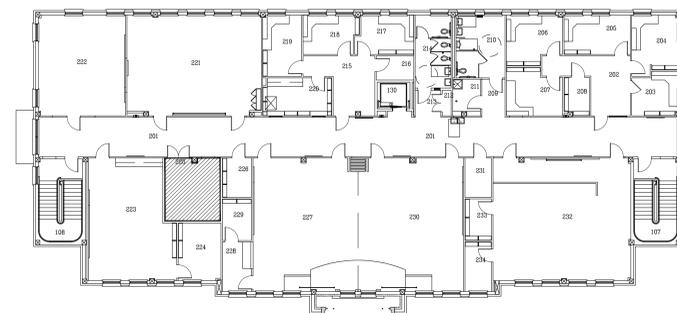
NOTES:
1) THE NEW PANEL WILL REMAIN P2 ETHERNET.



4. Morrison Hall - Reference Plan - 1st Floor
No Scale

BUILDING NAME = MORRISON HALL									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	MORRISON HALL 1ST FLOOR	28	MEC	RM 138	EM6229	FAST FORWARD		X	1

NOTES:
1) THE NEW PANEL WILL REMAIN P2 ETHERNET.



5. Morrison Hall - Reference Plan - 2nd Floor
No Scale

BUILDING NAME = MORRISON HALL									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	MORRISON HALL 2ND FLOOR	29	PXC36	RM 225	NO PORT	FLASH		X	1

NOTES:
1) THE NEW PANEL WILL REMAIN P2 ETHERNET. ONE (1) NEW IP DROP WILL BE NEEDED FOR THIS NETWORK.

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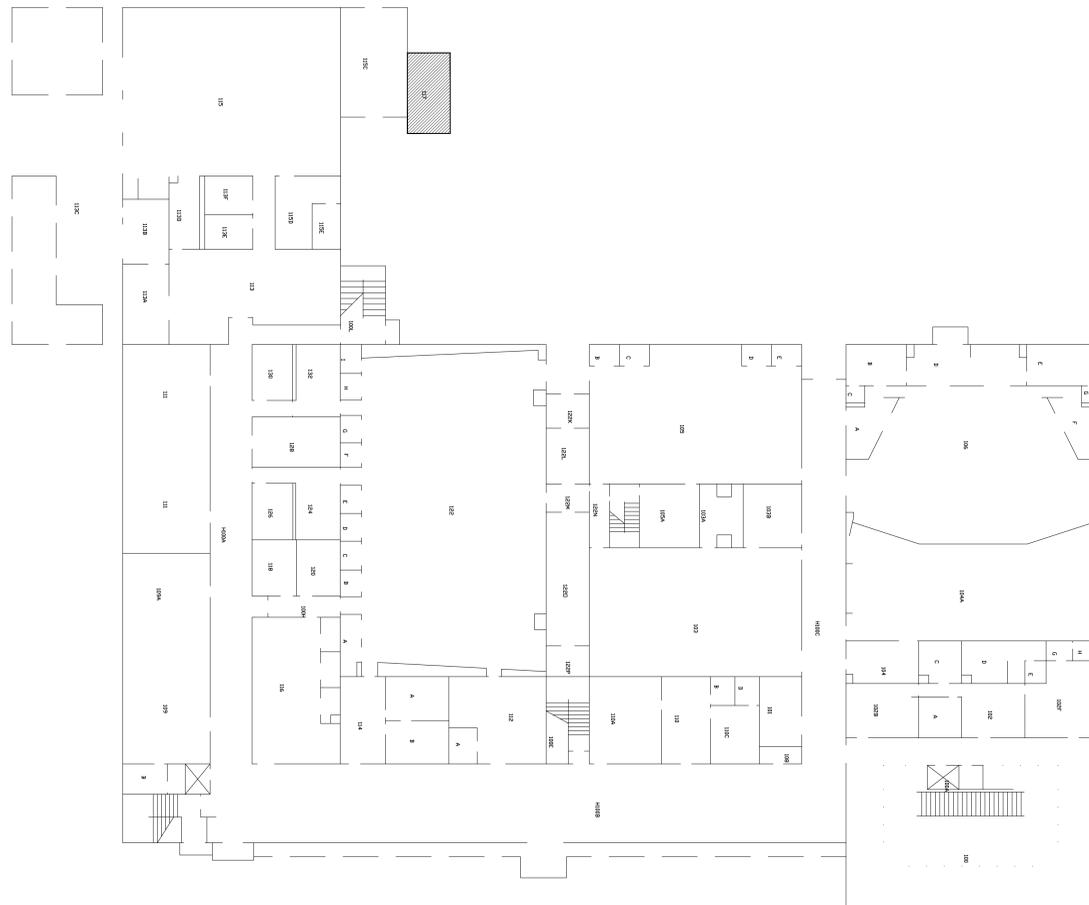
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M-3

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State of Louisiana Project No. 01-107-24-05, F.01004613



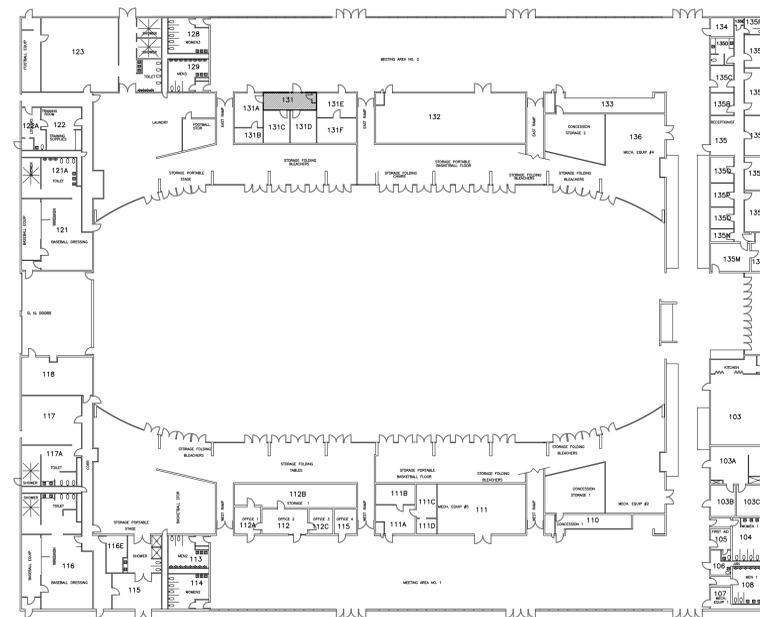
1. New Fine Arts - Reference Plan - 1st Floor

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = NEW FINE ARTS									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	NEW FINE ARTS	12	MBC	RM 117	FIBER CONVERTER	FAST FORWARD	X		1

NOTES:
 1) THESE PANELS WILL BE CONVERTED/REPLACED WITH P2 ETHERNET.



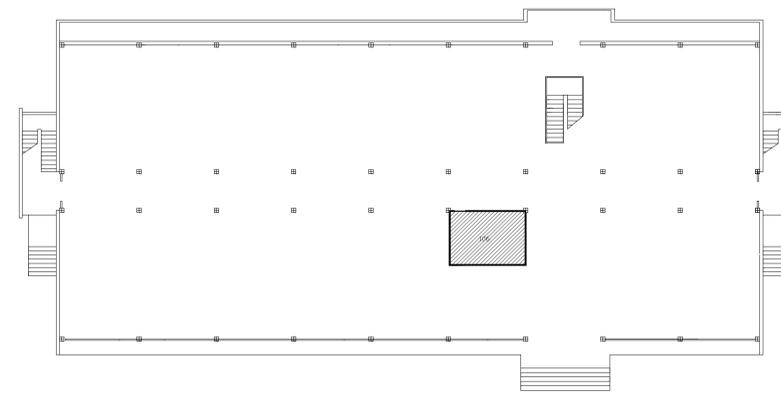
3. Prather Coliseum - Reference Plan - 1st Floor

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = PRATHER COLISEUM									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	PRATHER COLISEUM	15	MBC	RM 131	EM103	FAST FORWARD	X		1

NOTES:
 1) THE NEW PANEL WILL REMAIN P2 ETHERNET.



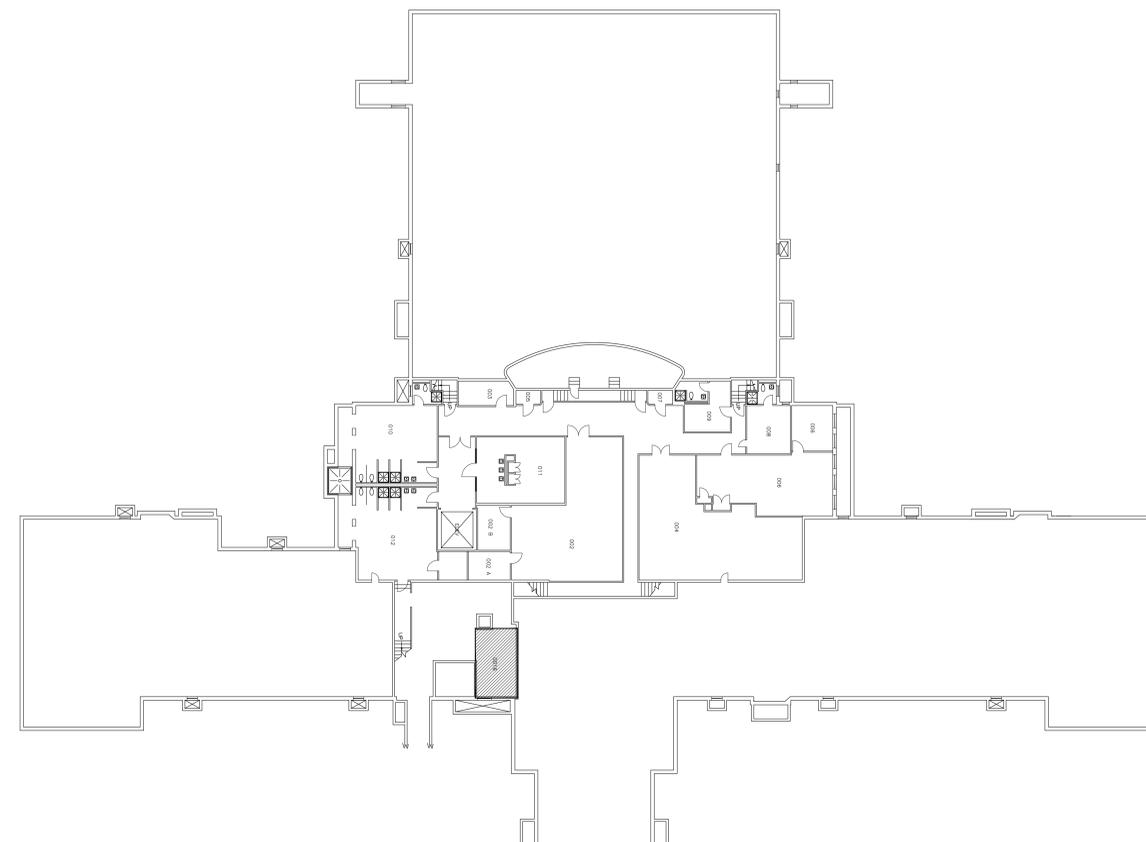
2. Roy Hall Bldg. - Reference Plan - 1st Floor

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = ROY HALL BLDG.									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	NSU NODE 14	14	MBC	RM 106	EM2	FAST FORWARD	X		1

NOTES:
 1) THE NEW PANEL WILL REMAIN P2 ETHERNET.



4. AA Fredericks (Old Fine Arts) - Reference Plan - Basement

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = OLD FINE ARTS									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	OFA NODE 01	1	PXC24	BASEMENT	EM325/1	FLASH		X	1
P2 RS-485	OLD FINE ARTS BLDG.	13	MBC	BASEMENT	EM325/2	FAST FORWARD	X		1

NOTES:
 1) THESE PANELS WILL BE CONVERTED/REPLACED WITH P2 ETHERNET. ONE (1) NEW IP DROP WILL BE NEEDED FOR THIS NETWORK.

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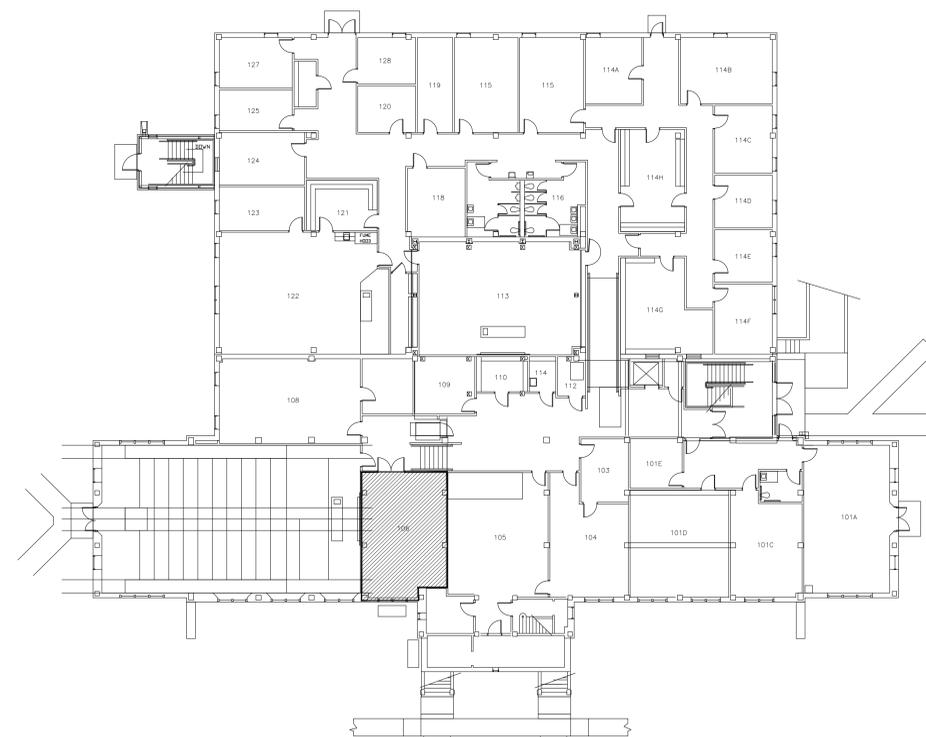
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M-4



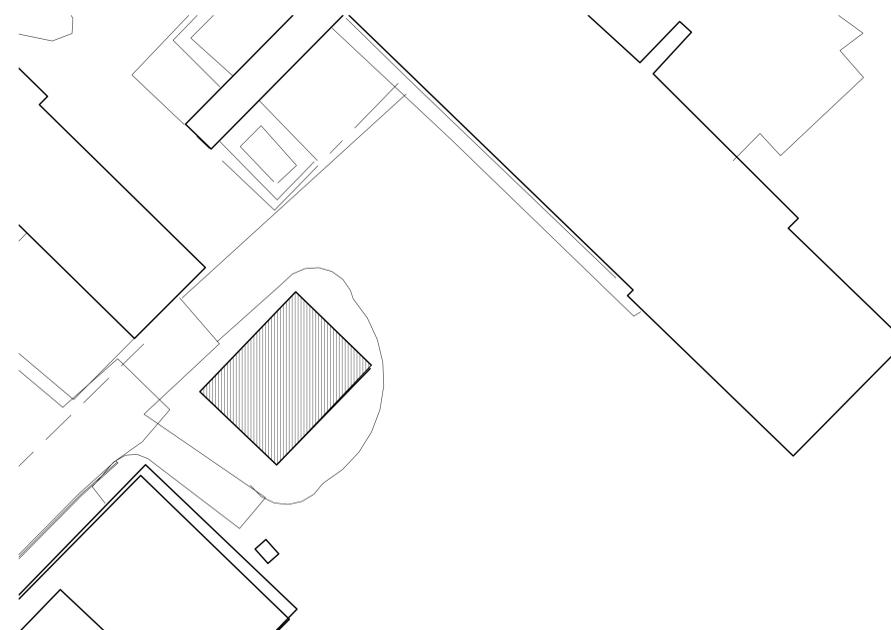
1. Russell Hall Bldg. - Reference Plan - 1st Floor

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = RUSSELL HALL BLDG.									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	NSU NODE 20	20	MBC	RM 106	313	FAST FORWARD	X		1

NOTES:
1) THE NEW PANEL WILL REMAIN P2 RS-485



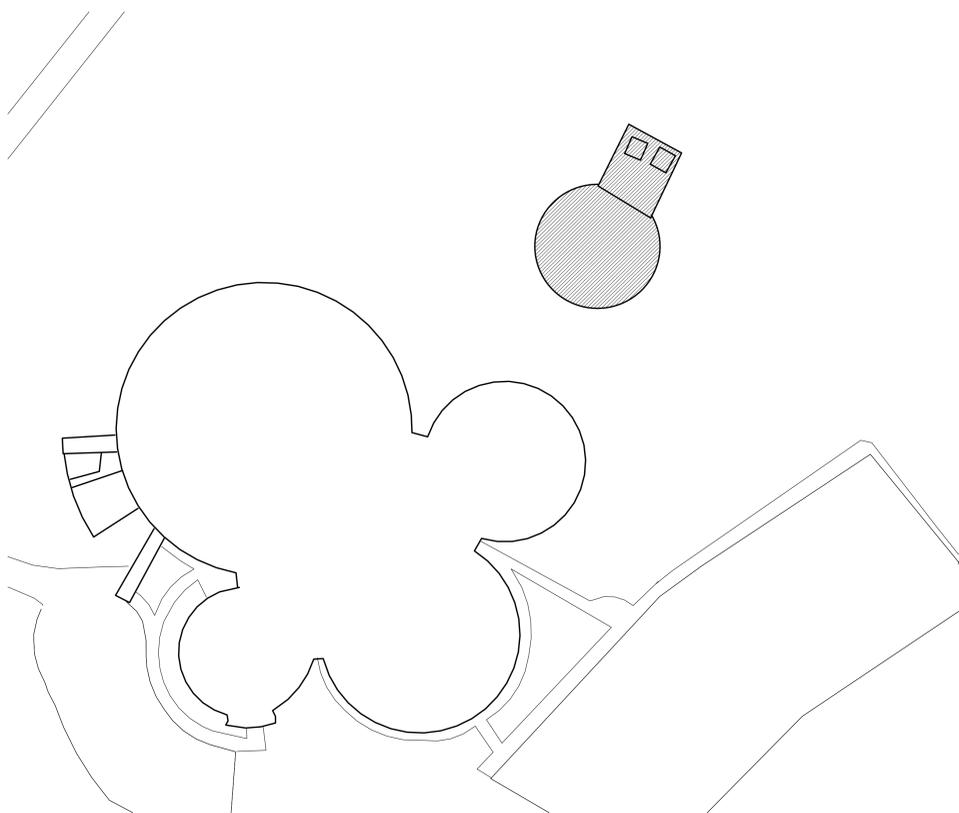
2. Warren Easton Chiller Plant - Reference Plan

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = WARREN EASTON CHILLER PLANT									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	WARREN EASTON CHILLER PLT.	21	MBC	RM. 1	FIBER CONVERTER	FAST FORWARD	X		1

NOTES:
1) THE NEW PANEL WILL BE P2 ETHERNET.



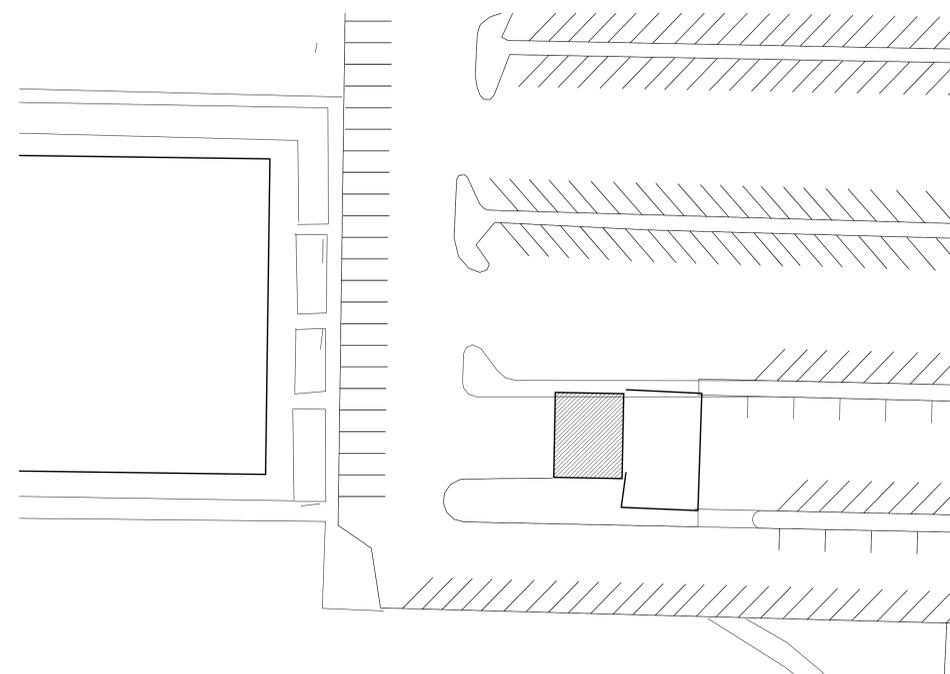
3. Teachers Ed Chiller Plant - Reference Plan

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = TEACHERS ED CHILLER PLANT									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	TEACHERS ED MBC 18	18	MBC	RM. 1	FIBER CONVERTER	FAST FORWARD	X		1

NOTES:
1) THE NEW PANEL WILL BE P2 ETHERNET.



4. E.P. Watson Library Chiller Plant - Reference Plan

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = E.P. WATSON LIBRARY CHILLER PLANT									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	WATSON LIBRARY CHLR PLANT	1	MBC	RM. 1	FIBER CONVERTER	FAST FORWARD	X		1

NOTES:
1) THE NEW PANEL WILL BE P2 ETHERNET.

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NATCHITOCHEES, LOUISIANA

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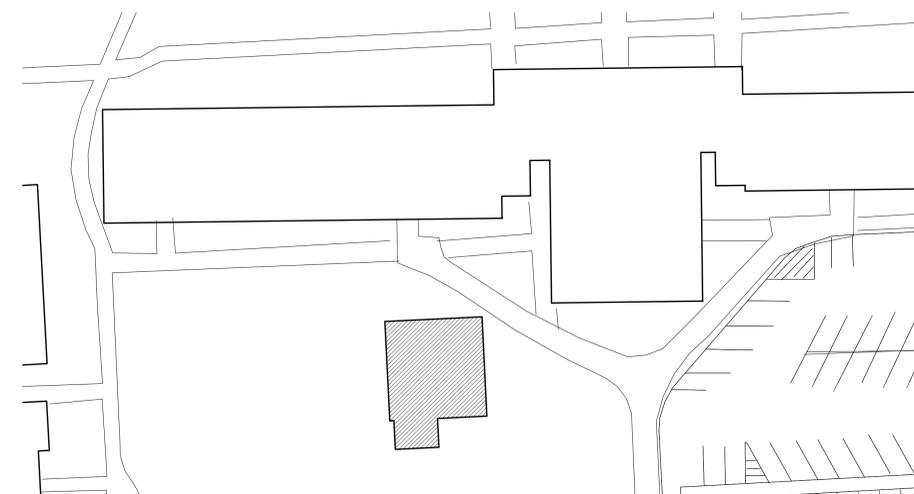
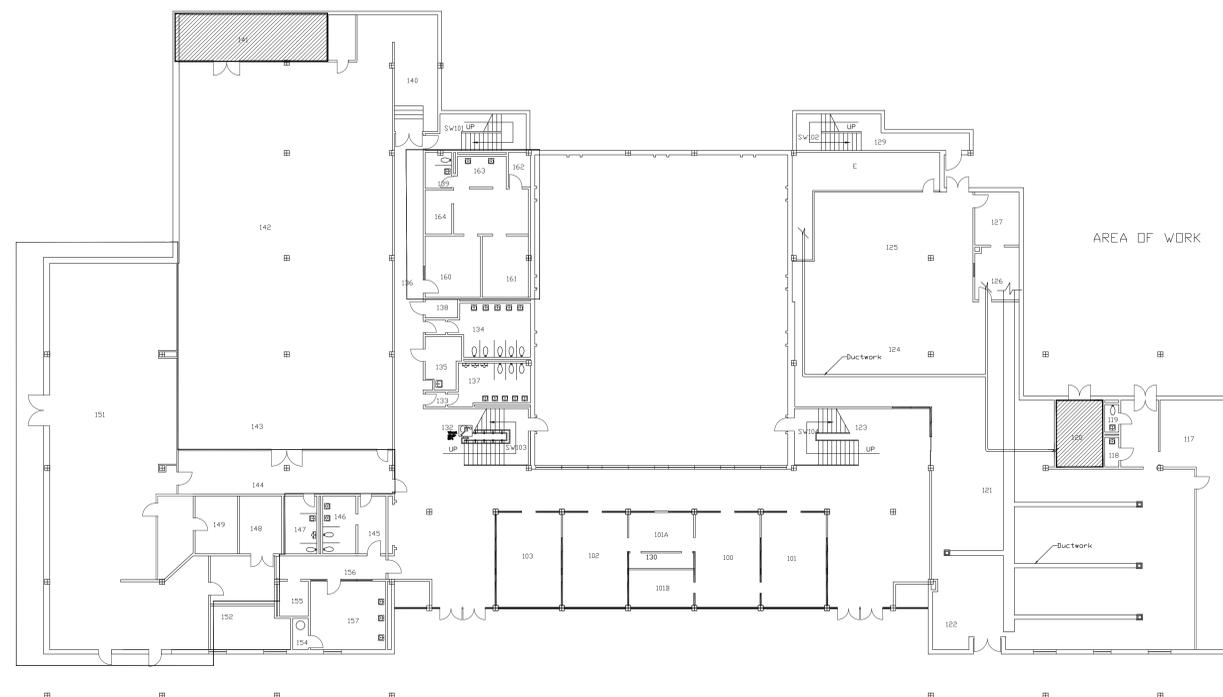
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BUILDING PANEL SCHEDULES & SCOPE OF WORK

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M-5



1 Student Union Bldg. - Reference Plan - 1st Floor
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = STUDENT UNION BLDG.									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	STUDENT UNION	7	MBC	POST OFFICE 77	NO PORT	FAST FORWARD	X		1
P2 ETHERNET	STUDENT UNION PXC 01	--	PXC	MECHANICAL ROOM	NO PORT	FLASH	X		2
BACNET	STUDENT UNION PXC 02	--	PXC	RM. 120	NO PORT	FLASH	X		2

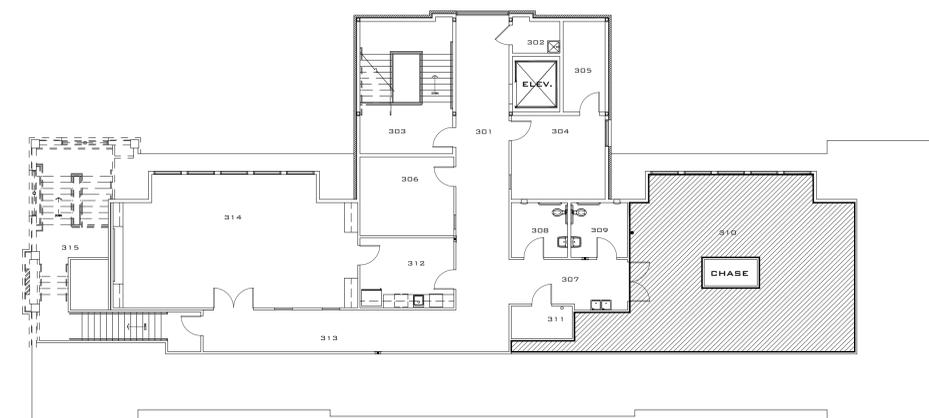
NOTES:
 1) THE NEW PANEL WILL REMAIN P2 ETHERNET.
 2) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.

2 Chiller Station No. 1 - Reference Plan
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = CHILLER STATION 1									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	CHILLER STATION PXM	--	PXC	CHILLER STATION 1	FIBER CONVERTER	FLASH	X		1

NOTES:
 1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



3 East Caspari - Reference Plan - 3rd Floor
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = EAST CASPARI									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	EAST CASPARI PXM 01		PXC	RM 310	NOT LABELED	FLASH	X		1

NOTES:
 1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.

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NATCHITOCHE, LOUISIANA

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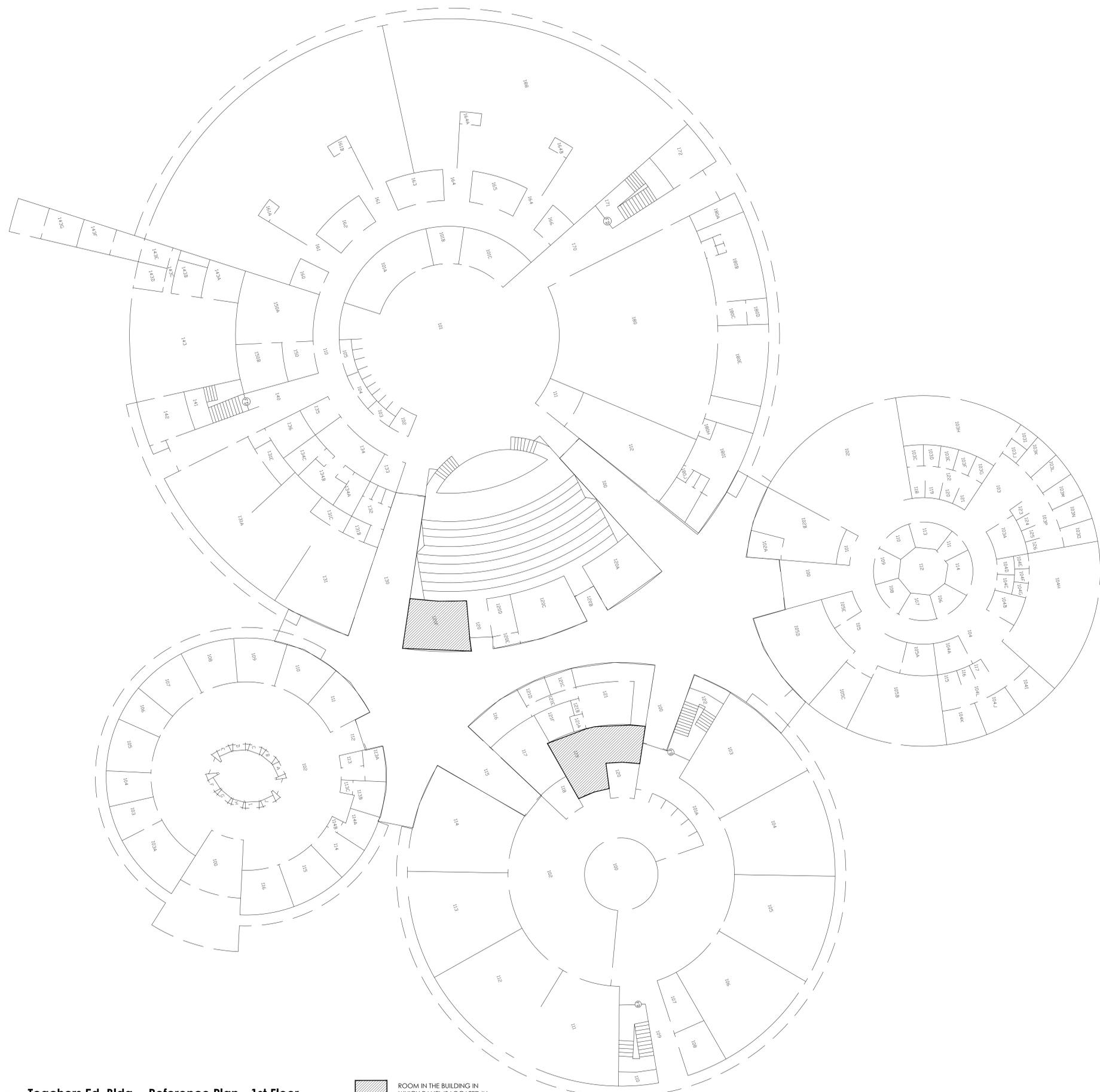


M-6



ASSOCIATED DESIGN GROUP, INC.
 3909 West Congress Street, Suite 201
 Lafayette, Louisiana 70506
 Phone: (337) 234-5710
 Email: adginc@adginc.org

ADG Project No.
 25062



1 Teachers Ed. Bldg. - Reference Plan - 1st Floor
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = TEACHERS ED BLDG.									
NETWORK TYPE	NODE (BLDG NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXST. IT DROP TO BE RE-USED.	NEW IT DROP TO BE PROVIDED.	NOTES
P2 RS-485	TEACHERS ED. MBC 24	24	MBC	RM. 120F	FIBER CONVERTER	FAST FORWARD		X	1
P2 RS-485	TEACHERS ED. MBC 25	25	MBC	RM. 119B	-	FAST FORWARD	X		1

NOTES:
 1) THE NEW PANEL WILL REMAIN P2 ETHERNET.

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BUILDING AUTOMATION SYSTEM (BAS) UPGRADES & REPAIRS

NORTHWESTERN STATE UNIVERSITY

NATCHITOCHEES, LOUISIANA

State of Louisiana Project No. 01-107-24-05, F. 01004613

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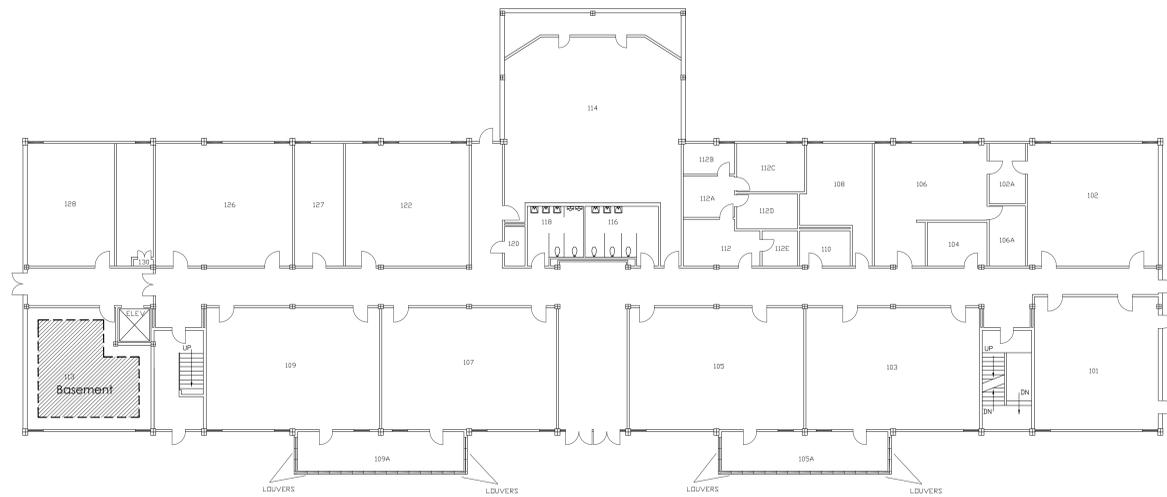
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M-7

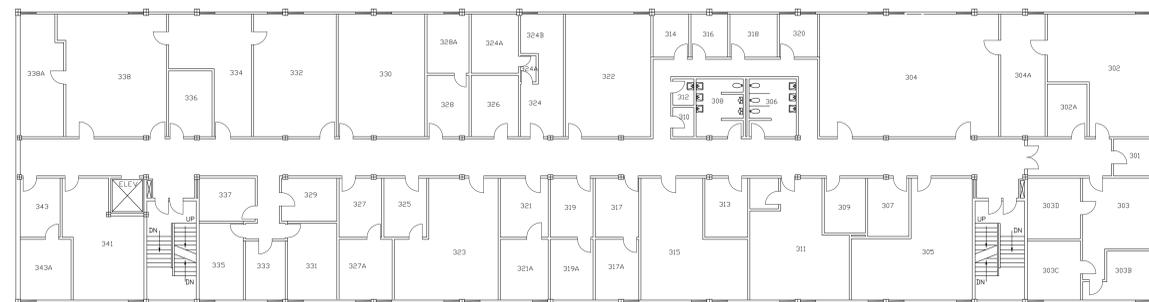


1. Biology (Bienvenue Hall) - Reference Plan - 1st Floor
No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = BIOLOGY BACNET									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
BACNET	BIENVINUE HALL	-	PXC	BASEMENT	526	FLASH	X		1

NOTES:
1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.

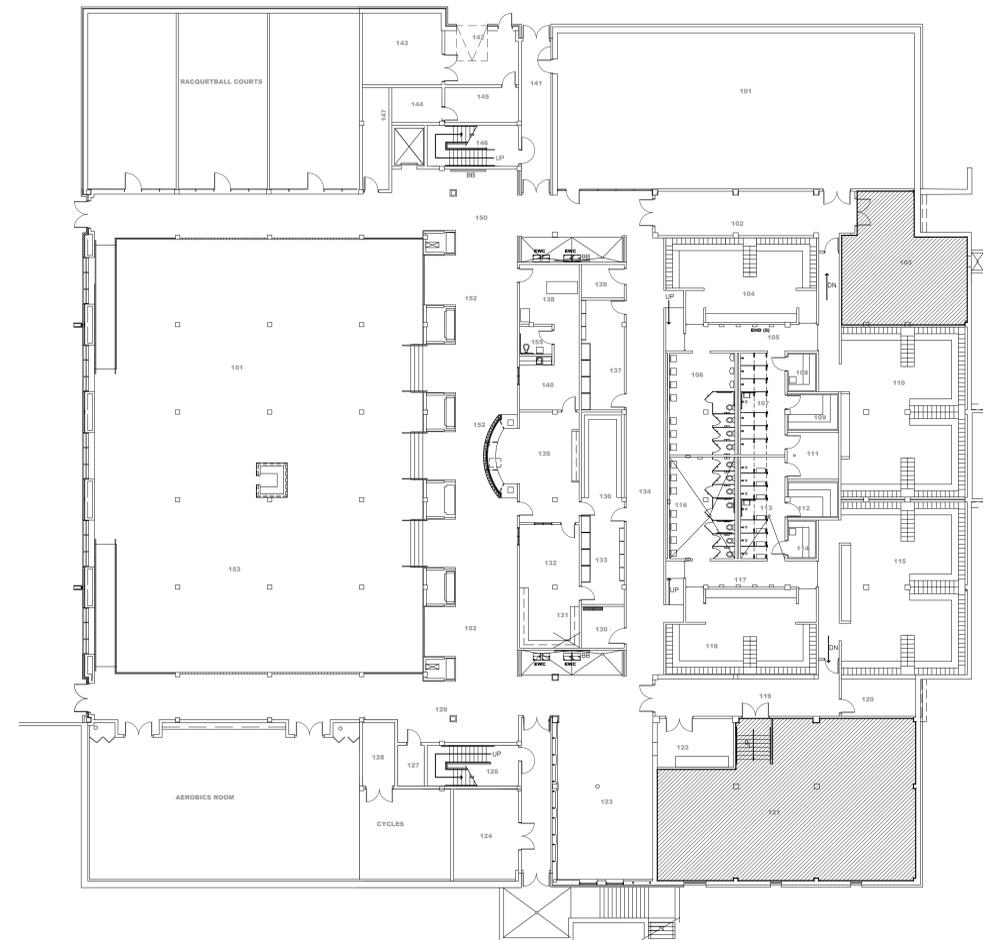


2. Biology (Bienvenue Hall) - Reference Plan - 3rd Floor
No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = BIOLOGY									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	BIOLOGY NODE 01	-	PXC	N/A	N/A	FLASH	X		1

NOTES:
1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



3. WRAC - Reference Plan - Basement
No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = WRAC									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	WRACAHU1	1	MEC	RM 103	EM 23	FAST FORWARD	X		1
P2 RS-485	WRACPLANT	2	MEC	RM 121	NO PORT	FAST FORWARD		X	1
P2 RS-485	WRACAHU3	3	MEC	RM 121	NO PORT	FAST FORWARD		X	1

NOTES:
1) THESE PANELS WILL BE CONVERTED/REPLACED WITH P2 ETHERNET.

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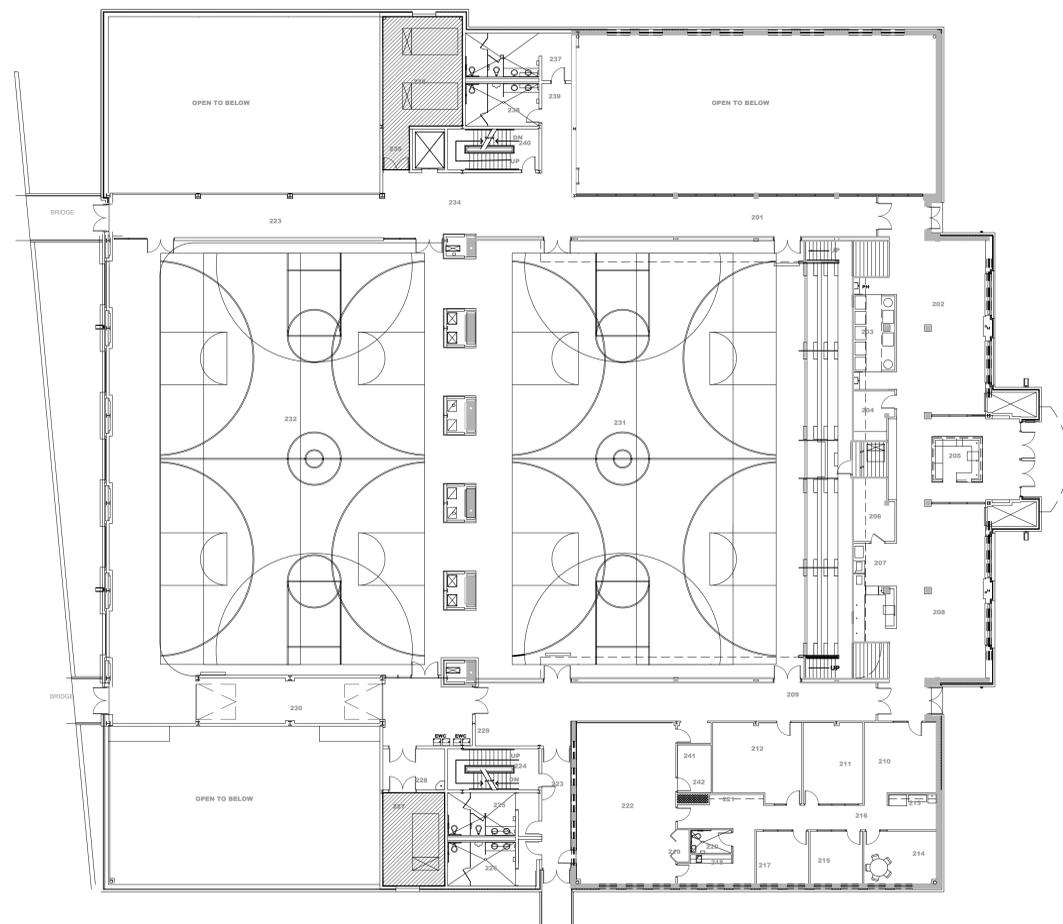
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M-8

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State of Louisiana Project No. 01-107-24-05, F. 01004613

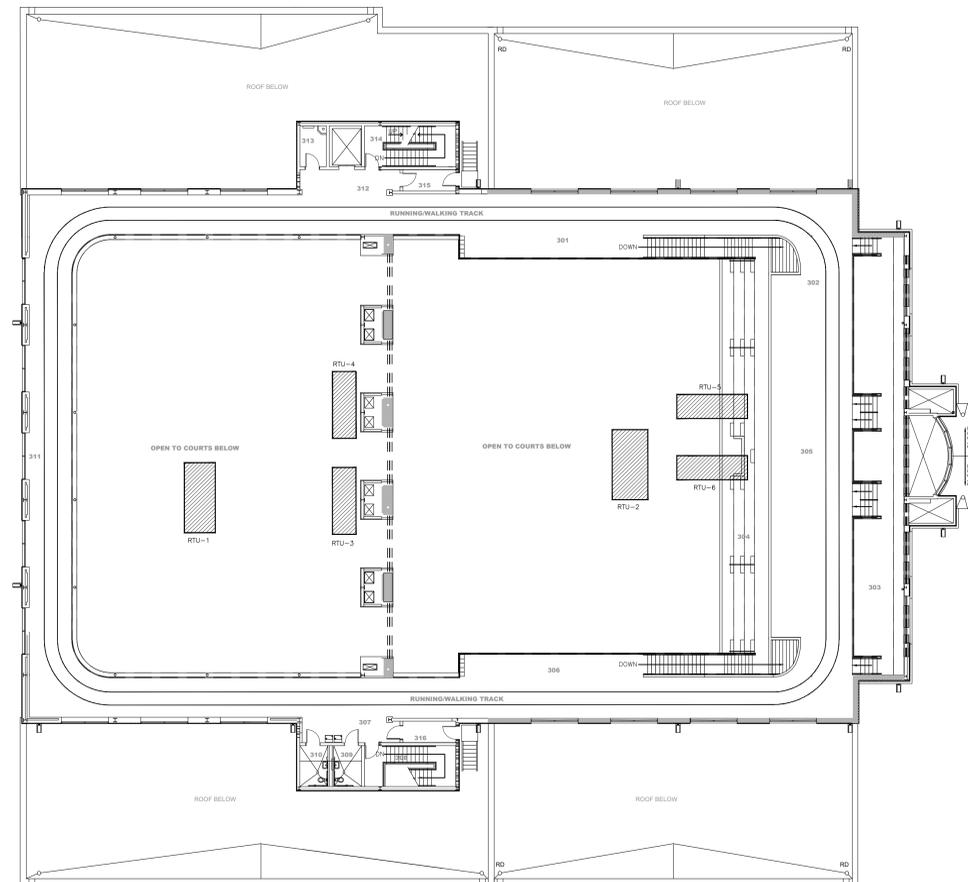


1. WRAC - Reference Plan - Ground Level
No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = WRAC									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	WRAC-AHU4	4	MEC	RM 236	NO PORT	FAST FORWARD		X	1
P2 RS-485	WRAC-AHU5	5	MEC	RM 236	NO PORT	FAST FORWARD		X	1
P2 RS-485	WRAC-AHU6	6	MEC	RM 227	NO PORT	FAST FORWARD		X	1

NOTES:
1) THESE PANELS WILL BE CONVERTED/REPLACED WITH P2 ETHERNET.



2. WRAC - Reference Plan - Balcony Level
No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = WRAC									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 RS-485	WRAC-RTU1	7	MEC	ATTIC / ROOF	NO PORT	FAST FORWARD		X	1
P2 RS-485	WRAC-RTU2	8	MEC	ATTIC / ROOF	NO PORT	FAST FORWARD		X	1
P2 RS-485	WRAC-RTU3	9	MEC	ATTIC / ROOF	NO PORT	FAST FORWARD		X	1
P2 RS-485	WRAC-RTU4	10	MEC	ATTIC / ROOF	NO PORT	FAST FORWARD		X	1
P2 RS-485	WRAC-RTU5	11	MEC	ATTIC / ROOF	NO PORT	FAST FORWARD		X	1
P2 RS-485	WRAC-RTU6	12	MEC	ATTIC / ROOF	NO PORT	FAST FORWARD		X	1

NOTES:
1) THESE PANELS WILL BE CONVERTED/REPLACED WITH P2 ETHERNET.

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M-9

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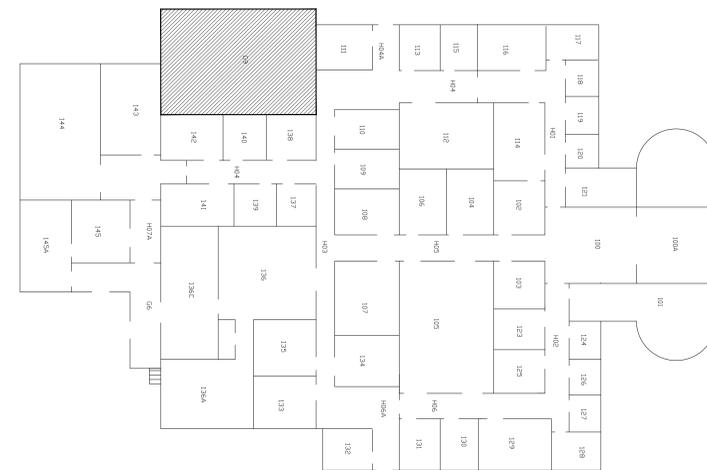


1. Biology - Reference Plan - 3rd Floor
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = BIOLOGY									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	BIOLOGY NODE 01	--	PXC	N/A	N/A	FLASH	X		1

NOTES:
 1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



3. St. Denis - Reference Plan - 1st Floor
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = ST. DENIS									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	ST. DENIS PXM	--	PXC	MECHANICAL RM 03	NOT LABELED	FLASH	X		1

NOTES:
 1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.

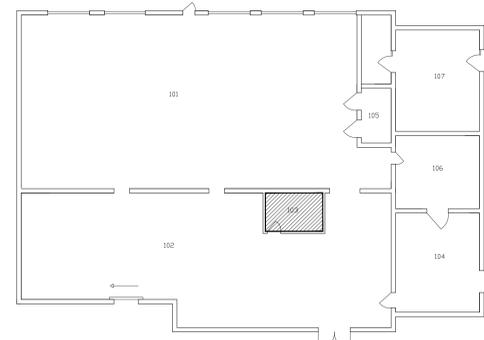


2. Warren Easton Hall - Reference Plan - 1st Floor
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = WARREN EASTON HALL									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	WARREN EASTON PXM	--	PXC	RM 113B	FIELD CONVERTER	FLASH	X		1

NOTES:
 1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.

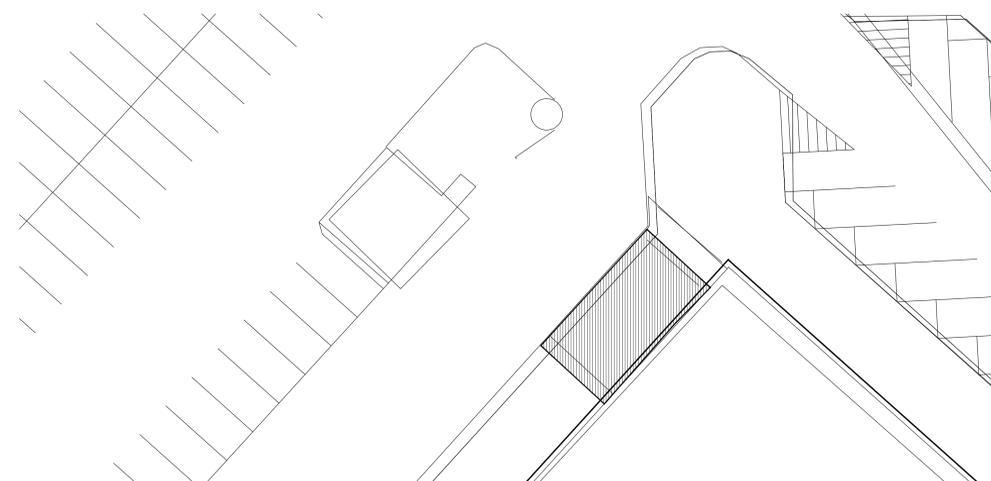


4. Power Plant - Reference Plan - 1st Floor
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = POWER PLANT									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	BOILERPLANT	--	PXC	RM 103	--	FLASH	X		1

NOTES:
 1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



5. Prather New Chiller - Reference Plan
 No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = PRATHER NEW CHILLER									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	PRATHER AUX	--	PXC	RM 131B	EM 103	FLASH	X		1

NOTES:
 1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.

Date Issued	February 13, 2026
Drawn By	DEP
Checked By	RCC
File Name	25062 M-10.dwg

Revision	Date

Drawing Title:
BUILDING PANEL SCHEDULES & SCOPE OF WORK

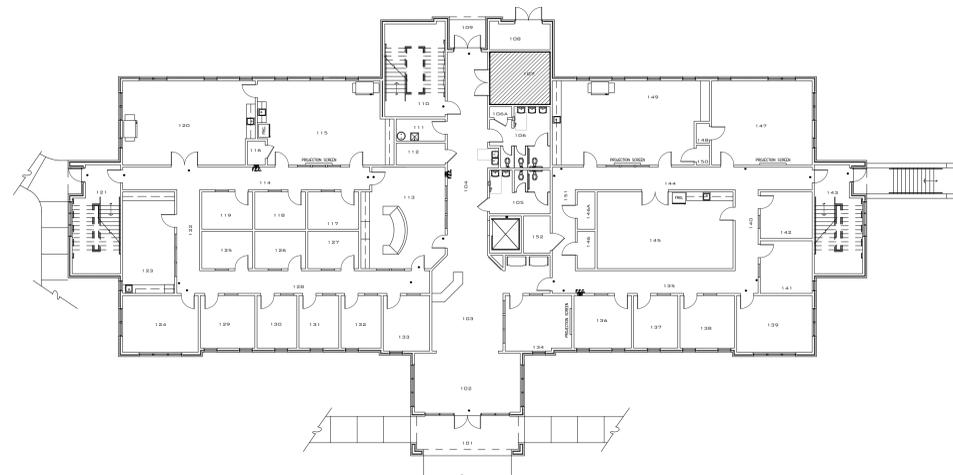
Professional Seal: _____ Sheet No. _____



M-10

BID DOCUMENTS
BUILDING AUTOMATION SYSTEM (BAS)
UPGRADES & REPAIRS
NORTHWESTERN STATE UNIVERSITY
NATCHITOCHEES, LOUISIANA

State of Louisiana Project No. 01-107-24-05, F. 01004613



1 Student Services - Reference Plan - 1st Floor

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = STUDENT SERVICES									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	STUDENT SERVICES IPXC01	--	PXC	RM. 107	--	FLASH	X		1

NOTES:
1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



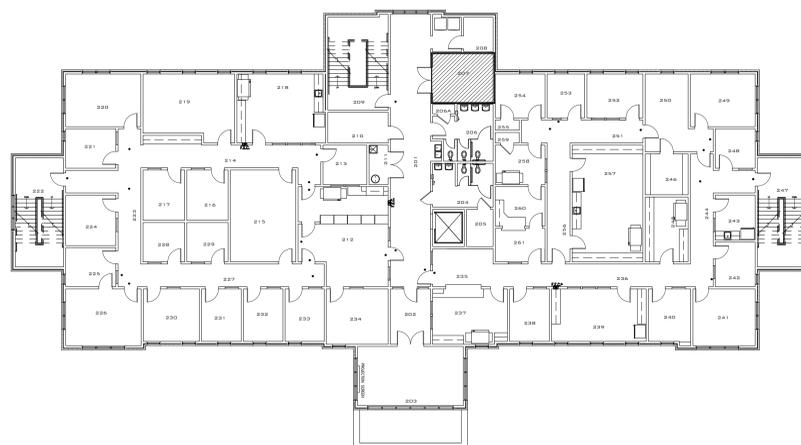
3 Student Services - Reference Plan - 3rd Floor

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = STUDENT SERVICES									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	STUDENT SERVICES IPXC03	--	PXC	RM. 305	--	FLASH	X		1

NOTES:
1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



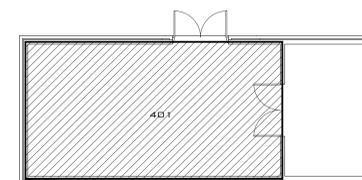
2 Student Services - Reference Plan - 2nd Floor

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = STUDENT SERVICES									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	STUDENT SERVICES IPXC02	--	PXC	RM. 207	--	FLASH	X		1

NOTES:
1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



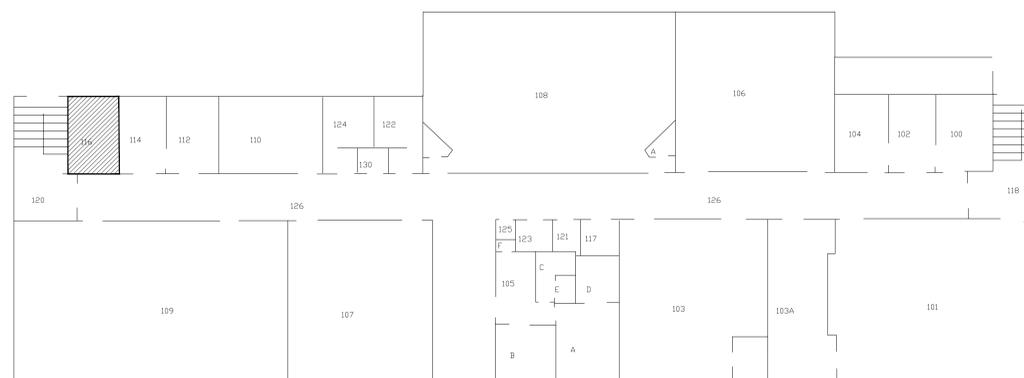
4 Student Services - Mechanical Building

No Scale

ROOM IN THE BUILDING IN WHICH PANEL IS LOCATED IN.

BUILDING NAME = STUDENT SERVICES									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	STUDENT SERVICES PLANT	--	PXC	RM. 401	NOT LABELED	FLASH	X		1

NOTES:
1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.



5 Williamson - Reference Plan - 1st Floor

No Scale

BUILDING NAME = WILLIAMSON									
NETWORK TYPE	NODE (BLDG. NAME)	NODE NO.	EXISTING PANEL	PANEL LOCATION / RM. NO.	PORT ADDRESS	FLASH OR FAST FORWARD	EXIST. IT DROP TO BE RE-USED	NEW IT DROP TO BE PROVIDED	NOTES
P2 ETHERNET	MEC02		MEC	RM. 116	NOT LABELED	FAST FORWARD	X		1

NOTES:
1) THIS NETWORK CAN BE BROUGHT INTO DESIGO CC AFTER FLASHING.

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Professional Seal: _____ Sheet No. _____



M-11