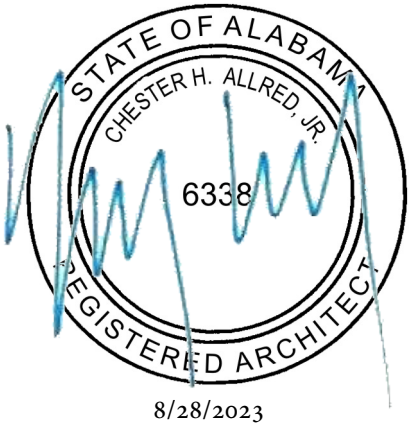
PROJECT MANUAL
August 28, 2023

GS# 374-009
SITE IMPROVEMENTS
(BOLTON BUILDING)
BILOXI, MISSISSIPPI

for:
Bureau of Building, Grounds and
Real Property Management
501 North West Street, Suite 1401B
Jackson, Mississippi 39201

ASA Job No. 2022-38



BID DATE: October 5, 2023
2:00pm, local time

allred stolarski architects

Allred Stolarski Architects, PA
711 Church Street
Ocean Springs, MS 39564

INDEX TO SPECIFICATIONS

DEPARTMENT OF FINANCE AND ADMINISTRATION
BUREAU OF BUILDING, GROUNDS AND
REAL PROPERTY MANAGEMENT
JACKSON, MISSISSIPPI

ADVERTISEMENT FOR BIDS

Sealed bids will be received electronically via MAGIC or physically delivered to the office of the Bureau of Building, Grounds and Real Property Management, 501 North West Street, Suite 1401 B, Jackson, Mississippi, 39201, until 2:00:00 p.m. (14:00:00 Military Time) on Thursday, 10/05/2023, for:

RE: GS# 374-009 Site Improvements
Bolton Building (Office of Capitol Facilities) (Department of Finance and Administration)
RFx # 3160006142

at which time they will be publicly opened and read. Contract documents may be obtained from:

Professional:	Allred Stolarski Architects, PA
Address:	711 Church Avenue
	Ocean Springs, Mississippi 39564
Phone:	228-762-1975
Email:	hoppy@allredstolarski.com

A deposit of $150.00 is required. Bid preparation will be in accordance with Instructions to Bidders bound in the project manual. The Bureau of Building, Grounds and Real Property Management reserves the right to waive irregularities and to reject any or all bids. **NOTE: Telephones and desks will not be available for bidders use at the bid site.**

Bureau of Building, Grounds and Real Property Management

Dates of Publication:

09/05/2023
09/12/2023

Note: Whenever reference is made, in any document or meeting, to 2:00:00 p.m., it shall also mean, and be the same as, 14:00:00 Military Time.

INSTRUCTIONS TO BIDDERS
SECTION 00 2100

PART 1 - GENERAL

1.01 **QUESTIONS:** Questions should be directed to the Professional. Should a Bidder find discrepancies in, or omissions from, the procurement documents, or be in doubt as to their meaning, the Bidder should immediately notify the Professional. The Professional will send written instruction(s) or interpretation(s) to all known holders of the documents. Neither the Owner, nor the Professional, will be responsible for any oral instruction or interpretation.

1.02 **BIDDER'S QUALIFICATIONS:**

A. **Certificate of Responsibility:** The Mississippi State Board of Contractors is responsible for issuing Certificates of Responsibility to Contractors. To be awarded a Contract for public work, Sections 31-3-15 and 31-3-21 of the **Mississippi Code of 1972, Annotated** requires a Contractor to have a current Certificate of Responsibility at bid time and during the entire length of the job. The Certificate of Responsibility number issued becomes a significant item in all public bidding.

B. **Bid Under $50,000:** If a Bidder submits a bid not exceeding $50,000, no Certificate of Responsibility number is required; however, a notation stating the *bid does not exceed $50,000* shall appear on the face of the envelope, or a Certificate of Responsibility number.

C. **Bid Over $50,000:** Each Bidder submitting a bid in excess of $50,000 shall show its Certificate of Responsibility number on the bid and on the face of the envelope containing the bid.

D. **Joint Venture Bid:** When multiple Contractors submit a joint venture bid in excess of $50,000, a *joint venture* Certificate of Responsibility number shall be shown on the bid and on the face of the envelope containing the bid. If the Multiple-Contractor joint venture has no *joint venture* Certificate of Responsibility number, each of the Contractors participating in the bid shall indicate their individual Certificate of Responsibility numbers on the bid and on the face of the envelope.

1.03 **NON-RESIDENT BIDDER:** When a non-resident Bidder (a Contractor whose principal place of business is outside the State of Mississippi) submits a bid for a Mississippi public works project, one of the following is required and shall be submitted with the Proposal Form: (Code 31-3-21(3))

A. **Copy of Law:** If the non-resident Bidder's state has a resident Bidder preference law, a copy of that CURRENT law shall be submitted with the Proposal Form.

B. **Statement:** If the state has no such law then a statement indicating *the State of (Name of State) has no resident Contractor preference law* shall be submitted with the Proposal Form.

1.04 **DISQUALIFICATION OF BIDDER:** A Bidder may be disqualified for any of the following reasons:

A. Failure to comply with the bid requirements.

B. Bidder is in arrears on existing Contracts with the Bureau or another state agency, university, community college, or junior college.

C. Bidder is involved in an ongoing dispute related to the Bidder's execution, workmanship, or timely performance of a previous Contract with the Bureau or another state agency, university, community college, or junior college.

D. Bidder has defaulted on a previous Contract with the Bureau of another state agency, university, community college, or junior college.

1.05 **CONDITIONS OF WORK:** Each Bidder must fully inform himself of all conditions relating to the construction of the Project and employment of labor thereon. Failure to do so will not relieve a successful Bidder of obligations to furnish all material and labor necessary to carry out the provisions of the Contract. Insofar as possible, the Bidder must employ methods, or means, which will not cause interruption of, or interference with, the work of any other Bidder, or Contractor.

1.06 **EXAMINATION OF SITE:** All Bidders, including the general Contractor and Subcontractors, shall visit the building site, compare the Drawings and Project Manual with any work in place and be informed of all conditions. Failure to visit the site will in no way relieve the successful Bidder from furnishing any materials or performing any work required to complete work in accordance with Drawings and Project Manual without additional cost to the Owner.

1.07 **LAWS AND REGULATIONS:** The Bidder's attention is directed to the fact that all applicable Mississippi state laws, rules and regulations of all authorities having jurisdiction over construction of the Project apply to the Contract.

1.08 **OBLIGATION OF BIDDER:** At the bid opening, each Bidder will be presumed to have inspected the site, read and become thoroughly familiar with the Drawings and the Project Manual, including all addenda.

1.09 **BID DOCUMENT DEPOSIT AND RETURN:** The deposit amount, if any, shall be established as the estimated actual cost of copying and reproduction plus shipping via USPS standard Ground Transportation, is shall be indicated in the Advertisement for Bids. Bidders may request shipping via express carrier or expedited delivery at their own additional cost. Upon returning the documents to the Professional within ten (10) working days of the bid date and in good condition, all document holders will be refunded the full deposit amount. Further, any document holder who is awarded the contract, related subcontracts and/or vendor agreements may elect to retain their documents and request refund of the full deposit amount upon execution of the construction contract and approval of general contractor, however; such documents shall be counted toward the total number of copies furnished free of charge to the general contractor. No partial sets of documents will be issued. Selected trade organizations, plan rooms and web-based distribution networks will be issued one (1) set of documents without charge.

PART 2 - PROPOSAL FORM

2.01 **METHOD OF BIDDING:** Lump sum, single bids received on a general contract will include general, mechanical and electrical construction and all work shown on Drawings or specified in the Project Manual.

2.02 **PROPOSAL FORMS:** The Bidder shall make all proposals on forms provided and shall fill all applicable blank spaces without interlineations or alteration and must not contain recapitulation of the work to be done. No oral or telegraphic proposals will be considered.

2.03 **TIME OF COMPLETION:** The Bidder shall agree to commence work on, or before, a date specified in a written *Notice to Proceed* and fully complete the Project within the calendar days indicated on the Proposal Form.

2.04 **BASE BID AND ALTERNATES:**

A. On the Proposal Form, the Bidder shall write out the Base Bid amount in words and include the numerical amount The written word shall govern.

B. The Proposal Form shall contain a brief description of each alternate modifying the scope. The Bidder shall write out the amount in words and include the numerical amount for each alternate. The written word shall govern.

2.05 **SUBSTITUTIONS:** No substitutions, qualifications or redefining of the Specification requirements are allowed to be marked on the Proposal Form, unless specifically required by the Bid Documents.

2.06 **ADDENDA:** Any addenda to the Drawings or Project Manual issued before or during the time of bidding shall be included in the proposal and become a part of the Contract. The Proposal Form will have ample space to indicate the receipt of addenda. When completing the Proposal Form, the Bidder shall list the Addendum number in spaces provided.

2.07 **BIDDER IDENTIFICATION:**

A. **Signature:** The Proposal Form shall be signed by any individual authorized to enter into a binding agreement for the Business making the bid proposal.

B. **Name of Business:** The name appearing on the Proposal Form should be the complete spelling of bidder's name exactly as recorded at the Secretary of State, which should also be the same as at the Mississippi State Board of Contractors.

C. **Legal Address:** The address appearing on the Proposal Form should be the same address as recorded at the Secretary of State, which should also be the same as at the Mississippi State Board of Contractors.

D. **Certificate of Responsibility Number(s):** The Certificate of Responsibility Number(s) appearing on the Proposal Form should be the same number appearing in the current Mississippi State Board of Contractors Roster.

2.08 **BID SECURITY:** The Bid Security shall be in the form of a Bid Bond, or a Certified Check:

A. **Bid Bond:** The Bidder may submit a Bid Bond by a Surety licensed in Mississippi in the amount of five percent (5%) of the base bid. The Bid Bond shall be duly executed by the Bidder, a Mississippi Licensed Agent for said Surety

approved by the Mississippi Insurance Department OR signed by the Surety AND countersigned by a Mississippi Licensed Agent for said Surety approved by the Mississippi Insurance Department https://www.mid.ms.gov (or most up-to-date link) (No standard form is required for the Bid Bond.) Where bid is to be submitted electronically, a scanned copy of bid bond is acceptable.

B. **Certified Check:** The Bidder may submit a certified check made out to the *Bureau of Building, Grounds and Real Property Management* in the amount of five percent (5%) of the base bid. All checks received from Bidders will be returned upon request, unless a Bidder is one (1) of the three (3) apparent low Bidders. The three (3) apparent low Bidder's checks will be held for forty-five (45) days, unless a Contract is awarded and executed in less time. Where bid is to be submitted electronically, certified check must be physically delivered to the address indicated on the Advertisement for Bids prior to the time and date stated.

2.09 **POWER OF ATTORNEY:** Each bid security must be accompanied by an appropriate Power of Attorney. No Power of Attorney is necessary with a certified check.

PART 3 - SUBMITTING THE PROPOSAL FORM

3.01 **SUBMITTAL:** A bid must be either submitted electronically via MAGIC or physically delivered to the address indicated on the Advertisement for Bids prior to the time and date stated.

A. **Physical Submittal:** If physically submitted, only one original of Bid Proposal shall be submitted which should be sealed in an opaque envelope marked, mailed or hand-delivered as shown below. If the Bid is mailed, the bid envelope shall be placed inside a second envelope to prevent inadvertent premature opening of the Proposal.

(In upper left hand corner)
Name of Firm (complete spelling of bidder's name and address – exact as recorded at the Secretary of State which should be the same as you applied for at the Mississippi State Board of Contractors)

(Bid shall be addressed and delivered to)
Bureau of Building, Grounds and Real Property Management
501 North West Street, Suite 1401B [Woolfolk Building]
Jackson, Mississippi 39201

(In lower left hand corner)
Bid for Project # _____
Title _____
Using Agency _____
Certificate of Responsibility # _____(for over $50,000.00)
Under $50,000.00 (add statement)

B. **Electronic Submittal:** Bidders must be registered prior to submitting bids electronically. It is the responsibility of the Bidder to allow sufficient time to complete or confirm such registration before the date and time established to receive bids. Information on registration and bidding electronically may be found at www.dfa.ms.gov/dfa-offices/mmrs/mississippi-suppliers-vendors. For further assistance e-mail mash@dfa.ms.gov OR call (601) 359-1343, Option 2. If a Bidder desires to receive system generated Construction Bid Notices for future Bureau of Building, Grounds and Real Property Management opportunities, use Product Code 90922.

3.02 **MODIFICATION TO BID:** A bidder may only modify the bid prior to the scheduled closing time indicated in the Advertisement for Bids in the following manner:

A. **Physical Bid:** A modification may be written on the outside of the sealed envelope containing the bid.
B. **Electronic Bid:** Information and attachments may be modified and re-submitted via MAGIC.

3.03 **WITHDRAWAL OF BID:** Any bid may be withdrawn prior to the scheduled time for opening of bids. However, after the scheduled opening, bids may not be withdrawn until forty-five (45) calendar days after bid opening.

PART 4 - BID OPENING AND AWARD OF CONTRACT

4.01 **OPENING OF BIDS:** Bids will be publicly opened shortly after the time stated in the Advertisement for Bids. Bidder representatives are invited; however, attendance is not mandatory. Closure of agency preventing the opening of bids at the advertised date and time due to Force Majeure Event reasons will result in bids being publicly opened on the next business day that the agency shall be open and at the previously advertised time. Physical Bids without a Certificate of Responsibility on the outside of the envelope, or a statement indicating bid is under $50,000.00, will not be opened. Electronic Bids where Certificate of Responsibility or statement indicating bid is under $50,000.00 is not entered as response to required question, will not be considered.

4.02 **IRREGULARITIES:** The omission of any information requested on the Proposal Form may be considered as an informality, or irregularity, by the awarding public body when in their opinion the omitted information does not alter the amounts contained in the submitted bid proposal, or place other Bidders at a disadvantage.

4.03 **PROTEST:** Any protest must be delivered in writing to the Owner within twenty-four (24) hours after the bid opening.

4.04 **ERRORS:** Any claim of error and request for release from bid must be delivered in writing to the Owner within twenty-four (24) hours after the bid opening. The Bidder shall subsequently and promptly provide sufficient documentation with the written request clearly proving an error was made. Failure to provide such documentation adequate to prove an error may result in forfeiture of Bid Security to the Owner.

4.05 **AWARD OF CONTRACT:** The Owner reserves the right to reject any or all bids. A Contract will be awarded (subject to receipt of an executable contract) on the basis of the lowest, responsive, responsible base bid, or lowest combination of base bid and those alternates selected by the Owner generally in the order listed unless a different order is determined to be in the best interest of the Using Agency and/or Owner and which produces a total within available funds. Where such bidder fails to enter into a contract, the Owner reserves the right to award to the next lowest responsive, responsible bidder or resolicit the project.

4.06 **FAILURE TO ENTER INTO A CONTRACT:** The Bidder shall forfeit the Bid Security to the Owner as liquidated damages for any of the following reasons:

A. Prior to award, failure, or refusal, to furnish the names, classifications and COR #s of Sub-Contractors over Fifty Thousand Dollars ($50,000.00) as well as entities who are to furnish materials or equipment fabricated to a special design within three (3) working days after receipt of Notice of Intent to Award the Contract.

B. Prior to award, failure, or refusal, to furnish substitute acceptable Sub-Contractors or entities within five (5) working days of when the Owner or Prime Professional has made reasonable objection to those initially submitted.

C. Following Notice of Award (subject to executable contract), failure, or refusal, to execute and deliver the Form of Agreement Between the Owner and the Contractor, the Performance and Payment Bond, and the Certificate of Insurance within ten (10) working days after receipt of same from the Professional.

4.07 **SECURITY FOR FAITHFUL PERFORMANCE:** Simultaneously, with delivery of the executed Contract, the Contractor will furnish a Surety Bond, or Bonds, as security for faithful performance, the payment of all persons performing labor on the project, and furnishing materials in connection with this Contract. The Surety on such Bond, or Bonds, will be a duly authorized surety company satisfactory to the Owner and meeting all of the following requirements:

A. Licensed at the time of award by the State of Mississippi's Commissioner of Insurance for the purpose of providing surety. https://www.mid.ms.gov (or most up-to-date link)

B. Listed at the time of award in the Department of the Treasury's **Federal Register** as a company holding certificates of authority as acceptable sureties on Federal Bonds, commonly referred to as the Treasury List.

C. All Bonds shall be executed on the form provided in the Project Manual under Section 00 6100 entitled *Contract Bond*.

D. The Contract Bond shall be duly executed by the Bidder, a Surety licensed in Mississippi signed by a Mississippi Licensed Agent for said Surety approved by the Mississippi Insurance Department OR signed by the Surety AND countersigned by a Mississippi Licensed Agent for said Surety approved by the Mississippi Insurance Department with the name and address typed (or lettered legibly), and Surety Seal (preferably embossed). https://www.mid.ms.gov (or most up-to-date link)

E. All Bonds must be accompanied by an appropriate Power of Attorney dated same as Contract Bond and sealed (preferably embossed ~~seal~~).

PART 5 - BIDDER'S CHECKLIST

The following checklist is for the Bidder's assistance only. It is not inclusive and does not have to be included with the Proposal Form when submitting a bid proposal.

5.01 **PROPOSAL FORM**: (only one original proposal form to be submitted)

Base Bid

( ) Write in the amount of the base bid in words and numbers. In the case of a conflict, the written word shall govern.

Alternates

( ) Write in each alternates amount in words and numbers. In the case of a conflict, the written word shall govern.

Addenda

( ) Acknowledge the receipt of each addendum by writing in the number of the addendum.

Acceptance

( ) Proposal is signed by authorized person

( ) Name of Business - complete spelling of bidder's name and address - exact as recorded at the Secretary of State

[http://www.sos.state.ms.us/busserv/corp/soskb/csearch.asp] which should be the same as you applied for at the Mississippi State Board of Contractors [http://www.msboc.us/Search2.CFM]

( ) Legal address of the business listed above (at SOS and Contractor's Board)

( ) Correct Certificate of Responsibility Number(s) as it appears in the current MS State Board of Contractors Roster

Certificate of Responsibility Number(s)

( ) Base Bid is under $50,000 and no number is required AND the statement "bid does not exceed $50,000" is on the outside of the sealed envelope or statement included with electronic bid

OR ( ) Base Bid is $50,000 or more and number is required and is on the outside of the sealed envelope or included with electronic bid

( ) Joint Venture and *joint venture* number is required

OR ( ) Joint Venture participants' numbers are required

5.02 **BID SECURITY:**

( ) Included Bid Bond

OR ( ) Included Certified Check

5.03 **POWER OF ATTORNEY:**

( ) Included Power of Attorney

5.04 **NON-RESIDENT BIDDER:**

( ) Attached a Copy of Non-Resident Bidder's Preference Law

OR ( ) Attached a Statement

5.05 **SUB-CONTRACTORS NAME:**

( ) List any Mechanical, Plumbing, and/or Electrical Sub-Contractors regardless of cost.

* List name even for under $50,000 (see 5.06 regarding COR)
* Fire Protection Sprinkler Contractors do not have to be listed
* If there is a separate HVAC/Plumbing Sub-Contractor, so notate as mentioned herein
* If Mechanical, Plumbing, and/or Electrical Sub-Contractor is performed by the General, be sure the General has a COR for said discipline
* If there is no Mechanical, Plumbing, and/or Electrical Sub-Contractor listed, then use of Sub-Contractor to perform such scope will not be permitted.

5.06 **SUB-CONTRACTORS' COR NUMBER**

( ) * List Certificate of Responsibility Number for any listed Sub-Contractor over $50,000.00

***** END OF SECTION *****

Division 0

PROPOSAL FORM
SECTION 00 4200

To: Bureau of Building, Grounds and Real Property Management
501 North West Street, Suite 1401B [Woolfolk Building]
Jackson, Mississippi 39201

Re: Project # GS#374-009
Project Title SITE IMPROVEMENTS
Location BOLTON BUILDING, BILOXI, MS

I propose to complete all work in accordance with the Project Manual and Drawings within 90 consecutive calendar days for the sum of: (Professional must specify number of days)

BASE BID: **(**Write in the amount of the base bid in words and numbers. In case of conflict, the written word governs.)

Words: _____ Dollars
Figures: ($_____)

ALTERNATES: **(**Write in the amount of all of the alternates in words and numbers. In case of conflict, the written word governs.)

Alternate #1 ☐ Adds ☐ Deducts
Words: _____Dollars
($_____)
Description: _____
_____

Alternate #2 ☐ Adds ☐ Deducts
Words: _____Dollars
($_____)
Description: _____
_____

Alternate #3 ☐ Adds ☐ Deducts
Words: _____Dollars
($_____)
Description: _____
_____

Alternate #4 ☐ Adds ☐ Deducts
Words: _____Dollars
($_____)
Description: _____
_____

Alternate #5 ☐ Adds ☐ Deducts
Words: _____Dollars
($_____)
Description: _____
_____

ADDENDA ACKNOWLEDGMENT:

No. _____ No. _____ No. _____

No. _____ No. _____ No. _____

ACCEPTANCE:

I certify that I am authorized to enter into a binding contract, if this Proposal is accepted.

Signature _____ Date _____

Name and Title_____

Name of Business _____

Address _____(mailing)

Address _____(physical)

City/State/Zip Code _____County _____

Phone _____ Fax _____ Email _____

■ **BIDDER'S CERTIFICATE OF RESPONSIBILITY NUMBER:** _____

■ **MINORITY BUSINESS ENTERPRISE? (MBE/WBE) Yes _____ No _____** (to assist with Code 57-1-57)

■ Attach copy of Non-Resident Bidder's Preference Law

■ Mechanical / Plumbing / Electrical Contractors:

Regarding said Divisions of the Specifications of the BoB Standard Form of Agreement Between The Owner and The Contractor:

List any Mechanical/Plumbing and/or Electrical Sub-Contractors that will perform work of this contract, regardless of cost even for under $50,000.00. COR must be included where sub-contract exceeds $50,000.00. If no sub-contractor is listed, and such work is within scope of contract and over $50,000.00, bidder's own COR classification(s) must be sufficient to self-perform any such work. If no sub-contractor is listed, then use of sub-contractor to perform such scope will not be permitted.

Mechanical Contractor: _____ Certificate of Responsibility No. _____
Plumbing Contractor: _____ Certificate of Responsibility No. _____
Electrical Contractor: _____ Certificate of Responsibility No. _____

STANDARD FORM OF AGREEMENT BETWEEN THE OWNER AND THE CONTRACTOR
SECTION 00 5200

This Agreement made the _____ day of _____, 20_____ between the Owner,

Bureau of Building, Grounds and Real Property Management
501 North West Street, Suite 1401B [Woolfolk Building]
Jackson, Mississippi 39201

created by Section 7-1-451 et seq., and Section 31-11-1, et seq., **Mississippi Code of 1972, Annotated**, and acting for the State of Mississippi;

and between the Contractor:

Business Name _____
Address _____
City/State/Zip _____ Phone: _____Fax:_____Email:_____

The Contractor is a (check and complete one of the following):

_____ ☐ CORPORATION or ☐ LLC solely organized and existing under the laws of the State of _____ and having its principal office in _____, _____, _____
(City) (County) (State

_____ PARTNERSHIP of the following (list all partners):
_____
_____
_____

_____ SOLE PROPRIETORSHIP

For the following Project:

GS#374-009
SITE IMPROVEMENTS
BOLTON BUILDING, BILOXI, MISSISSIPPI

This Agreement entered into as of the day and year first written above:

OWNER: BUREAU OF BUILDING, GROUNDS AND REAL PROPERTY MANAGEMENT

By:_____
(Signature)

_____
(Name and Title)

CONTRACTOR:

By:_____
(Signature)

_____
(Name and Title)

APPROVED AS TO FORM:

By: _____
(Signature of Attorney)

THE OWNER AND THE CONTRACTOR AGREE AS SET FORTH IN PAGES ONE THROUGH THREE, ARTICLES ONE THROUGH FIVE, AS FOLLOWS:

ARTICLE 1: THE WORK AND CONTRACT DOCUMENTS

1.1.1 The Contractor will perform all the work required by the Contract Documents for the Project indicated above.

1.2 **THE CONTRACT DOCUMENTS**

1.2.1 The Contract Documents which constitute the entire Agreement between the Owner and the Contractor, are enumerated as follows:

1.2.2 Project Manual dated AUGUST 28, 2023

BIDDING REQUIREMENTS
- Advertisement for Bids
- Instructions to Bidders
- Proposal Form

STANDARD FORM OF AGREEMENT BETWEEN THE OWNER AND THE CONTRACTOR
CONTRACT BOND
POWER OF ATTORNEY
CERTIFICATE OF INSURANCE
AFFIDAVIT OF PAYMENT TO ALL SUBCONTRACTORS
CONDITIONS OF THE CONTRACT
- General Conditions
- Supplementary Conditions
- Labor Requirements
- Minority Participation
- Special Conditions

ADDENDA
SPECIFICATIONS (check the specs listed on the contents and included in the manual)

X Division 1: General Requirements	X Division 26: Electrical
___ Division 2: Existing Conditions	___ Division 27: Communications
___ Division 3: Concrete	X Division 28: Electronic Safety and Security
___ Division 4: Masonry	___ Division 31: Earthwork
___ Division 5: Metals	___ Division 32: Exterior Improvements
___ Division 6: Wood, Plastics and Composites	___ Division 33: Utilities
___ Division 7: Thermal and Moisture Protection	___ Division 34: Transportation
___ Division 8: Openings	___ Division 35: Waterway and Marine Construction
___ Division 9: Finishes	___ Division 40: Process Interconnections
___ Division 10: Specialties	___ Division 41: Material Processing and Handling Equipment
___ Division 11: Equipment	___ Division 42: Process Heating, Cooling, and Drying Equipment
___ Division 12: Furnishings	___ Division 43: Process Gas and Liquid Handling, Purification, and Storage Equipment
___ Division 13: Special Construction	
___ Division 14: Conveying Equipment	___ Division 44: Pollution and Waste Control Equipment
___ Division 21: Fire Suppression	___ Division 45: Industry-Specific Manufacturing Equipment
___ Division 22: Plumbing	___ Division 46: Water and Wastewater Equipment
___ Division 23: HVAC	___ Division 48: Electrical Power Generation
___ Division 25: Integrated Automation	

1.2.3 Addenda
Addendum No. 1, dated _____
Addendum No. 2, dated _____
Addendum No. 3, dated _____
Addendum No. 4, dated _____
Addendum No. 5, dated_____

1.2.4 Drawings dated _____

Sheets No. _____ through _____	Sheets No. _____ through _____
Sheets No. _____ through _____	Sheets No. _____ through _____
Sheets No. _____ through _____	Sheets No. _____ through _____
Sheets No. _____ through _____	Sheets No. _____ through _____
Sheets No. _____ through _____	Sheets No. _____ through _____
Sheets No. _____ through _____	Sheets No. _____ through _____

1.2.5.1 Other documents, dated _____
_____

ARTICLE 2: CONTRACT SUM

2.1 **CONTRACT SUM**

2.1.1 The Owner will pay the Contractor in current funds for the performance of the work subject to additions and deductions by Change Order as provided in the Contract Documents, the Contract Sum of

_____Dollars

($ _____). The Contract sum is determined as follows:

Base Bid		$_____
Modifications	( ) Adds ( ) Deducts	$_____
Negotiations		$_____
Alternate No. _____	( ) Adds ( ) Deducts	$_____
Alternate No. _____	( ) Adds ( ) Deducts	$_____
Alternate No. _____	( ) Adds ( ) Deducts	$_____
Alternate No. _____	( ) Adds ( ) Deducts	$_____
Alternate No. _____	( ) Adds ( ) Deducts	$_____
Total Contract Sum		$_____

2.2 **LIQUIDATED DAMAGES**

2.2.1 The stipulated liquidated damages described in Paragraph 9.11 of the *Supplementary Conditions* are in the amount of __ONE HUNDRED FIFTY AND NO/100_____ Dollars ($ 150.00_____) for each calendar day.

ARTICLE 3: CONTRACT TIME

3.1 **TIME**

3.1.1 The work to be performed under this Contract shall be commenced upon the date stated in the *Notice to Proceed*. The work is to be substantially complete, subject to approved Change Orders, no later than __90____ calendar days from the date stated in the *Notice to Proceed*.

ARTICLE 4: PAYMENTS AND FINAL PAYMENTS

4.1 **PROGRESS PAYMENTS**

4.1.1 Based upon applications for payment submitted to the Professional by the Contractor and *Certificates for Payment* issued by the Professional, the Owner will make progress payments on account of the Contract Sum to the Contractor as provided in the Contract Documents.

4.2 **FINAL PAYMENT**

4.2.1 Final payment constituting the entire balance of the Contract Sum will be paid by the Owner to the Contractor when the work has been completed, the Contract fully performed and a final Certificate for Payment has been issued by the Professional and approved by the Owner.

ARTICLE 5: MISCELLANEOUS PROVISIONS

5.1 **DEFINITION OF TERMS**

5.1.1 Terms used in this Agreement which are defined in the General, Supplementary, and Special Conditions of the Contract will have the meanings designated in those Conditions.

5.2 **CONTRACTOR'S INTEREST IN AGREEMENT**

5.2.1 The Contractor will not assign, sublet, or transfer the interest in this Contract agreement without the written consent of the Owner. The Owner and Contractor hereby agree to the full performance of the covenants contained herein.

5.3 **PROFESSIONAL**

5.3.1 The Professional assigned to this Project is as follows:

Name_____ALLRED STOLARSKI ARCHITECTS, PA_____

Address_____711 CHURCH STREET, OCEAN SPRINGS, MS 39564_____

Telephone __228-762-1975_____ Fax Number ___N/A_____ E-Mail Address hoppy@allredstolarski.com

***** END OF SECTION *****

CONTRACT BOND
SECTION 00 6100

I. PREAMBLE

KNOW ALL MEN BY THESE PRESENTS: THAT _____,
Principal, a _____, residing at _____, authorized to do business in the State of Mississippi under the laws thereof, and _____Surety, a corporation of the State of _____, authorized to do business in the State of Mississippi under the laws thereof, are held and firmly bound unto the Bureau of Building, Grounds and Real Property Management of the State of Mississippi, Obligee, hereinafter referred to as "Owner," for the use and benefit of the Owner and those claimants and others set forth herein below and described in Sections 31-5-51 and 31-5-3, **Mississippi Code of 1972, Annotated**, as amended, in the amount of _____ _____ Dollars ($_____), lawful money of the United States, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

WHEREAS, Principal has by written agreement dated _____, 20_____, entered into a Contract with the Owner for the following:

_____
_____
_____

as provided in said Contract and in accordance with the Contract Documents. All of the terms and provisions of the above mentioned Contract, drawings, Project Manual, and addenda are by reference made a part hereof and fully incorporated herein, and are hereinafter referred to as "the Contract." All of the terms and provisions of Sections 31-5-51, 31-5-3, supra, Section 31-5-53 of the **Mississippi Code of 1972, Annotated**, as amended, and all other code sections cited herein are also by reference made a part hereof and fully incorporated herein.

II. PERFORMANCE BOND

NOW, THEREFORE, the condition of this Performance Bond is such that if Principal shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect, subject however, to the following conditions:

Whenever the Owner has performed its obligation but the Principal has defaulted under the terms of the Contract, or any portion thereof, and the Owner has declared the Principal to be in default, the Surety shall promptly:

1. Remedy the default, or
2. Complete the Contract in accordance with its terms and conditions, or
3. Procure the completion of the Contract in accordance with its terms and conditions.

Even if there should be a succession of defaults, the Surety is responsible for completion of the Contract. The Surety shall provide sufficient funds to pay the cost of completion of the Contract in its entirety including other costs and damages for which the Surety may be liable thereunder, less the balance of the Contract price. The term "balance of the Contract price," as used in this paragraph, shall mean the total amount payable by Owner to Principal under the Contract and any Change Orders thereto, less the amount paid by Owner to Principal.

III. LABOR AND MATERIAL PAYMENT BOND

NOW, THEREFORE, the condition of this Labor and Material Payment Bond is such that if Principal shall promptly make payments to all persons supplying labor or material used in the prosecution of the work under said Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect; however, the Owner shall not be liable for the payment of any costs or expenses of any suit described in Subsection (2) of Section 31-5-51, supra.

IV. BOND FOR PAYMENT OF TAXES AND OTHER ASSESSMENTS

NOW THEREFORE, the condition of this Bond for Payment of Taxes and Other Assessments is such that if Principal shall promptly make payment of all taxes, licenses, assignments, contributions, damages, penalties, and interest thereon, when and as the same may lawfully be due the State of Mississippi, or any County, Municipality, Board, Department, Commission, or political subdivision thereof, by reason of and directly connected with the performance of said Contract or any part thereof as provided by Sections 27-65-1, 27-65-21, 27-67-1, and 31-5-3, **Mississippi Code 1972, Annotated**, or any other applicable statute or other authority, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

V. GENERAL CONDITIONS

The following conditions apply to all three (3) of the above-mentioned Bonds:

1. The Performance Bond is for an amount equal to the full amount of said Contract.
2. The Labor and Material Payment Bond is for an amount equal to the full amount of said Contract.
3. If any changes are made in the work, or any extensions of time are granted, or any increases in the total dollar amount of the Contract are made, such changes, extensions, increases, or other forbearance on the part of either the Owner or the Principal will not, in any way, release the Principal and Surety, or either of them, from their liability hereunder, or any portion thereof, notice to the Surety of any such change, extension, increase, or forbearance being expressly waived.
4. These Bonds are governed by and shall be construed in accordance with Mississippi law. Any inconsistency with these Bonds and any provision of Mississippi law shall be remedied by deleting the inconsistent portion of these Bonds and leaving the remaining consistent portions in full force and effect.

Signed and sealed this _____ day of _____, 20_____.

SURETY _____
Mississippi NAIC number: _____

By: _____
(Signature)

_____ Attorney-in-Fact
(Typed Name) (Title)
Surety Agent MS Ins Dept License Number: _____
(Leave blank if you do not have a Mississippi #)

_____
(Surety Address)

_____
(Surety City/State/Zip/Phone)

_____
(MS LICENSED AGENT COMPANY NAME)
(add MS Agent's address below)

COUNTERSIGNED: (if Surety Agent above is NOT MS Licensed)

_____
(Signature)

_____ Licensed Mississippi Agent
(Typed Name) (Title)
Countersignature Agent MS License Number: _____

_____
(MS Licensed Agent Address)

_____
(MS Licensed Agent City/State/Zip/Phone)

PRINCIPAL _____

By: _____
(Signature) (same person on Bond and Contract page)

_____
(Typed Name and Title)

_____
(Address)

_____
(City/State/Zip/Phone)

Surety Company, Surety Agent's Name, Address, etc. should be typed and with seal (preferably embossed seal) on Bond and P/A. The P/A should be for the Attorney-in-Fact with seal (preferably embossed seal).

The Contract Bond shall be duly executed by the Bidder AND a MS Licensed Agent said Surety approved by the MS Ins Dept
OR
signed by the Surety's Agent AND countersigned by a MS Licensed Agent for said Surety approved by the MS Ins Dept.

Countersignature, when signed, can be the same as the Attorney-in-Fact when the Attorney-in-Fact and/or Surety IS licensed in Mississippi. Countersignature will be different when the Attorney-in-Fact and/or Surety is "not" licensed in Mississippi. P/A will be for the Attorney-in-Fact.

Check the Surety Company AND the Surety Agent
AND/OR the Countersignature Company and/or Agent at MS Ins Dept web:
https://www.mid.ms.gov (or most up-to-date link)

Easier to locate Agent at MID when name agrees with MID licensed name.)

(Bond Agent MID or Code requirements are different from the Ins Cert Agent MID or Code requirements.)

CERTIFICATE OF INSURANCE

SECTION 00 6216

This certificate of insurance neither affirmatively nor negatively amends, extends, or alters the coverage afforded by the policies below.

INSURED: (Contractor's Name & Address)		**COMPANIES PROVIDING COVERAGE w/ MID Lic or NAIC #**
	A	#
	B	#
PROJECT: (Number, Name & Location)	**C**	#
	D	#
	E	#
OWNER: Bureau of Building, Grounds & Real Property Management	**F**	#
	G	#
	Companies above must be approved by the MS Ins Dept at https://www.mid.ms.gov (or most up-to-date link) per Code & WComp at http://www.mwcc.ms.gov/ (MID mod'd 041615)	

Type Insurance	Co	Policy Number	Policy Period	Coverage and Minimum Amount	
General Liability Commercial General Liability				General Aggregate	$ 1,000,000
				Products Comp/Ops (Aggregate	$ 1,000,000
				Personal Injury (Per Occurrence)	$ 500,000
				BI & PD (Per Occurrence)	$ 1,000,000
				Fire Damage (Per Fire)	$ 50,000
				Medical Expense (Per Person)	$ 5,000
Owners/Contractors Protective Liability				General Aggregate	$ 1,000,000
				Per Occurrence	$ 500,000
Automobile Liability				Bodily Injury/Property Damage Combined Single Limit (Per Occurrence)	$ 500,000
				OR Bodily Injury (Per Person)	$ 250,000
				OR Bodily Injury (Per Accident)	$ 500,000
				OR Property Damage (Per Occurrence)	$ 100,000
* Excess Liability (Umbrella on projects over $500,000)				Aggregate	$ 1,000,000
				Per Occurrence	$ 1,000,000
Workers' Compensation (As required by Statute) Employers' Liability				Accident (Per Occurrence)	$ 100,000
				Disease-Policy Limit	$ 500,000
				Disease-Per Employee	$ 100,000
Property Insurance (not required when project is demolition ONLY – required for ALL other projects including paving)				**OR** Builders' Risk Installation Floater	Must be equal to Value of Work
Other					

Certification: I certify that these policies (subject to their terms, conditions and exclusions) have been (1) issued to the Insured for the coverages and at least the amounts as indicated by companies licensed in Mississippi; (2) countersigned by a Mississippi Licensed Agent; and (3) endorsed to require the company to give thirty (30) days written notice to the Owner prior to cancellation or non-renewal of above.

Producing Agent: (Name, Address and Telephone)	(Signature) (Date) MID Lic # or countersign below
	(Name and Title of Authorized Representative) (typed)
	Agent must be approved by the MS Ins Dept or countersign https://www.mid.ms.gov

☐ Check if Mississippi Licensed Agent
OR Countersign by Mississippi Licensed Agent MID Lic #

_____ _____

Division 0

CERTIFICATE OF INSURANCE INSTRUCTIONS
SECTION 00 6217

1. The *Certificate of Insurance* is a tabulation of insurance required for this Project as specified in Article 11 entitled *Insurance and Bonds* in the General Conditions (AIA Document A201, Sixteenth Edition, 2017).

2. The *Certificate of Insurance* must be completed, certified by the original signature of a Mississippi Licensed Insurance Agent and/or countersignature and bound in each set of the Contract Documents. Insurance Companies providing coverage and Agent and/or Countersignature Agent must be approved by the Mississippi Insurance Department on their web at https://www.mid.ms.gov (or most up-to-date link). (Agent does not have to be on the MID web "for providers necessarily" – but must be an approved Agent on MID web. Easier to locate Agent at MID when name agrees with MID licensed name.)

3. Indicate Insured, Project, Companies providing coverage, policy numbers and policy periods in the blanks as applicable.

4. If the "OWNERS/CONTRACTORS PROTECTIVE LIABILITY" insurance is part of the Commercial General Liability Insurance Policy, or included by endorsement, indicate the policy number and period of the CGL policy in the "OWNERS/CONTRACTORS PROTECTIVE LIABILITY" blank spaces.

5. Automobile Liability Insurance may be provided which covers Bodily Injury and Property Damage in one (1) Combined Single Limit, or may be provided with separate minimum limits as shown on the Certificate of Insurance and specified in Article 11 of the Supplementary Conditions. The person signing the Certificate of Insurance should show which option the Contractor has selected by marking out the coverage that is not provided under the policies indicated.

6. OTHER INSURANCE (if required) will be indicated by typing in the "OTHER" block and detailed in Article 11 of the Supplementary Conditions.

7. CERTIFICATION wording may not be changed without specific written approval from the Owner (nor on any Owner documents even beyond Insurance Certificate).

8. "Riders", Binders, TBA, TBD, or other unsolicited attachments, are not allowed as part of the *Certificate of Insurance* unless specifically requested in writing by the Owner, or specified as part of the requirements for this Project (nor on any Owner documents even beyond Insurance Certificate).

9. CAUTION: The *Certificate of Insurance* is intended to be used for all Projects. The Contractor must provide all insurance specified in the Contract Documents for this Project, whether indicated on this form, or not. The Contractor must verify all insurance has been provided as required.

10. In accepting the Insurance Certificate by Owner, it would be helpful if some indication is given when, and if, the Provider is a Surplus Line Carrier, a Broker, or Self Insured (because they may not be on the MID web list referenced herein). (The Owner will have to ask MID (or know) at some point.)

11. The Workers Comp insurance provider must be approved and show up on the Workers Comp web at http://www.mwcc.state.ms.us / Services / Proof of Coverage Inquiry / accept / etc. and at the last step – enter the "contractor's name".

Note: Regarding #2 and #11. At the MID web – you enter the Surety Company / Provider / Agent. At the MWCC web – You enter the Vendor's name, then click on the policy number to see the MWCC Ins Provider.

***** END OF SECTION *****

Division 0

AFFIDAVIT CERTIFYING PAYMENT TO ALL SUBCONTRACTORS
SECTION 00 6300

Department of Finance and Administration
Bureau of Building, Grounds and Real Property Management

I acknowledge that, pursuant to Miss. Code Ann. §31-5-25 and H.B. 1562, Laws of 2002, that I am required to submit monthly certification indicating payments to subcontractors on prior payment requests. I, the undersigned Contractor, do hereby certify that I have paid the following amounts to subcontractors for Work which has been performed and incorporated into previous Applications for Payment which were issued and payment received from the Owner on the project listed below. I understand that this document must be submitted on a monthly basis after the submittal, approval and payment of Application for Payment #1. I understand that the Bureau of Building reserves the right to require me, the undersigned, to provide verification of payment and/or additional information.

Project Number: _____

Project Name: _____

Using Agency: _____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

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Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

(Attach additional list of subcontractors and amounts, if necessary)

Contractor Name and Title: _____

Contractor Certificate of Responsibility Number: _____

Contractor Signature: _____ Date: _____

STATE OF MISSISSIPPI

COUNTY OF _____

SWORN TO AND SUBSCRIBED BEFORE ME, the undersigned notary public,

this the _____ day of _____, 20____.

_____
NOTARY PUBLIC

My Commission Expires:

_____

GENERAL CONDITIONS
SECTION 00 7200

PART 1 - GENERAL

1.01 **DESCRIPTION**

A. **SCOPE:** The **General Conditions of the Contract for Construction**, AIA Document A201, Seventeenth Edition, 2017, Articles 1 through 15 inclusive, is a part of this Contract and is incorporated herein.

B. **BIDDING COPY:** For the purpose of bidding, Contractors are presumed to be familiar with AIA Document A201, a copy of which may be obtained from the Professional, or examined in the Professional's office.

***** END OF SECTION *****

This page left blank intentionally.

SUPPLEMENTARY CONDITIONS
SECTION 00 7300

PART 1 – GENERAL

1.01 **Description**

A. **Owner:** These supplements are necessary because the Owner is an agency, or political subdivision, of the State of Mississippi and occupies a different position from that of the usual Owner.

B. **Document:** The following supplements modify, change, delete from, or add to the **General Conditions of the Contract**, AIA Document A201, Seventeenth Edition, 2017. When any Article of the **General Conditions** is modified, or deleted, by these *Supplementary Conditions*, the unaltered provisions of that Article, Paragraph, Subparagraph, or Clause will remain in effect.

Article 1
GENERAL PROVISIONS

1.1 **Basic Definitions**

1.1.1 **The Contract Documents**

Change this subparagraph to read as follows:

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 Special Conditions), Drawings, Specifications and Addenda issued prior to the 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 minor changes in the Work issued by the Prime Professional. The Contract Documents also include the advertisement or invitation for bids or proposals, Instructions to Bidders, and the Contractor's bid or proposal.

1.1.2 **The Contract**

Change each instance of the word "*Architect*" to "*Prime Professional*" and each instance of the word "*Architect's*" to "*Prime Professional's*".

1.1.7 **Instruments of Service**

Change the word "*Architect*" to "*Prime Professional*" and change the word "*Architect's*" to "Prime Professional's".

1.1.8 **Initial Decision Maker**

Change this Subparagraph to read as follows:

The Initial Decision Maker is the person identified as the Professional in Paragraph 5.3.1 of the Standard Form of Agreement Between the Owner and the Contractor and will render initial decisions on Claims in accordance with Section 15.2.

1.1.9 Add a new Subparagraph as follows:

Commissioning Authority Professional
A professional independent of the Prime Professional retained by the owner who manages a quality-focused process for enhancing the delivery of the project. The process focuses upon verifying and documenting that the facility and all of its systems are planned, designed, installed, tested, operated, and maintained to meet the Owner's project requirements.

1.2.1 Change this Subparagraph to read as follows:

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor and unless otherwise provided in the Contract Documents, this shall include all labor, materials, equipment, tools, machinery, water, heat, utilities, transportation, and other facilities and services, whether temporary or permanent and whether or not incorporated in the Work. 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. In case of any direct conflict among the Contract Documents, the specifications shall take precedence over the drawings, supplemental or special conditions shall take precedence over more general conditions or requirements, details shall take precedence over plans, and larger scale drawings shall take precedence over smaller scale drawings.

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

1.5.1 Change each instance of the word "*Architect*" to "*Prime Professional*" and each instance of the word "*Architect's*" to "*Prime Professional's*" and add a new sentence at the end of this Subparagraph:

This Paragraph in no way supersedes the Owner's document rights set forth in the separate Agreement Between the Owner and the Professional.

1.5.3 Add a new Subparagraph as follows:

Transparency
In accordance with the Mississippi Accountability and Transparency Act of 2008, §27-104-151, et seq., of the Mississippi Code of 1972, as Amended, the American Accountability and Transparency Act of 2009 (P.L. 111-5), where applicable, and §31-7-13 of the Mississippi Code of 1972, as amended, where applicable, a fully executed copy of this agreement shall be posted to the State of Mississippi's accountability website at: https://www.transparency.mississippi.gov

1.6 **Notice**

1.6.1 Change this Subparagraph to read as follows:

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 address and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if transmitted to the government or business issued e-mail address of the respective party.

1.7 **Digital Data Use and Transmission**

Delete the last sentence of this Paragraph.

1.8 **Building Information Models Use and Reliance**

Change this Paragraph to read as follows:

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 a written documents 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 Change this Subparagraph to read as follows:

The Owner, as used in these Documents, refers to the Bureau of Building, Grounds and Real Property Management, acting for and on behalf of the State of Mississippi and for the benefit of the Institution, Agency, or Department for which the Work under this Contract is being performed. The Owner is the entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner's representative, who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization, is the individual who signed the Agreement Between the Owner and the Contractor, his successor in the case of that individual's retirement or termination, or his direct supervisor in the case of that individual's absence. Except as otherwise provided in Subparagraph 4.2.1, the Prime Professional does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 Delete this Subparagraph in its entirety.

2.2 **Evidence of the Owner's Financial Arrangements**

2.2.1 Delete this Subparagraph in its entirety.

2.2.2 Delete this Subparagraph in its entirety.

2.3.1 Delete this Subparagraph in its entirety.

2.2.3 Delete this Subparagraph in its entirety.

2.2.4 Delete this Subparagraph in its entirety.

2.3 **Information and Services Required of the Owner**

2.3.2 Add the word "*or Engineer*" following each instance of the word "*Architect*" and add the words "*or engineering respectively*" following each instance of the word "*architecture*".

2.3.3 Add the word "*or Engineer*" following each instance of the word "*Architect*.

2.3.6 Change this Subparagraph to read as follows:

Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary, but in no instance to exceed twenty-five (25) copies, for the execution of the Work.

2.4 **Owner's Right to Stop the Work**

Change this Subparagraph to read as follows:

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents as required by Section 12.2 or fails to carry out Work in accordance with the Contract Documents, the Owner may issue, or direct the Prime Professional to 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. The rights and remedies under this Subparagraph are in addition to and do not in any respect limit any other rights of the Owner, including the right to terminate in accordance with Article 14.

2.5 **Owner's Right to Carry Out the Work**

Change this Paragraph read as follows:

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 predjudice to other remedies the Owner may have, correct such default or neglect. The Prime Professional 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 Prime Professional'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 Prime Professional, 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**

3.1.3 Change the word "*Architect*" to "*Prime Professional*" and change the word "*Architect's*" to "*Prime Professional's*".

3.2 **Review of Contract Documents and Field Conditions by Contractor**

3.2.2 Change each instance of the word "*Architect*" to "*Prime Professional*".

3.2.3 Change each instance of the word "*Architect*" to "*Prime Professional*".

3.2.4 Change the word "*Architect*" to "*Prime Professional*".

3.3 **Supervision and Construction Procedures**

3.3.1 Change each instance of the word "*Architect*" to "*Prime Professional*".

3.4 **Labor and Materials**

3.4.2 Change each instance of the word "*Architect*" to "*Prime Professional*" and add the words "*where such substitution results in a modification of the Contract Sum or Contract Time*" to the end of this sentence.

3.4.4 Add a new Subparagraph as follows:

Employee Status Verification System *If applicable, the Contractor represents and warrants that it will ensure its compliance with the Mississippi Employment Protection Act, Section 71-11-1, et seq. of the Mississippi Code Annotated (Supp 2008), and will register and participate in the status verification system for all newly hired employees. The term "employee" as used herein means any person that is hired to perform work within the State of Mississippi. As used herein, "status verification system" means the Illegal Immigration Reform and Immigration Responsibility Act of 1996 that is operated by the United States Department of Homeland Security, also known as the E-Verify Program, or any other successor electronic verification system replacing the E-Verify Program. The Contractor agrees to maintain records of such compliance and, upon request of the State and approval of the Social Security Administration or Department of Homeland Security, where required, to provide a copy of each such verification to the State. The Contractor further represents and warrants that any person assigned to perform services hereunder meets the employment eligibility requirements of all immigration laws of the State of Mississippi. The Contractor understands and agrees that any breach of these warranties may subject the Contractor to the following: (a) termination of this Agreement and ineligibility for any state or public contract in Mississippi for up to three (3) years, with notice of such cancellation/termination being made public, or (b) the loss of any license, permit, certification or other document granted to the Contractor by an agency, department or governmental entity for the right to do business in Mississippi for up to one (1) year, or (c) both. In the event of such cancellation/termination, the Contractor would also be liable for any additional costs incurred by the State due to the contract cancellation or loss of license or permit.*

3.4.5 Add a new Subparagraph as follows:

In providing labor for the proper execution and completion of the Work, the Contractor shall comply with the provisions of Section 31-5-19 of the Mississippi Code of 1972, Annotated.

3.4.6 Add a new Subparagraph as follows:

In providing materials for the proper execution and completion of the Work, the Contractor shall comply with the provisions of Section 31-5-23 of the Mississippi Code of 1972, Annotated.

3.5 **Warranty**

3.5.1 Change each instance of the word "*Architect*" to "*Prime Professional*".

3.7 **Permits, Fees, Notices and Compliance with Laws**

3.7.1 Change this Subparagraph to read as follows:

Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for any applicable permits, fees, licenses, and inspections by government agencies necessary for the 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.

3.7.3 Delete the words "*knowing it to be*" from this Subparagraph.

3.7.4 Change each instance of the word "*Architect*" to "*Prime Professional*" and change the word "*Architect's*" to "*Prime Professional's*".

3.7.5 Change the word "*Architect*" to "*Prime Professional*".

3.9 **Superintendent**

3.9.2 Change this Subparagraph to read as follows:

The Contractor, as soon as practicable after award of the Contract, and prior to commencement of any on-site Work, shall notify the Owner and Prime Professional of the name, qualifications and references of the proposed superintendent and any assistant superintendents where provided for in the Contract Documents. Within 14 days of receipt of the information, the Prime Professional shall notify the Contractor stating whether the Owner or the Prime Professional (1) has reasonable objection to the proposed superintendent based upon information provided or other requirements provided for in the Contract Documents or (2) requires additional information or time for review. Failure of the Prime Professional to respond within the 14-day period shall constitute notice of no reasonable objection.

3.9.3 Change the word "*Architect*" to "*Prime Professional*".

3.10 **Contractor's Construction and Submittal Schedules**

3.10.1 Change this Subparagraph to read as follows:

The Contractor, promptly after being awarded the Contract, and no later than fifteen days after the date established in the Notice to Proceed, shall submit for the Owner's and Prime Professional'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 the time limits current under the Contract Documents. Submission of a schedule that indicates or expresses an intent to complete Work prior to the time limits established by the Contract Documents shall not make the Owner liable to the Contractor for any failure to achieve early completion or obligate the Owner to take or prevent any actions to facilitate the Contractor's completion prior to the expiration of the Contract Time. The schedule shall be revised monthly or at more frequent intervals as required by the conditions of the Work and Project.

3.10.2 Change each instance of the word "*Architect's*" to "*Prime Professional's*" and change the word "*Architect*" to "*Prime Professional*".

3.10.3 Change the word "*Architect*" to "*Prime Professional*".

3.11 **Documents and Samples at the Site**

Change each instance of the word "*Architect*" to "*Prime Professional*".

3.12 **Shop Drawings, Product Data and Samples**

3.12.4 Change each instance of the word "*Architect*" to "*Prime Professional*".

3.12.5 Change each instance of the word "*Architect*" to "*Prime Professional*".

3.12.6 Change the word "*Architect*" to "*Prime Professional*".

3.12.7 Change the word "*Architect*" to "*Prime Professional*".

3.12.8 Change each instance of the word "*Architect's*" to "*Prime Professional's*" and change the word "*Architect*" to "*Prime Professional*".

3.12.9 Change the word "*Architect*" to "*Prime Professional*" and change the word "*Architect's*" to "*Prime Professional's*".

3.12.10.1 Change each instance of the word "*Architect*" to "*Prime Professional*".

3.12.10.2 Change each instance of the word "*Architect*" to "*Prime Professional*".

3.15 **Cleaning Up**

3.15.2 Change this Subparagraph to read as follows:

If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be assessed to the Contractor.

3.16 **Access to Work**

Change this Paragraph to read as follows:
The Contractor shall provide the Owner, Prime Professional, Commissioning Authority Professional, Separate Contractors and their authorized representatives with access to the Work in preparation and progress wherever located. This shall include the provision of lifts, ladders, scaffolding and/or equivalent for access to elevated work.

3.17 **Royalties, Patents and Copyrights**

Change each instance of the word "*Architect*" to "*Prime Professional*".

3.18 **Indemnification**

3.18.1 Change this Subparagraph to read as follows:

To the fullest extent allowed by law, Contractor shall indemnify, defend, save and hold harmless, protect, and exonerate the Owner, Prime Professional, Prime Professional's consultants, Commissioning Authority Professional, Commissioning Authority Professional's consultants, as well as the State of Mississippi, its Commissioners, Board Members, officers, employees, agents, and representatives, from and against all claims, demands, liabilities, suits, actions, damages, losses, and costs of every kind and nature whatsoever, including, without limitation, court costs, investigative fees and expenses, and attorneys' fees, arising out of or caused by Contractor's and/or its partners, principals, agents, employees, and/or subcontractors in the performance of or failure to perform this Agreement. In the State's sole discretion, Contractor may be allowed to control the defense of any such claim, suit, etc. In the event Contractor defends said claim, suit, etc., Contractor shall use legal counsel acceptable to the State; Contractor shall be solely liable for all reasonable costs and/or expenses associated with such defense and the State shall be entitled to participate in said defense. Contractor shall not settle any claim, suit, etc., without the State's concurrence, which the State shall not unreasonably withhold.

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Article 4
ARCHITECT

Change the title of this article from "*ARCHITECT*" to "*PRIME PROFESSIONAL*".

4.1 **General**

4.1.1 Change this Subparagraph to read as follows:

The Prime Professional is the person identified as the Professional in the Agreement Between the Owner and the Contractor and retained by the Owner pursuant to Section 2.3.2.

4.1.2 Change each instance of the word "*Architect*" to "*Prime Professional*".

4.2 **Administration of the Contract**

4.2.1 Change the first line of this Subparagraph to read as follows:

The Prime Professional will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative during construction until the end of the period for correction of Work as described in Section 12.2.

4.2.2 Change each instance of the word "*Architect*" to "*Prime Professional*".

4.2.3 Change each instance of the word "*Architect*" to "*Prime Professional*".

4.2.4 Change each instance of the word "*Architect*" to "*Prime Professional*" and each instance of the word "*Architect's*" to "*Prime Professional's*".

4.2.5 Change the word "*Architect's*" to "*Prime Professional's*" and change the word "*Architect*" to "*Prime Professional*".

4.2.6 Change each instance of the word "*Architect*" to "*Prime Professional*".

4.2.7 Change each instance of the word "*Architect*" to "*Prime Professional*" and each instance of the word "*Architect's*" to "*Prime Professional's*".

4.2.8 Change each instance of the word "*Architect*" to "*Prime Professional*".

4.2.9 Change the word "*Architect*" to "*Prime Professional*".

4.2.10 Change each instance of the word "*Architect*" to "*Prime Professional*" and the word "*Architect's*" to "*Prime Professional's*".

4.2.11 Change the word "*Architect*" to "*Prime Professional*" and the word "*Architect's*" to "*Prime Professional's*".

4.2.12 Change each instance of the word "*Architect*" to "*Prime Professional*".

4.2.13 Change the word "*Architect's*" to "*Prime Professional's*".

4.2.14 Change each instance of the word "*Architect*" to "*Prime Professional*".

Article 5
SUBCONTRACTORS

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

5.2.1 Change this Subparagraph to read as follows:

Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, prior to award of the Contract by the Owner, shall furnish in writing to the Owner through the Prime Professional, the names, classifications, and COR #'s of Sub-Contractors over Fifty Thousand Dollars ($50,000.00) (as well as entities who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. Such list shall also include any Mechanical, Plumbing, or Electrical Sub-Contractor as listed on Proposal Form regardless of amount. Within 7 days of receipt of the information, the Prime Professional shall notify the Contractor whether the Owner or the Prime Professional (1) has reasonable objection to any such proposed Sub-Contractor or entity based upon information provided or other requirements provided for in the Contract Documents or (2) requires additional information or time for review. Failure of

the Prime Professional to respond within the 7-day period shall constitute notice of no reasonable objection. Where a Project involves a Mississippi Landmark or a building and/or site potentially eligible for such designation, the Contractor shall also furnish documentation that all Sub-Contractors, regardless of Sub-Contract amount, have at least the minimum number of years of successful experience specified by the Prime Professional in work on previous projects involving State or National Landmarks of similar type, scale and complexity and that all key personnel to be utilized to perform the Work are experienced craftsmen with not less than five (5) years of experience.

5.2.2 Change this Subparagraph to read as follows:

The Contractor shall not contract with a proposed Sub-Contractor or entity to whom the Owner or Prime Professional has made reasonable and timely objection. Other than the Mechanical, Plumbing, or Electrical Sub-Contractors as listed on the Proposal Form, the Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection. Only where the listed Mechanical, Plumbing, or Electrical Sub-Contractor has (1) closed their business (2) entered into bankruptcy or (3) refuses to enter into a contract with the Contractor will substitution of such Sub-Contractor be permitted prior to the execution of the Agreement Between the Owner and Contractor. Substitution for refusal to enter into contract shall not be permitted if the reason for such refusal is due to unilateral reduction by Contractor of such Sub-Contractor's bid price.

5.2.3 Change this Subparagraph to read as follows:

If the Owner or Prime Professional has reasonable objection to a Sub-Contractor or entity proposed by the Contractor, other than the Mechanical, Plumbing, or Electrical Sub-Contractors as listed on the Proposal Form, the Contractor shall propose another to whom the Owner or Prime Professional has no reasonable objection. Neither the Contract Sum nor Contract Time may be increased or decreased due to any change in Sub-Contractor or entity. Failure of Contractor to identify Sub-Contractors or entities to whom the Owner and Prime Professional have no reasonable objections within 10 working days of initial submission shall result in the bid or proposal being deemed non-responsible at which time the Owner may elect to award to the next lowest responsive, responsible bidder or resolicit the project.

5.2.4 Change this Subparagraph to read as follows:

Following the execution of the Agreement Between the Owner and Contractor, the Contractor shall not substitute a Sub-Contractor or entity for one previously selected if the Owner or Prime Professional makes reasonable objection to such substitution. In no case shall substitution of Mechanical, Plumbing or Electrical Sub-Contractors be permitted except where such Sub-Contractor has (1) closed their business (2) entered into bankruptcy (3) becomes in arrears or (4) becomes involved in an ongoing dispute with the Contractor related to the Sub-Contractor's execution, workmanship, or timely performance of their potion of the Work.

Article 6
CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.2.2 Change each instance of the word "*Architect*" to "*Prime Professional*".

6.3 Change the word "*Architect*" to "*Prime Professional*".

Article 7
CHANGES IN THE WORK

7.2 **Change Orders**

7.2.1 Change each instance of the word "*Architect*" to "*Prime Professional*".

7.2.2 Add a new Subparagraph as follows:

The maximum mark-up included in a Change Order for profit and overhead is limited to twenty percent (20%) of the total of

the actual cost for materials, labor and subcontracts. Profit and overhead include: all taxes, fees, permits, insurance, bond, job superintendent, job and home office expense. All Sub-Contractors and Sub-Sub-Contractors shall acquiesce to the same requirements when participating in a Change Order.

7.3 **Construction Change Directives**

7.3.4 Change the word "*Architect*" to "*Prime Professional*".

7.3.4.1 Change the word "*Architect*" to "*Prime Professional*".

7.3.6 Change this Subparagraph to read as follows:

Upon receipt of a Construction Change Directive signed by the Prime Professional and the Owner, the Contractor shall promptly proceed with the change in the Work and advise the Prime Professional 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 Change this Subparagraph to read as follows:

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 become effective once signed by the Prime Professional and the Owner and will subsequently be incorporated into a Change Order.

7.3.8 Change the word "*Architect*" to "*Prime Professional*".

7.3.9 Change this Subparagraph to read as follows:

Until such time that a Construction Change Directive is recorded as a Change Order, the Contractor may not request payment for Work completed under the Construction Change Directive in Applications for Payment.

7.3.10 Change each instance of the word "*Architect*" to "*Prime Professional*".

7.4 Change each instance of the word "*Architect*" to "*Prime Professional*" and the word "*Architect's*" to "*Prime Professional's*".

Article 8
TIME

8.1 **Definitions**

8.1.2 Change this Subparagraph to read as follows:

The date of commencement of the Work is the date established in the Notice to Proceed.

8.1.3 Change the word "*Architect*" to "*Prime Professional*".

8.2 **Progress and Completion**

8.2.1 Change this Subparagraph to read as follows:

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 and acknowledges that such period includes time for all applicable submittals, selections, reviews, approvals, inspections, meetings, as well as discovery and investigation of any latent conditions.

8.2.2 Change this Subparagraph to read as follows:

The Contractor shall not knowingly commence the Work prior to the date established in the Notice to Proceed or the effective dates of bond and insurance required to be furnished by the Contractor.

8.3 **Delays and Extensions of Time**

8.3.1 Change this Subparagraph to read as follows:

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 Prime Professional, of an employee of either, or of a Separate Contractor; (2) by labor disputes, pandemics, acts of terrorism, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions in excess of any weather days otherwise provided for in the Contract Documents that are documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (3) by delay authorized by the Owner pending dispute resolution; or (4) by other causes that the Contractor asserts, and the Owner, in consultation with the Prime Professional determines justify delay, then the Contract Time shall be extended for such reasonable time as the Owner, in consultation with the Prime Professional, may determine. Such determination shall take into consideration the critical path of the Work and will be reduced by any float in the Contractor's Construction Schedule that does not affect the overall completion of the Work. Except where such delay is due to suspension by the Owner in accordance with Article 14 or such delay has the effect of stopping all progress of the Work for 14 calendar days or more, the Contract Sum will not be increased for additional general overhead expenses; however, it may be increased for direct expenses directly related to the delay of specific portions of the Work so delayed. Any claim for loss or any delay occasioned by any Sub-Contractor or entity under contract with the Contractor, shall be settled between the Contractor and such other Sub-Contractor or entity.

Article 9
PAYMENTS AND COMPLETION

9.2 **Schedule of Values**

Change this Paragraph to read as follows:

Where the Contract is based on a stipulated sum, the Contractor shall submit a schedule of values to the Prime Professional, at least 10 working days before the first Application for Payment, a schedule of values allocating the entire 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 Prime Professional. This schedule, unless objected to by the Prime Professional or Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any subsequent changes to the schedule of values shall be submitted to the Prime Professional and supported by such data to substantiate its accuracy as the Prime Professional may require, and unless object to by the Prime Professional or Owner, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

9.3 **Applications for Payment**

9.3.1 Add a new sentence to the end of this Subparagraph:

The form of Application for Payment will be AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet, or a computer generated form containing similar data.

9.3.1.1 Delete this Subparagraph in its entirety.

9.3.1.3 Add a new Clause to Subparagraph 9.3.1 as follows:
On any contract as described herein, of which the total amount is Two Hundred Fifty Thousand Dollars ($250,000.00) or greater, or on any contract with a subcontractor, regardless of amount, five percent (5%) shall be retained until the Work is at least fifty percent (50%) complete, on schedule and satisfactory in the Prime Professional's opinion, at which time fifty percent (50%) of the retainage held to date shall be returned, subject to consent of surety, to the prime contractor for distribution to the appropriate subcontractors and suppliers; provided, however, that future retainage shall be withheld at

the rate of two and one-half percent (2 1/2%). When submitting request for reduction in retainage, the Contractor will include, with the application, a Consent of Surety to Reduction which is AIA Form G707A, and a Power of Attorney. (Code 31-5-33)

9.3.1.4 Add a new Clause to Subparagraph 9.3.1 as follows:

The Contractor must submit each month with this Application for Payment a separate letter stating that he is requesting an extension of time or that he had no need for an extension for that period of time. No payment on a monthly application will be considered due and payable until the letter is received. Complete justification such as weather reports or other pertinent correspondence must be included for each day's request for extension. A Contractor's letter, or statement, will not be considered as adequate justification. The receipt of this request and data by the Owner will not be considered as approval of the Owner or Prime Professional in any way.

9.3.2.1 Add a new Clause to Subparagraph 9.3.2 as follows:

Payment in an amount not greater than the documented cost paid by the Contractor for ~~on~~ materials stored at some location other than the Project site, may be approved by the Prime Professional and the Owner after the Contractor has submitted the following items:

.1 An acceptable Lease Agreement between the General Contractor and the owner of the land, or building, where the materials are stored covering the specific area where the materials are located.
.2 Consent of Surety, or other acceptable Bond, to cover the materials stored off-site.
.3 All Perils Insurance coverage for the full value of the materials stored off-site.
.4 A Bill of Sale from the Manufacturer to the General Contractor for the stored materials.
.5 A complete list and inventory of materials manufactured, stored and delivered to the storage site and of materials removed from the storage site and delivered to the job site.
.6 A review by the Prime Professional of the materials stored off-site prior to release of payment. Where the storage location is greater than 50 miles of the building site, the Contractor shall pay or reimburse reasonable travel costs of the Prime Professional and/or his Consultants for such review.
.7 Guarantee no storage costs, additional delivery fees, or subsequent costs to the Owner.

9.4 **Applications for Payment**

9.4.1 Change each instance of the word "*Architect*" to "*Prime Professional*" and the word "*Architect's*" to "*Prime Professional's*".

9.4.2 Change each instance of the word "*Architect*" to "*Prime Professional*" and each instance of the word "*Architect's*" to "*Prime Professional's*".

9.5 **Decisions to Withhold Certification**

9.5.1 Change each instance of the word "*Architect*" to "*Prime Professional*" and the word "*Architect's*" to "*Prime Professional's*".

9.5.1.7 Delete the word "*repeated*" from this Clause.

9.5.2 Change the word "*Architect*" to "*Prime Professional*".

9.5.3 Delete this Subparagraph in its entirety.

9.5.4 Change each instance of the word "*Architect*" to "*Prime Professional*".

9.6 **Progress Payments**

9.6.1 Change each instance of the word "*Architect*" to "*Prime Professional*".

9.6.2 Change the first line of this Subparagraph to read as follows:

The Contractor shall pay each Sub-Contractor and material supplier, in accordance with Section 31-5-27 of the Mississippi Code 1972, Annotated, in proportion to the percentage of work completed by each less applicable retainage.

9.6.3 Change each instance of the word "*Architect*" to "*Prime Professional*".

9.6.4 Change the word "*Architect*" to "*Prime Professional*".

9.6.9 Add a new Subparagraph as follows:

The amount retained by the Contractor from each payment to each Sub-Contractor and material supplier shall not exceed the percentage retained by the Owner from the Contractor.

9.6.9.1 Add a new Clause to Subparagraph 9.6.9 as follows:

The Contractors shall submit monthly certification, in accordance with Section 31-5-25 of the Mississippi Code 1972, Annotated, on Owner's "Affidavit Certifying Payment to All Subcontractors" form, to the Prime Professional indicating payments to subcontractors on prior payment request.

9.6.10 Add a new Subparagraph as follows:

The Owner agrees to make payment in accordance with Mississippi Law on "Time for full and final payment to contractors; exemptions; monthly submission by contractors of proof of payment to subcontractors", Section 31-5-25 of the Mississippi Code of 1972, Annotated, which generally provides for payment of undisputed amounts within forty-five (45) days of when they are due and payable. Payments by state agencies using the statewide electronic payment and remittance vehicle shall be made and remittance information provided electronically as directed by the State. These payments shall be deposited into the bank account of the Contractor's choice. Contractor understands and agrees that the State is exempt from the payment of taxes. All payments shall be in United States currency. No payment, including final payment, shall be construed as acceptance of defective or incomplete work, and the Contractor shall remain responsible and liable for full performance.

9.7 **Failure of Payment**

Change this Paragraph to read as follows:

The Contractor and the Owner shall be subject to the remedies as prescribed in Section 31-5-25 of the Mississippi Code 1972, Annotated.

9.8 **Substantial Completion**

9.8.1 Add the following sentence to the end this Subparagraph to read as follows:

In order to be considered occupiable or utilizable by the Owner, all life safety systems must be operable and tested and the commissioning requirements for the Work or designated portion thereof must be complete except for thermographs of electrical systems, trend log monitoring, seasonal testing, near-warranty end activities and verification of training sessions.

9.8.3 Change this Subparagraph to read as follows:

Upon receipt of the Contractor's list, the Prime Professional will promptly visit the site to determine whether the Work or designated portion thereof is substantially complete. If, in the opinion of the Prime Professional, the Work or designated portion thereof is not substantially complete, the Prime Professional will not proceed with inspection and the Prime Professional will report the reasons for such determination to the Contractor. In such case, the Contractor shall then

submit a revised list and request for inspection when these reasons have been resolved.

9.8.4 Change this Subparagraph to read as follows:

When the Work or designated portion thereof is substantially complete and affirmed by the Owner, the Prime Professional will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the punch list accompanying the Certificate. Unless otherwise provided in the Contract Documents, 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.

9.9 **Partial Occupancy or Use**

9.9.1 Change each instance of the word "*Architect*" to "*Prime Professional*".

9.9.2 Change the word "*Architect*" to "*Prime Professional*".

9.10 **Final Completion and Final Payment**

9.10.1 Change this Subparagraph and add the associated Clauses to read as follows:

When, in the opinion of the Contractor, the Work is ready for final inspection and acceptance by the Owner, the Contractor shall make such notice to the Prime Professional.

1. *Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance by the Owner, the Prime Professional will promptly visit the site and assess the state of the Work to determine if it is ready for final inspection by the Owner. If, in the Prime Professional's judgment, the Work is not ready for final inspection, the Prime Professional will report the reasons for such determination to the Contractor. In such case, the Contractor shall then submit a revised request for final inspection when these reasons have been resolved.*

2. *Once the Prime determines the Work is ready for final inspection, the Prime Professional will call for final inspection of the with the Owner for the purpose of determining whether the Work is acceptable under the Contract Documents.*
3. *The final inspection shall be conducted in the presence of the Owner and a list of defects or discrepancies, if any, will be compiled into a final punch list furnished to all parties.*
4. *Once corrections of all final punch list items have been confirmed by the Prime Professional, the Prime Professional will provide a letter recommending final acceptance of the Work to the Owner.*

9.10.2 Change this Subparagraph to read as follows:

Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Prime Professional (1) final application for payment, (2) consent of surety to final payment, (3) power of attorney, (4) Contractor's affidavit of release of liens, (5) Contractor's affidavit of payment of debts and claims, (6) Contractor's guarantee of work, (7) Project Record Documents and (8) certificates, warranties, guarantees, bonds or documents as called for in the individual sections of the Project Manual. The final payment will be reduced by the value of any amounts assessed to the Contractor per Section 2.5 Owner's Right to Carry Out the Work, Section 6.3 Owners Right to Clean Up, or Section 9.11 Liquidated Damages where such amounts have not been reconciled by a Change Order per Section 7.2 prior to final acceptance unless such amounts have been resolved via separate agreement(s) between the Owner and the Contractor.

9.11 **Liquidated Damages**

9.11.1 Add a new Paragraph as follows:

Time being of the essence and a matter of material consideration thereof, a reasonable estimate in advance is established to cover losses incurred by the Owner if the project is not substantially complete on the date set forth in the Contract

Documents. The Contractor and his Surety will be liable for and will be assessed by the Owner the sums stipulated in Paragraph 2.2 of the Standard Form of Agreement Between the Owner and the Contractor as fixed and agreed as liquidated damages for each calendar day of delay until the work is substantially complete unless circumstances dictate otherwise in the discretion of the Owner. The Contractor and his Surety acknowledge that losses to the Owner caused by the delay of the Contractor are not readily ascertainable and that the amount estimated per day and established as liquidated damages is reasonable and not a penalty.

Article 10
PROTECTION OF PERSONS AND PROPERTY

10.2 **Safety of Persons and Property**

10.2.5 Change this Subparagraph to read as follows:

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 Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Sub-Contractor, a Sub-Sub-Contractor, 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 for Clauses 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss attributable to acts or omissions of the Owner or Prime Professional and not attributable to the fault or negligence of the Contractor. Where damage or loss is insured under property insurance required by the Contract Documents, the Contractor shall promptly report, file and facilitate the claim process so as to minimize any impacts on the timely completion of the Work. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.3 **HAZARDOUS MATERIALS**

10.3.2 Delete this Subparagraph in its entirety.

10.3.3 Delete this Subparagraph in its entirety.

10.3.4 Delete this Subparagraph in its entirety.

10.3.5 Delete this Subparagraph in its entirety.

10.3.6 Delete this Subparagraph in its entirety.

Article 11
INSURANCE AND BONDS

11.1 **Contractor's Insurance and Bonds**

11.1.1 Add a sentence to the end of this Subparagraph as follows:

Insurance shall be purchased to protect the Contractor from claims set forth below for not less than the limits of liability specified below or required by law, whichever coverage is greater, which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Sub-Contractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

Add new Clauses as follows:

.1 GENERAL LIABILITY:
Commercial General Liability
(Including XCU)

General Aggregate ..... $ *1,000,000.00 Aggregate*
Products & Completed Operations ..... $ *1,000,000.00 Aggregate*
Personal & Advertising Injury ..... $ *500,000.00 Per Occurrence*
Bodily Injury & Property Damage ..... $ *1,000,000.00 Per Occurrence*
Fire Damage Liability ..... $ *50,000.00 Per Occurrence*
Medical Expense ..... $ *5,000.00 Per Person*

.2 *OWNERS & CONTRACTORS PROTECTIVE LIABILITY:*
Bodily Injury & Property Damage ..... $ *1,000,000.00 Aggregate*
Bodily Injury & Property Damage ..... $ *500,000.00 Per Occurrence*

.3 *AUTOMOBILE LIABILITY:*
(Owned, Non-owned & Hired Vehicles)
Contractor Insurance Option Number 1:

Bodily Injury & Property Damage ..... $ *500,000.00 Per Occurrence*
(Combined Single Limit)
Contractor Insurance Option Number 2:
Bodily Injury ..... $ *250,000.00 Per Person*
Bodily Injury ..... $ *500,000.00 Per Accident*
Property Damage ..... $ *100,000.00 Per Occurrence*

.4 *EXCESS LIABILITY:*
(Umbrella on projects over $500,000)
Bodily Injury & Property Damage ..... $ *1,000,000.00 Aggregate*
(Combined Single Limit)

.5 *WORKERS' COMPENSATION:*
(As required by Statute)
EMPLOYERS' LIABILITY:
Accident ..... $ *100,000.00 Per Occurrence*
Disease ..... $ *500,000.00 Policy Limit*
Disease ..... $ *100,000.00 Per Employee*

.6 *PROPERTY INSURANCE:*
Builder's Risk ..... $ *Equal to Value of Work*
or
Installation Floater ..... $ *Equal to Value of Work*

11.1.5 Add a new Subparagraph to read as follows:

Insurance shall be maintained without interruption from the date of commencement of the Work until the date of final payment unless otherwise noted on the Certificate of Substantial Completion.

11.1.6 Add a new Subparagraph to read as follows:

Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to final execution of the Contract and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. Information concerning reduction of coverage on account of revised limits or clams paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

11.1.7 Add a new Subparagraph as follows:

If the coverages are provided on a claims-made basis, the policy date or retroactive date shall predate the Contract; the termination date, or the policy, or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment.

11.1.8 Add a new Subparagraph as follows:
If any insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles.

11.1.9 Add a new Subparagraph as follows:

The Owner as fiduciary shall have power to adjust and settle a loss with Insurers unless one of the parties in interest shall object in writing within five (5) days after occurrence of loss.

11.2 **Owner's Insurance**

Delete this Paragraph in its entirety and substitute the following:

The Contractor shall purchase and maintain such insurance as will protect the Owner from his contingent liability to others for damages because of bodily injury, including death, and property damage, which may arise from operations under this Contract and other liability for damages which the Contractor is required to insure under any provision of this Contract. Certificate of this insurance will be filed with the Owner and will be the same limits set forth in 11.1.5.

11.2.1 Delete this Subparagraph in its entirety.

11.2.2 Delete this Subparagraph in its entirety.

11.2.3 Delete this Subparagraph in its entirety.

11.3 **Waivers of Subrogation**

11.3.1 Delete this Subparagraph in its entirety.

11.3.2 Delete this Subparagraph in its entirety.

11.5 **Adjustment and Settlement of Insured Loss**

11.5.1 Delete this Subparagraph in its entirety.

11.5.2 Delete this Subparagraph in its entirety.

Article 12
UNCOVERING AND CORRECTION OF WORK

12.1 **Uncovering of Work**

12.1.1 Change each instance of the word "*Architect's*" to "*Prime Professional's*", change the word "*Architect*" to "*Prime Professional*", and add the words "*or Contract Sum*" at the end of this sentence.

12.1.2 Change each instance of the word "*Architect*" to "*Prime Professional*".

12.2 **Correction of Work**

12.2.1 Change the word "*Architect*" to "*Prime Professional*" and the word "*Architect's*" to "*Prime Professional's*".

12.2.2.1 Change the word "*Architect*" to "*Prime Professional*".

Article 13
MISCELLANEOUS PROVISIONS

13.1 **Governing Law**

Change this Paragraph to read as follows:

The Contract shall be governed by the laws of the State of Mississippi.

13.3 **Rights and Remedies**

13.3.2 Change the word "*Architect*" to "*Prime Professional*".

13.4 **Tests and Inspections**

13.4.1 Change each instance of the word "*Architect*" to "*Prime Professional and Commissioning Authority Professional*".

13.4.2 Change the first two instances of the word "*Architect*" to "*Prime Professional*" and the second two instances of the word "*Architect*" to "*Prime Professional and Commissioning Authority Professional*".

13.4.3 Change the word "*Architect*" to "*Prime Professional's and Commissioning Authority Professional's*".

13.4.5 Change each instance of the word "*Architect*" to "*Prime Professional and/or the Commissioning Authority Professional*".

13.5 Delete this Paragraph in its entirety.

Article 14
TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 **Termination by the Contractor**

14.1.1.3 Change the word "*Architect*" to "*Prime Professional*".
14.1.1.4 Delete this Clause in its entirety.

14.1.3 Change the word "*Architect*" to "*Prime Professional*".

14.1.4 Change the word "*Architect*" to "*Prime Professional*".

14.2 **Termination by the Owner for Cause**

14.2.1.1 Delete the word "*repeatedly*" from this Clause.

14.2.1.3 Delete the word "*repeatedly*" from this Clause.

14.2.1.3 Delete the word "or" from this Clause.

14.2.1.4 Change the period to a semi-colon and add the word "*or*" to this Clause.

14.2.1.5 Add a new Clause as follows:

fails to achieve Substantial Completion of the Project within the time limits established by the Contract Documents.

14.2.2 Change the word "*Architect*" to "*Prime Professional*" and change the words "*certification by*" to "*advice of*".
14.2.4 Change the word "*Architect's*" to "*Prime Professional's*".

Article 15
CLAIMS AND DISPUTES

15.1 **Claims**

15.1.2 Change this Subparagraph to read as follows:

Commencement of Statutory Limitation Period
The Owner and Contractor shall commence all claims and causes of action within the time period specified by applicable state law.

15.1.3.1 Change each instance of the word "*Architect*" to "*Prime Professional*".

15.1.4 Change this Subparagraph to read as follows:

Where both the Owner and the Contractor concur with the Initial Decision Maker's decision, the Contract Sum and Contract Time shall be adjusted in accordance with Article 7 and the Prime Professional will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

15.1.7 Delete this Subparagraph in its entirety.

15.2 **Initial Decision**

15.2.1 Change this Subparagraph to read as follows:

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 and 10.4, shall be referred to the Initial Decision Maker for initial decision. The Prime Professional will serve as the Initial Decision Maker. An initial decision by the Initial Decision Maker shall be required as a condition precedent to arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered by the Initial Decision Maker. The Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

15.2.2 Change the words "*approve the Claim*" to "*recommend approval of the Claim to the Owner*".

15.2.4 Change the words "*reject or approve the Claim*" to "*recommend rejection or approval of the Claim to the Owner*".

15.2.5 Change the Subparagraph to read as follows:

The Initial Decision Maker will render an initial decision to recommend approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision recommendation shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Prime Professional, if the Prime Professional is not serving as the Initial Decision Maker, of any recommended change in the Contract Sum or Contract Time or both. Where the Owner concurs with the recommendation it is binding on the parties but subject to arbitration or litigation.

15.2.6 Delete this Subparagraph in its entirety.

15.2..6.1 Delete this Clause in its entirety.

15.3 **Mediation**

15.3.1 Delete this Subparagraph in its entirety.

15.3.2 Delete this Subparagraph in its entirety.

15.3.3 Delete this Subparagraph in its entirety.

15.3.4 Delete this Subparagraph in its entirety.

15.4 **Arbitration**

15.4.1 Delete this Subparagraph in its entirety.

15.4.1.1 Delete this Clause in its entirety.

15.4.2 Delete this Subparagraph in its entirety.

15.4.3 Delete this Subparagraph in its entirety.

15.4.4 Delete this Subparagraph in its entirety.

15.4.4.1 Delete this Clause in its entirety.

15.4.4.2 Delete this Clause in its entirety.

15.4.4.3 Delete this Clause in its entirety.

15.5 Add a new Paragraph as follows:

Arbitration Procedures for the Department of Finance and Administration's Bureau of Building, Grounds and Real Property Management

All matters of dispute arising out of any agreement with the Department of Finance and Administration for planning, design, engineering, construction, erection, repair, or alteration of any building, structure, fixture, road, highway, utility or any part thereof, or any agreement with the Department of Finance and Administration for architectural, engineering, surveying, planning, and related professional services which provides for mediation or arbitration, shall comply with the following course for resolution. No arbitration hearing shall be granted on any claim in excess of One Hundred Thousand Dollars ($100,000.00).

15.5.1 Add a new Subparagraph and Clauses as follows:

Conditions Precedent to Arbitration

.1 The aggrieved party must first notify opposing party in writing in detail of the matter(s) in dispute the amount involved and the remedy sought. Such writing shall include copies of any documents, writings, plans, or other matter pertinent to the resolution of the dispute. The Director of the Bureau of Building and a principal of the opposing party shall be the proper parties for such notice and shall be active parties in any subsequent dispute resolution.

.2 If the dispute cannot be satisfactorily resolved, within thirty (30) days of the complaint being rejected in writing by either

party, notice by certified mail shall be given to the Deputy Director of the Department of Finance and Administration. A copy of the notice shall be sent by certified mail to the opposing party. Such notice shall be in writing setting forth in detail the matter(s) in dispute, the amount involved, the remedy sought and state that informal resolution between the parties cannot be reached. Such writing shall include copies of any documents, writings, plans, or other matter pertinent to the resolution of the dispute. Opposing party shall have the opportunity to set forth in writing a rebuttal with pertinent documents attached. At the sole discretion of the Deputy Director, oral testimony may be had on the matter.

15.5.2 Add a new Subparagraph as follows:

Requests for Arbitration

Within thirty (30) days of a claim being rejected in writing by the Deputy Director of the Department of Finance and Administration, either party may request arbitration. Notices for requests for arbitration shall be made in writing to the Executive Director of the Department of Finance and Administration, P.O. Box 267, Jackson, MS 39201. Such notice shall set forth in detail the matter(s) in dispute, the amount involved, and the remedy sought. A copy of the request shall be mailed to the opposite party. The party requesting arbitration must deposit the sum of two hundred ($200.00) with its request as a deposit against costs incurred by the arbitrators. Each party will be notified in writing in any manner provided by law of certified mail not less than twenty (20) days before the hearing of the date, time and place for the hearing. Appearance at the hearing waives a party's right to notice.

15.5.3 Add a new Subparagraph as follows:

Selection of Arbitrators

Upon request for arbitration, a panel of three (3) arbitrators shall be chosen. One (1) member shall be appointed by the Executive Director of the Department of Finance and Administration. One (1) member shall be appointed by the executive director of a professional or trade association which represents interests similar to that of the non-state party. The third member shall be appointed by the first two.

15.5.4 Add a new Subparagraph as follows:

Hearings

All hearings shall be open to the public. All hearings will be held in Jackson, Mississippi, unless another location is mutually agreed to by the parties. The hearings shall be conducted as prescribed by ***Mississippi Code 1972, Annotated****, Sections 11-15-113, 11-15-115, and 11-15-117. A full and complete record of all proceedings shall be taken by a certified court reporter. The scheduling and cost of retaining the court reporter shall be the responsibility of the party requesting arbitration. The costs of transcription of the record shall be the responsibility of the party requesting such transcript. No arbitration hearing shall be held without a certified court reporter. Deliberations of the arbitrators shall not be part of the record.*

15.5.5 Add a new Subparagraph as follows:

Awards

Awards shall be made in writing and signed by the arbitrators joining in the award. A copy of the award shall be delivered to the parties by certified mail.

15.5.6 Add a new Subparagraph as follows:

Fees and Expenses

Reasonable fees and expenses, excluding counsel fees, incurred in the conduct of the arbitration shall be at the discretion of

the Arbitrator except each party shall bear its own attorney's fees and costs of expert witnesses.

15.5.7 Add a new Subparagraph as follows:

Modifications, Confirmations, and Appeals

All modifications, confirmations and appeals shall be as prescribed by ***Mississippi Code 1972, Annotated****, Section 11-15-123 et seq. All awards shall be reduced to judgment and satisfied in the same manner other judgments against the State are satisfied.*

15.5.8 Add a new Subparagraph as follows:

Secretary for the Arbitrators

All notices, requests, or other correspondence intended for the arbitrators shall be sent to Executive Director, Department of Finance and Administration, P.O. Box 267, Jackson, MS 39201.

MINORITY PARTICIPATION
SECTION 00 7339

PART 1 – PARTICIPATION FORM

1.01 **GENERAL**

The Contractor will submit the following form within seven (7) days from the Notice to Proceed:

Department of Finance and Administration
Bureau of Building, Grounds and Real Property Management
501 NORTH WEST STREET, SUITE 1401 B • JACKSON, MISSISSIPPI 39201
TEL (601) 359-3621 • FAX (601) 359-2470

Minority Tracking or Participation Form
February 2003

This document will serve as a tracking instrument for minority participation in publicly funded construction projects managed by the Bureau of Building, Grounds and Real Property Management. This document will aid DFA/BOB in its commitment to encourage minority participation during the bidding process. Your conscientious effort and commitment to help establish good business relations with minority subcontractors, consultants, suppliers, partners and/or joint ventures is greatly appreciated.

Any responses will be deemed public information and may be incorporated into reporting information compiled by the Bureau of Building in the following manner: Contractors that listed minority participation, Contractors that did not list minority participation and Contractors that submitted an incomplete (partially filled-out or blank) form.

The Prime General Contractor will submit to the Owner within seven (7) days from the Notice to Proceed, a completed *Minority Tracking Form* (as follows) outlining the use of minority subcontractors that will be used on the project.

Minority - A person who is a citizen or lawful permanent resident of the United States and who is the following:
African American, Hispanic American, Asian American, American Indian or Female

Project Name and Number: _____

General Contractor: (Name) _____

Check the Following Appropriate Box

☐ **There are NO minority participants included in this bid proposal.**

☐ **There are minority participants included in this bid proposal.** The minority participants may be defined as: Subcontractor(s)/Consultant(s)/ Supplier(s) / Partner(s) / Joint Ventures(s).

List minority participants and their discipline/responsibility per the above or per Construction Specification Institution (CSI) forty-eight (48) divisions.

Name: _____

Division 0

Division: _____

Amount $ _____

Page 2 of 3
DFA / Bureau of Building
Minority Participation Form

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

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Division: _____

Amount $ _____

Name: _____

Division: _____

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Name: _____

Division: _____

Amount $ _____

Name: _____

Division 0

Division: _____

Amount $ _____

Page 3 of 3 (Submit if necessary)
DFA / Bureau of Building
Minority Participation Form

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

End of Form

LABOR REQUIREMENTS
SECTION 00 7343

PART 1 - EQUAL OPPORTUNITY

1.01 **GENERAL**

The Contractor will maintain policies of employment as follows:

A. The Contractor and all Subcontractors will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin or age. The Contractor will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, national origin, or age. Such action will include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

B. The Contractor and all Subcontractors will, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants receive consideration for employment without regard to race, religion, color, sex, national origin or age.

PART 2 – FEDERAL REQUIREMENTS

2.01 **APPLICABILITY**

When project funding includes Federal funds, the applicable Federal Labor Standards Provisions will be included herein, to which the Contractor, and all Subcontractors, shall be subject to. Where no such pages are included, then no special provisions shall apply.

PART 3 - WAGE RATES

3.01 **GENERAL**

When project funding includes Federal funds, the applicable Federal Government Wage Determinations will be included herein, to which the Contractor, and all Subcontractors, shall be subject to. Where no such pages are included, then no special wages shall apply.

SPECIAL CONDITIONS
SECTION 00 8000

PART 1 - PERFORMANCE INFORMATION

N/A

PART 2 – GRANT CONDITIONS

N/A

PART 3 – OTHER CONDITIONS

N/A

ADDENDA
SECTION 00 9000

1.01 **ADDENDA**

Any Addendum issued on this Project will be included in Section 00 9000 and become a part of the *Standard Form of Agreement Between the Owner and Contractor.*

SUMMARY OF WORK
SECTION 01 1000

1.01 **WORK COVERED BY CONTRACT DOCUMENTS**

A. **Work Covered**: Work covered by the Contract Documents is as shown in drawings and described in words in the Project Manual. The Project Title and location is indicated on the first page of this Project Manual.

B. **Start of Work**: Work shall be started immediately upon issuance of a *Notice to Proceed*. Prior to this, all Contracts and beginning documents will have been executed and insurance in force.

C. **Time of Completion**: The completion of this Work is to be on, or before, the time indicated in the *Standard Form of Agreement Between the Owner and the Contractor*.

D. **Contractor's Duties**:

1. Except as specifically noted, provide and pay for:
    a. Labor, materials and equipment.
    b. Tools, construction equipment and machinery.
    c. Water, heat and utilities required for construction.
    d. Other facilities and services necessary for proper execution and completion of the Work.
2. Pay legally required sales, consumer, use, payroll, privilege and other taxes.
3. Secure and pay for, as necessary for proper execution and completion of work, and as applicable at the time of the receipt of the bids:
    a. Permits.
    b. Government fees.
    c. Licenses.
4. Give required notices.
5. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of work.
6. Promptly submit written notice to Professional of observed variance of Contract Documents from legal requirements. It is not the Contractor's responsibility to make certain that drawings and specifications comply with codes and regulations. Appropriate modifications to Contract Documents will adjust necessary changes. Assume responsibility for work known to be contrary to such requirements, without notice.
7. Enforce strict discipline and good order among employees. Do not employ or work unfit persons, or persons, not skilled in assigned task.
8. Provide a written safety plan.

E. **Hazardous Materials**: The Prime General Contractor is responsible for the removal and disposal of any hazardous materials encountered in the performance of the Contract requirements. Hazardous Containing Materials [HCM] include, but are not limited to, Asbestos and Lead Paint and should be identified and removed as a part of the Contract. The absence of details does not relieve the Prime General Contractor from the responsibility of removal and disposal; but, a Change Order could be executed in the absence of identified HCM in the documents.

F. **Coordination**: The Prime General Contractor is responsible for the coordination of the total project. All other Contractors and all Subcontractors will cooperate with the Prime General Contractor so as to facilitate the general progress of the Work. Each trade shall afford all other trades every reasonable opportunity for the installation of their work. Refer to Section 01 3100 entitled *Project Coordination*.

1.02 **CONTRACTS**

Contracts: Construct work under a single Prime General Contract. Refer to Section 00 5200 entitled *Standard Form of Agreement Between the Owner and the Contractor*.

1.03 **WORK BY OTHERS**

Work by Others shall be described in each appropriate Project Manual section and noted on the Drawings.

1.04 **OWNER-FURNISHED PRODUCTS**

A. **Products Furnished By Owner**: Products furnished by Owner shall be described in each appropriate Project Manual section and noted on the Drawings.

B. **Products**: Delivered and unloaded at site.

C. **Owner's Duties**:
1. Schedule delivery date with Supplier in accordance with construction schedule.
2. Obtain installation drawings and instructions.
3. Submit claims for transportation damages.
4. Arrange Guarantees, Warranties, etc..

D. **Contractor's Duties**:
1. Designate required delivery date for each product in construction schedule.
2. Promptly inspect delivered products, report missing, damaged, or defective items.
3. Handle at site, including uncrating and storage.
4. Protect from exposure to elements and from damage.
5. Repair or replace damaged items resulting from Contractor's operations.
6. Install and make final connections.

1.05 **CONTRACTOR'S USE OF PREMISES**

A. Confine operations at site to areas permitted by:
1. Law.
2. Ordinances.
3. Permits.
4. Contract Documents.
5. Owner.

B. Do not unreasonably encumber site with materials or equipment.

C. Do not load structure with weight that will endanger structure.

D. Assume full responsibility for protection and safekeeping of products stored on premises.

E. Move any stored products which interfere with operations of Owner or other Contractors.

F. Obtain and pay for use of additional storage or work areas needed for operations.

G. Limit use of site for work and storage to the area indicated in the drawings.

1.06 **SPECIAL REQUIREMENTS**

A. Refer to Section 01 8000 entitled *Special Requirements* for any Project specific summary of work requirements.

ALLOWANCES
SECTION 01 2100

1.01 **DESCRIPTION**

A. **Related Work Specified Elsewhere**: Sections of Specifications as listed under Schedule of Allowances.

B. **Allowances for Products**:
1. Purchase products under each allowance as directed by the Professional.
2. Amount of each allowance includes:
   a. Net cost of product.
   b. Delivery and unloading at site.
   c. Applicable taxes.
3. In addition to amounts of allowances, include in bid, for inclusion in Contract Sum, Contractor's costs for:
   a. Handling at site, including uncrating and storage.
   b. Protection from elements and damage.
   c. Labor, installation and finishing.
   d. Other expenses required to complete installation.
   e. Overhead and profit.

C. **Selection of Products**:
1. **Architect's Duties**: Consult with Contractor in consideration of products and Suppliers; make selections, designate products to be used; and, notify Contractor in writing.
2. **Contractor's Duties**: Assist Professional in determining qualified Suppliers; obtain proposals from Suppliers when requested by the Professional; and, make appropriate recommendations for consideration of the Professional. Upon notification of selection, enter into Purchase Agreement with designated Supplier.

D. **Delivery**: The Contractor is responsible for arranging all delivery and unloading and should promptly inspect products for damage or defects and submit claims for transportation damage.

E. **Installation**: Comply with requirements of referenced specification section.

F. **Adjustment of Costs**: Should actual purchase cost be more, or less, than the specified allowance amount, the Contract Sum will be adjusted by Change Order equal to the amount of the difference.

1.02 **SCHEDULE OF ALLOWANCES**

A. Refer to Section 01 8000 entitled *Special Requirements* for Project specific Schedule of Allowances.

ALTERNATES
SECTION 01 2300

1.01 **DESCRIPTION**

A. **Scope**: This section describes the changes to be made under each alternate.

B. **General**: The referenced Specification sections contain the pertinent requirements for materials and methods to achieve the work described herein. Coordinate related work and modify surrounding work, as required, to complete the Project under each alternate designated in the Contract.

1.02 **DESCRIPTION OF ALTERNATES**

A. Refer to Section 01 8000 entitled *Special Requirements* for Project specific description of project Alternates.

CHANGE ORDER PROCEDURES
SECTION 01 2600

1.01 **SCOPE**

A. This Section describes the procedures for processing Change Orders to the Contract by the Owner, the Professional and the Contractor.

1.02 **CHANGE ORDER PROCEDURES**

A. **Change Proposed by Professional**: The Professional may issue a Change Order Request to the Contractor which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications and a change in Contract Time for executing the change. The Contractor will prepare and submit a Change Order Proposal within ten (10) working days.

B. **Change Proposed by Contractor**: The Contractor may propose a change by submitting a request for change to the Professional, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other Contractors. Document any requested substitutions in accordance with Section 01 6000 entitled *Substitutions and Product Options*.

C. **Contractor's Documentation**:
1. Maintain detailed records of Work completed on a time and material basis. Provide full information required for evaluation of proposed changes, and substantiate costs of changes in the Work.
2. Document each quotation for a change in cost or time with sufficient data allowing evaluation of the quotation.
3. On request, provide additional data to support computations:
   a. Quantities of products, labor, and equipment
   b. Taxes, insurance and bonds
   c. Overhead and profit
   d. Justification for any change in Contract Time
   e. Credit for deletions from Contract, similarly documented
4. Support each claim for additional costs, and for Work completed on a time and material basis, with additional information:
   a. Origin and date of claim
   b. Dates and times work was performed and by whom
   c. Time records and wage rates paid
   d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

D. **Construction Change Directive**: The Professional may issue a document, approved by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum or Contract Time. The change in Work will be promptly executed.

E. **Format**: The Professional will prepare three (3) originals of the Change Order or Change Directive using the Bureau of Building, Grounds and Real Property Management's *Change Order Form*. Where time is of the essence, and at the sole discretion of the Owner, scanned documents may be deemed acceptable to the Owner where signatures and dates are executed in blue ink.

F. **Types of Change Orders**:
1. **Stipulated Sum Change Order**: Based on Proposal Request and Contractor's fixed price quotation, or Contractor's request for a Change Order as approved by the Professional.

2. **Unit Price Change Order**: For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under a Construction Change Directive. Changes in Contract Sum or Contract Time will be computed as specified for Time and Material Change Order.
3. **Time and Material Change Order**: Submit itemized account and supporting data after completion of change, within time limits indicated in the *Standard Form of Agreement Between the Owner and the Contractor*. The Professional will determine the change allowable in Contract Sum and Contract Time as provided in the Contract Documents. The Contractor shall maintain detailed records of Work accomplished on Time and Material basis and shall provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

G. **Execution of Change Order**: The Professional will issue Change Orders for signatures of parties as provided in the *Standard Form of Agreement Between the Owner and the Contractor*. Final execution of all Change Orders requires approval by the Owner.

H. **Correlation of Contractor Submittals**: The Contract shall promptly revise *Schedule of Values* and the *Application for Payment* forms to record each authorized Change Order as a separate line item and adjust the Contract Sum. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust time for other items of Work affected by the change and resubmit. Promptly enter changes in Project Record Documents.

SCHEDULE OF VALUES
SECTION 01 2973

1.01 **DESCRIPTION**

A. **Scope**: Submit a *Schedule of Values* to the Professional at least ten (10) days prior to submitting the first Application for Payment. Upon the Professional's request, the Contractor will provide supportive data substantiating their correctness. Use *Schedule of Values* only as basis for Contractor's Application for Payment.

B. **Form of Submittal**: Submit Schedule of Values on AIA Document G703, or computer generated form containing similar style, using Table of Contents of these Specifications as basis for format for listing costs of work for sections under Divisions 2-48. Identify each line item with number and title as listed in Table of Contents in these Specifications.

D. **Preparing Schedule of Values**:
1. Itemize separate line item cost for each of the following general cost items: Performance and Payment Bonds, field supervision and layout, temporary facilities and controls.
2. Itemize separate line item cost for work required by each Section of these Specifications. Break down installed cost with overhead and profit.
3. Where determined to be feasible by the Owner, for each line item which has installed value of more than $20,000, break down costs into sub-components or divisions of $20,000 or less, rounding figures to nearest dollar. Make sum of total costs of all items listed in Schedule equal to total Contract Sum.

E. **Preparing Schedule of Unit Material Values**:
1. Submit separate Schedule of unit prices for materials to be stored on which progress payments will be made. Make form of submittal parallel to Schedule of Values with each line item identified same as line item in Schedule of Values. Include in unit prices only: cost of material, delivery, unloading at site, and sales tax.
2. Make sure unit prices multiplied by quantities equal material cost of that item in Schedule of Values.

F. **Review and Resubmittal**: After Professional's review, if requested, revise and resubmit Schedule of Values in same manner.

APPLICATIONS FOR PAYMENT
SECTION 01 2976

1.01 **SCOPE**

A. This Section describes procedures for preparing and submitting Applications for Payment by the Contractor.

1.02 **APPLICATIONS FOR PAYMENT**

A. **Format**:
1. Applications for Payments will be prepared on AIA forms G702 - *Application and Certificate for Payment* and G703 - *Continuation Sheet*; or, a computer generated form containing similar data may be used.

B. **Preparation of Application**:
1. Present required information in typewritten form
2. Execute certification by signature of authorized officer
3. Use data from approved *Schedule of Values*. Provide dollar value in each column for each line item for portion of Work performed and for stored products.
4. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original Item of Work.
5. Prepare Application for Final Payment as specified in Section 01 7700 entitled *Contract Closeout.*

C. **Submittal Procedures**:
1. Submit original and one (1) copy of each Application for Payment
2. Submit an updated construction schedule with each Application for Payment as described in Section 01 3216 entitled *Progress Schedule* or Section 01 3127 entitled *Network Analysis Schedules*.
3. Submit requests for payment at intervals agreed upon by the Professional, Owner and Contractor.
4. Submit requests to the Professional at agreed upon times, or as may be directed otherwise.

D. **Substantiating Data**:
1. Submit data justifying dollar amounts in question when such information is needed.
2. Provide one (1) copy of the data with a cover letter for each submittal.
3. Indicate the Application number, date and line item number and description.

PROJECT COORDINATION
SECTION 01 3100

1.01 **DESCRIPTION**

A. **Scope**: To set forth procedures, conditions and responsibility for coordination of the total project.

B. **Project Coordinator**: The Contractor, as soon as practicable after the award of each Job Order, and prior to commencement of any on-site Work, shall submit name(s) and qualifications of the proposed superintendent and any assistant superintendents as set forth in the Contract Documents. Upon the approval of the Professional and the Owner, the Project Coordinator will remain until the Project is completed and cannot be removed during construction without the written consent of the Owner and the Professional.

C. **Project Manager**: Where a Project involves a Mississippi Landmark or a building and/or site potentially eligible for such designation, the Contractor shall also submit name and qualifications of the project home office project manager as set forth in the General and Supplementary Conditions of the Contract. Upon the approval of the Professional and the Owner, the Project Coordinator will remain until the Project is completed and cannot be removed during construction without the written consent of the Owner and the Professional.

1.02 **DUTIES OF PROJECT COORDINATOR**

A. **General**:
1. **Coordination**: Coordinate the work of all Subcontractors and Material Suppliers.
2. **Supervision**: Supervise the activities of every phase of work taking place on the Project.
3. **Mechanical/Electrical**: Take special care to coordinate and supervise the work of the plumbing, heating and cooling and electrical Subcontractors.
4. **Communication**: Establish lines of authority and communication at the job site.
5. **Location**: The Project Coordinator must be present on the job all of the time.
6. **Permits**: Assist in obtaining building and special permits required for construction.

B. **Interpretations of Contract Documents**:
1. **Consultation**: Consult with Architects and Engineers to obtain interpretations.
2. **Assistance**: Assist in resolution of any questions.
3. **Transmission**: Transmit written interpretations to concerned parties.

C. **Cessation of Work**: Stop all work not in accordance with the requirements of the Contract Documents.

D. **Division One**: Coordinate and assist in the preparation of all requirements of Division One and specifically as follows:
1. **Cutting and Patching**: Supervise and control all cutting and patching of other trades' work.
2. **Project Meetings**: Schedule and preside at all project meetings.
3. **Construction Schedules**: Prepare and submit all construction schedules; supervise work to monitor compliance with schedules.
4. **Shop Drawings, Product Data and Samples**: Administer the processing of all submittals required by the Project Manual.
5. **Schedule of Values**: Assist in preparation and be knowledgeable of each entry in the Schedule of Values.
6. **Testing**: Coordinate all required testing.
7. **Temporary Facilities and Controls**: Allocate, maintain and monitor all temporary facilities.
8. **Substitutions and Product Options**: Administer the processing of all substitutions.
9. **Project Closeout**: Conduct final inspections and assist in collection and preparation of closeout documents.
10. **Cleaning**: Direct and execute a continuing cleaning program throughout construction, requiring each trade to dispose their own debris.
11. **Project Record Documents**: Maintain up-to-date project record documents.
12. **Safety Measures**: Plan and enforce all safety requirements.

E. **Changes**: Recommend and assist in the preparation of requests to the Professional for any changes in the Contract.

F. **Application for Payment**: Assist in the preparation and be knowledgeable of each entry in the Application and Certificate for Payment.

1.03 **SUBCONTRACTOR'S DUTIES**

A. **General**: The Subcontractor is responsible for coordinating and supervising employees in the work to be accomplished under their part of the Contract.

B. **Schedules**: Conduct work to assure compliance with construction schedules.

C. **Suppliers**: Transmit all instructions to Material Suppliers.

D. **Cooperation**: Cooperate with the Project Coordinator and other Subcontractors.

1.04 **OWNER-PURCHASED PRODUCTS**

A. **General**: Cooperate, accept delivery, arrange storage and protect Owner-purchased products until installation, or final acceptance.

PROJECT MEETINGS
SECTION 01 3119

1.01 **DESCRIPTION**

A. **Contractor's Responsibilities**: The General Contractor will administer all progress meetings which include the following:
1. Prepare agenda
2. Distribute written notice of meetings to listed attendees seven (7) days in advance
3. Make physical arrangements for and presiding at the meetings
4. Record minutes
5. Distribute copies of the minutes to listed attendees, regardless of actual participation, within four (4) days

B. **Pre-Construction Meeting**: The Bureau will schedule a pre-construction meeting as soon as possible after the award of Contract and the issuance of a *Notice to Proceed*.
1. **Attendees**:
   a. Owner
   b. Professional and Consultants
   c. General Contractor
   d. Major Subcontractors, including mechanical and electrical
   e. Representatives of governmental, or other regulatory agencies
   f. Commissioning Authority Professional (if Cx on project)
2. **Minimum Agenda**: (prepared by the General Contractor)
   a. Distribute and discuss preliminary construction schedule
   b. Critical work sequencing
   c. Designation of responsible personnel
   d. Procedures for maintaining record documents
   e. Use of premises, including office and storage areas
   f. Owner's requirements
   g. Security procedures
   h. Housekeeping procedures
   i. Commissioning issues (if Cx on project)
3. **Utilities**: A written agreement must be reached on how all utilities will be furnished and the rates the Contractor will be charged. This agreement should be resolved at this meeting. Refer to Section 01 5000 entitled *Construction Facilities and Temporary Controls* and Section 01 8000 entitled *Special Requirements* of this Project Manual for additional utility requirements.

C. **Progress Meetings**:
1. The Bureau will schedule regular meetings at the time of the pre-construction conference
2. Hold all meetings as progress of work dictates
3. **Attendees**:
   a. Owner
   b. Professional and Consultants
   c. General Contractor
   d. Subcontractors, as pertinent to the agenda
   e. Commissioning Authority Professional (if Cx on project)
4. **Minimum Agenda**:
   a. Review, approve minutes of the previous meeting
   b. Review work progress since last meeting
   c. Note field inspections, problems and decisions
   d. Identify problems which impede planned progress
   e. Review off-site fabrication problems
   f. Revise construction schedule, as indicated
   g. Plan progress during the next work period
   h. Review proposed changes

i. Complete other current business
j. Commissioning issues (if Cx on project)

D. **Commissioning Meetings (if Cx on project)**:
1. The Bureau will schedule a commissioning scoping meeting the pre-construction conference. Regular Commissioning Meetings will coincide with regularly scheduled Progress Meetings until such time that the Commissioning Process requires additional meetings. The Commissioning Authority Professional will chair, facilitate and document all Commissioning Meetings.
2. **Attendees:**
   a. Owner
   b. Commissioning Authority Professional
   c. Professional and Consultants
   d. General Contractor
   e. Subcontractors, as pertinent to unresolved issues identified in current Issues Log
   f. Testing, Adjusting and Balancing Contractor
   g. Using Agency's Building Operator/Physical Plant Representative
3. **Minimum Agenda:**
   a. Review, approve minutes of the previous meeting
   b. Review Issues Log

PROGRESS SCHEDULES
SECTION 01 3216

1.01 **DESCRIPTION**

A. **Scope**: Provide projected construction schedules for the entire Work and revise periodically. The following is a minimum requirement and other type schedules are acceptable with Owner's approval. This type of schedule is acceptable for any Project whose initial Contract award amount is **less than** one (1) million dollars ($1,000,000).

B. **Form of Schedules**: Prepare in form of horizontal bar chart.
1. Provide separate horizontal bar column for each trade or operation.
2. Place in order of the Table of Contents of Specifications.
3. Identify each column by major Specification section number.
4. Identify the first work day of each week by horizontal time scale.
5. Scale and space to allow for updating.

C. **Contents of Schedule**:
1. Provide complete sequence of construction by activity.
2. Indicate dates for beginning and completion of each stage of construction.
3. Identify work of separate floors, separate phases, or other logically grouped activities.
4. Show projected percentage of completion for each item of work as of first day of month.

D. **Updating**:
1. Show all changes occurring since previous submission of updated schedule.
2. Indicate progress of each activity and completion dates.

E. **Submittals**:
1. Submit initial schedules to the Professional within fifteen (15) days after date of *Notice to Proceed*.
2. Submit to Professional periodically updated schedules accurately depicting progress to first day of each month.
3. Submit two (2) copies, one (1) to be retained by the Professional and the other forwarded to the Owner.

NETWORK ANALYSIS SCHEDULE
SECTION 01 3217

1.01 **DESCRIPTION**

A. **Scope**: Provide projected network analysis schedules for the entire Work and revise periodically. This type of schedule is acceptable for any Project whose initial Contract award amount is one million dollars ($1,000,000), **or greater**.

1.02 **REFERENCES**

A. **Critical Path Methods in Construction Practice, 4th Edition:** Written by James M. Antill and Ronald W. Woodhead, published by Wiley.

1.03 **QUALITY ASSURANCE**

A. **Contractor's Administrative Personnel**: Two (2) years minimum experience in using and monitoring CPM schedules on comparable Projects is required.

1.04 **FORMAT**

A. **Listings**: Reading from left to right, in ascending order for each activity, identify each activity with the applicable specification section number.

B. **Diagram Sheet Size**: Height and width as required.

C. **Scale and Spacing**: To allow for notations and revisions.

1.05 **SCHEDULES**

A. **Critical Path Methods**: Prepare network analysis diagrams and supporting mathematical analyses using the critical path method.

B. **Order of Work**: Illustrate order and interdependence of activities and sequence of Work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.

C. **Complete Sequence of Construction**: Illustrate complete sequence of construction by activity, identifying work of separate stages. Provide dates for submittals and return of submittals; dates for procurement and delivery of products; and dates for installation and provision for testing. Provide legend for symbols and abbreviations used.

D. **Mathematical Analysis**: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:

1. Preceding and following event numbers
2. Activity description
3. Estimated duration of activity, in maximum thirty (30) day intervals
4. Earliest start date
5. Earliest finish date
6. Actual start date
7. Actual finish date
8. Latest start date
9. Latest finish date
10. Total and free float

11. Monetary value of activity (keyed to *Schedule of Values*)
12 Percentage of activity completed
13. Responsibility

E. **Analysis Program**: Capable of compiling monetary value of completed and partially completed activities, of accepting revised completion dates, and re-computation of all dates and floats.

F. **Required Sorts**: List activities in sorts or groups:
1. By preceding work item or event number from lowest to highest
2. By amount of float, then in order of early start
3. By responsibility in order of earliest possible start date
4. In order of latest allowable start dates
5. In order of latest allowable finish dates
6. Contractor's periodic payment request sorted by *Schedule of Values* listings, Specifications section
7. Listing of basic input data which generates the report
8. Listing of activities on the critical path
9. Monthly cash flow

G. ***Schedule of Values***: Coordinate contents with *Schedule of Values* in Section 01 2973.

1.06 **SUBMITTALS FOR REVIEW**

A. **Preliminary Network Diagram**: Within fifteen (15) days after the date established in the *Notice to Proceed* submit proposed preliminary network diagram defining planned operations for the first sixty (60) days of Work, with a general outline for the remaining Work.

B. **Review**: Participate in review of preliminary and complete network diagrams jointly with the Professional.

C. **Proposed Complete Network Diagram**: Within twenty (20) days after joint review of proposed preliminary network diagram, submit draft of proposed complete network diagram for review. Include written certification that mechanical and electrical Subcontractors have reviewed and accepted proposed schedule.

D. **Complete Network Diagram**: Within ten (10) days after joint review, submit complete network analysis consisting of network diagrams and mathematical analysis.

E. **Updated Network Schedules**: Submit updated network schedules with each Application for Payment.

F. **Copies**: Submit the number of opaque reproductions the Contractor requires, plus two (2) copies which will be retained by the Professional and the Owner.

1.07 **REVIEW AND EVALUATION**

A. **Review**: Participate in joint review and evaluation of network diagrams and analysis with the Professional at each submittal.

B. **Evaluate**: Evaluate Project status to determine Work behind schedule and Work ahead of schedule.

C. **Revisions**: After review and approval of the Professional, revise as necessary as a result of the review and resubmit within ten (10) days.

1.08 **UPDATING SCHEDULES**

A. **Schedules**: Maintain schedules to record actual start and finish dates of completed activities.

B. **Progress**: Indicate progress of each activity to date of revision, with projected completion date of each activity. Update diagrams to graphically depict current status of Work.

C. **Modifications**: Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

D. **Changes**: Indicate changes required to maintain Date of Substantial or Total Completion. These changes will be made only with the approval of the Professional.

E. **Extensions**: Contract completion time will be adjusted only for causes specified in the Contract. Requests for an extension of the contract completion date by the Contractor shall be supported with a justification, CPM data and supporting evidence as the Owner may deem necessary for determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the Contract. Submission of proof based on revised activity logic duration and costs is obligatory to any approvals. The schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved in the request. The Owner's determination as to the total number of days of contract extension shall be based upon the current computer-produced calendar-dated schedule for the time period in question and all other relevant information. Actual delays in activities which, according to the computer-produced calendar-dated schedule, do not affect the extended and predicted contract completion dates shown by the critical path in the network, will not be the basis for a change to the contract completion date. The Owner will, within a reasonable time after receipt of such justification and supporting evidence, review the facts and advise the Contractor in writing of the Owner's decision. The Contractor shall submit each request for a change in the contract completion date to the Owner. The Contractor shall include as a part of each change order proposal, a sketch showing all CPM revisions, duration changes, and cost changes, for the work in question and its relationship to other activities on the approved arrow diagram.

F. **Substantiate**: Submit sorts required to support recommended changes.

G. **Report**: Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.

1.09 **DISTRIBUTION**

A. **Distribution of Copies**: Following joint review, distribute copies of updated schedules to Contractor's Project site, to Subcontractors, Suppliers, Professional and Owner.

B. **Reporting Problems**: Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
SECTION 01 3323

1.01 **DESCRIPTION**

A. **Scope**: Submit to the Professional shop drawings, product data and samples required by Specification sections. Submit an additional copy of shop drawings, product data and samples related to items/systems identified to be commissioned to the Commissioning Authority Professional to be reviewed concurrently with the Professional. (if Cx on project).

B. **Shop Drawings**: Original drawings prepared by Contractor, Subcontractor, Supplier, or Distributor which illustrate some portion of the Work; showing fabrication, layout, setting, or erection details.
1. Prepared by a qualified detailer.
2. Identify details by reference to sheet and detail numbers shown on Contract drawings.
3. Minimum sheet size: 8 1/2" x 11"
4. Reproductions for submittals: Opaque diazo prints.

C. **Product Data**:

1. **Manufacturer's Standard Schematic Drawings**: Modify drawings to delete information which is not applicable to the Project. Supplement standard information to provide additional information applicable to the Project.
2. **Manufacturer's Catalog Sheets, Brochures, Diagrams, Schedules, Performance Charts, Illustrations and Other Standard Descriptive Data**: Clearly mark each copy to identify pertinent materials, products, or models. Show dimensions and clearances required. Show performance characteristics and capacities, wiring diagrams and controls.

D. **Samples**: Physical examples to illustrate materials, equipment or workmanship and to establish standard by which completed work is judged.

1. **Office Samples**: Of sufficient size and quantity to clearly illustrate functional characteristics of products or material with integrally related parts and attachment devices and full range of color samples. After review, samples remain the property of the Professional until completion of the construction project.
2. **Field Samples and Mock-ups**: Erect on project site at location acceptable to Professional. Construct each sample, or mock-up, completely including work of all trades required in finished work.

E. **Contractor's Responsibilities**:

1. Review shop drawings, product data and samples prior to submission.
2. Verify field measurements, field construction criteria, catalog numbers and similar data.
3. Coordinate each submittal with requirements of work and of Contract Documents.
4. Contractor's responsibility for errors and omissions in submittals is not relieved by the Professional's review of submittals.
5. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Professional's review of submittals unless Professional gives written acceptance of specific deviations.
6. Notify Professional in writing at the time of submission of deviations in submittals from requirements of Contract Documents.
7. Begin no work requiring submittals until the return of submittals bearing Professional's stamp and initials, or signature indicating review.
8. After Professional's review, distribute copies.

F. **Submission Requirements**:

1. Schedule submission with ample time before dates reviewed submittals will be needed.
2. Submit number of copies of shop drawings and product data which Contractor requires for distribution, plus one (1) copy to be retained by the Professional.
3. Submit number of samples specified in each Specification section.
4. Accompany submittals with transmittal letter, in duplicate, containing date, Project title and number; Contractor's name and address; the number of each shop drawings, product data and samples submitted; notification of deviations from Contract Documents; and, other pertinent data.
5. Submittals shall include:
    a. Date and revision dates.
    b. Project title and number.
    c. The names of the Professional, Contractor, Supplier, Manufacturer and separate detailer, when pertinent.
    d. Identification of product, or material.
    e. Relation to adjacent structure, or materials.
    f. Field dimensions clearly identified as such.
    g. Specification section number.
    h. Applicable standards such as ASTM number, or federal specifications.
    i. A blank space (2" x 3") for the Professional's stamp.
    j. Identification of deviations from Contract Documents.
    k. Contractor's stamp, initialed or signed, certifying the review of submittal, verification of field measurements and compliance with Contract Documents.

G. **Resubmission Requirements**:
1. **Shop Drawings**: Revise initial drawings, as required, and resubmit as specified for initial submittal. Indicate on the drawings any changes which have been made other than those required by the Professional.
2. **Product Data and Samples**: Submit new data and samples, as required, for initial submittal.

H. **Distribution of Submittals After Review**:
1. Distribute copies of shop drawings and product data which carry Professional's stamp to Contractor's file, job site file, Subcontractor, Supplier and Fabricator.

2. Distribute samples as directed.

I. **Professional's Duties**:
1. Review submittals with reasonable promptness.
2. Review for design concept of Project and information given in Contract Documents.
3. Review of separate item does not constitute review of an assembly in which item functions.
4. Affix stamp and initials, or signature, certifying the review of submittal.
5. Return submittals to Contractor for distribution.

TESTING LABORATORY SERVICES
SECTION 01 4529

1.01 **DESCRIPTION**

A. **Scope**: The Contractor will employ and pay for the services of an independent laboratory to perform specified services. In some instances, Owner will provide such testing services through independent testing laboratory retained by the Professional. Employment of a testing laboratory or provision of such services by others shall in no way relieve the Contractor of his obligation to perform work in accordance with the Contract.

B. **Inspection, Sampling and Testing**: Refer to each individual specification section for specific inspection, sampling and testing requirements.

C. **Qualification of Laboratory**:
1. Meet the *Recommended Requirements for Independent Laboratory Qualification* published by the American Council of Independent Laboratories.
2. Meet the basic requirements of ASTM E 329-70, *Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction*.
3. Responsible Engineer: Perform all testing under the direct supervision of a registered Professional engineer employed full time by the testing laboratory.
4. Submittals: Submit a copy of the inspection report of the facilities made by materials reference laboratory of National Bureau of Standards of any deficiencies reported by the inspection.
5. Approval: The Professional must approve the testing laboratory.

D. **Laboratory's Duties**:
1. Upon notice, cooperate with the Professional and the Contractor to promptly provide qualified personnel. Perform specified inspections, sampling and testing of materials and methods of construction to ascertain compliance with requirements of Contract Documents. Promptly notify the Professional and the Contractor of irregularities or deficiencies of work observed during performance of services.
2. Reports of inspections and tests will include:
   a. Date issued
   b. Project title and number
   c. Testing laboratory's name and address
   d. Name and signature of inspector
   e. Date of inspection, or sampling
   f. Record of temperature and weather
   g. Date of test

h. Identification of product and Specification section
i. Location of Project
j. Type of inspection, or test
k. Observations regarding compliance with Contract Documents

3. Prompt distribution of copies of the inspection reports and tests to:
   a. Owner
   b. Professional
   c. General Contractor
   d. Consulting Engineer, when pertinent
   e. Subcontractor, when pertinent

E. **Contractor's Responsibilities**:

1. Cooperate with laboratory personnel to provide access to work and to manufacturer's operation. Provide the laboratory with the required quantities of preliminary samples representative of materials to be tested and required quantities. When required, furnish copies of mill test reports. Furnish laboratory casual labor to obtain and handle samples at the site and to facilitate inspections and tests. Provide facilities for laboratory's exclusive use for storage and curing of test samples. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.
2. Arrange and pay for additional samples and tests required for Contractor's convenience. When initial tests indicate work does not comply with Contract Documents, the Contractor may employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing.

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS
SECTION 01 5000

1.01 **DESCRIPTION**

A. **Scope**: Work required under this section consists of all temporary construction facilities, services and related items to complete the work indicated on the drawings and described in the Project Manual.

B. **Standards**:

1. Conform to or exceed all temporary construction requirements stated in the current edition of the **International Building Code** [Chapter entitled *Safeguards During Construction*].
2. Refer to Section 00 7200 entitled *General Conditions of the Contract For Construction, Article 10 Protection of Persons and Property* as amended by Section 00 7300 *Supplementary Conditions*.

C. **Materials**: All materials required by the Work of this section shall be as specified in the respective sections.

1.02 **FACILITIES AND CONTROLS**

A. **Access**: The Prime General Contractor shall provide an adequate access and/or roads to the site of the structure, if required for the prosecution of work; and, should also provide and maintain at least one (1) temporary, or permanent, access to each working elevation to be permanently occupied.

B. **Hoisting Facilities**: The Prime General Contractor shall be responsible for providing suitable capacity and hoisting facilities for all people and materials. The use of the hoisting facilities shall be by mutual agreement of the Prime General Contractor and the individual Contractor.

C. **Field Office and Sheds**: At all times, the Prime General Contractor shall provide and maintain an on-site office with telephone, which may also be used by Subcontractors, the Owner and the Professional. Office location will be approved by the Owner. Where no suitable available space within an existing building is specifically identified for such purposes in Section 01 8000 entitled *Special Requirements* or elsewhere in the Contract Documents, the Prime General Contractor shall provide a trailer with full utilities for such purpose throughout

the Contract Time with space for both Contractor management personnel as well as for holding progress meetings. Each general and individual Contractor shall provide suitable watertight/dampproof sheds or containers to house their construction materials.

D. **Sanitation Facilities**: The Prime General Contractor is responsible for furnishing adequate temporary toilet facilities on the job site unless use of existing facilities on site is specifically permitted in Section 01 8000 entitled *Special Requirements* or elsewhere in the Contract Documents.

E. **Drinking Water**: The Prime General Contractor shall provide at all times sanitary drinking water facilities for all workmen on the job including ice, when required, and paper cups, etc.

F. **Fire Protection**: The Prime General Contractor shall provide general temporary fire protection except where the Work is within an existing building with operational permanent fire protection systems. Subcontractors will be responsible for their own. Where operational permanent fire protection systems exist, the Prime General Contractor and all Subcontractors shall take care not to damage such systems and take measures to prevent accidentally engaging such systems. Where the temporary disabling of any existing operational system is required for the performance of the Work, such shut-down shall be coordinated with the Owner.

G. **Storage**: The Prime General Contractor shall coordinate the allocation of storage areas to the various Subcontractors.

H. **Temporary Heating/Cooling/Dehumidification**: The Prime General Contractor shall provide heating, cooling, dehumidification, fuel and services, as necessary, to protect all work from dampness and cold or excessive heat and humidity until final acceptance. If in the late stages of the construction, mechanical and electrical installations will permit operation without damage to systems, and subject to the approval of the Professional and Owner, the mechanical and electrical facilities may be used to provide heating, cooling, dehumidification and ventilation in strict accordance with conditions established by the Professional and/or his Consultants. However, the Owner is saved harmless of any costs of operation, including the periodic replacement of filters, or responsibility as to acceptance of mechanical and/or electrical installations.

I. **Utilities**: The Prime General Contractor shall make arrangements for and furnish all water, gas, electricity (lighting and power) and other utilities necessary for construction purposes unless otherwise specified in Section 01 8000 entitled *Special Requirements* or elsewhere in the Contract Documents. Where any such utilities are to be furnished by the Institution or Agency, and such requirements are not detailed in Section 01 8000 or elsewhere in the Contract Documents, a written agreement must be reached on how any such utilities (water, gas, and electricity) will be furnished and the rates the Contractor will be charged by the Institution or Agency prior to initial use of any such utility. A copy of the final agreement signed by the Contractor and the Institution or Agency must be forwarded to the Owner. If the written agreement is not filed with the Owner, the Contractor and the Institution or Agency waives all rights as to the rates charged. The Owner will then determine all utility rates and assess the charges before final payment is rendered.

J. **Project Sign**: Where required in Section 01 8000 entitled *Special Requirements* or elsewhere in the Contract Documents, the Contractor shall furnish and erect on adequate supports and maintain one (1) neatly constructed sign identifying the names of the Project, Governor, Owner, Prime Professional, Contractor and Using Agency/Institution, and Governing Board as applicable. Sign shall also indicate the source(s) of funds for the project. The erection of additional signs depicting the names of the Contractor, Sub-Contractor, or Vendors is strictly prohibited. Unless a larger sign is otherwise detailed in the Contract Documents, such sign shall be as follows:

1. The Prime General Contractor will erect on adequate supports one (1) neatly constructed and painted or printed four foot by eight foot (4’ x 8’) plywood or equivalent panel conforming to the Owner’s Project Sign Template to be furnished with text, colors, and graphics specific to the Project.
2. No logos, graphics, custom fonts or similar are permitted for Prime Professional or Contractor names depicted on Project Sign.
3. The Prime General Contractor is responsible for maintaining the Project Sign until Final Acceptance of the Work or until Substantial Completion when authorized by the Owner. Any damage, including chipping, pealing or fading of text or images shall be promptly repaired or replaced.

SUBSTITUTIONS AND PRODUCT OPTIONS
SECTION 01 6000

1.01 DESCRIPTION

A. Scope: To set forth the procedure and conditions for substitutions and to give the product options available to the Contractor.

1.02 PRODUCTS LIST

A. Within thirty (30) days after the Contract has been signed, the Contractor will submit to the Professional five (5) copies of a complete list of all products proposed for installation.

B. Tabulate the list by Specification sections.

C. For products specified under reference standards, include with listing of each product:

1. Name and address of Manufacturer.
2. Trade name.
3. Model, or catalog designation.
4. Manufacturer's data.
5. Performance and test data.
6. Reference standards.
7. Percentage of recovered materials.

1.03 CONTRACTOR'S OPTIONS

A. For products specified only by reference standards or technical performance requirements, select any product meeting product standards by any Manufacturer.

B. For products specified by naming a minimum of three (3) products or Manufacturers, select any product and Manufacturer named. Equivalent products of domestic manufacture containing not less than the same percentage of recovered materials as named products will always be accepted if equal in all consequential respects.

C. For product specified by naming one (1) or more products and/or Manufacturers, but indicating the option of selecting equivalent products by stating "or equal" after specified product and/or Manufacturer, select named product or any product of domestic manufacture containing not less than the same percentage of recovered material as named product meeting specified reference standards or technical performance requirements as represented by the named products and/or Manufacturers.

D. For products specified by naming only one (1) product and/or Manufacturer as a “basis of design”, an equivalent product of domestic manufacture containing not less than the same percentage of recovered materials as named product will always be accepted if it is equal in all consequential respects.

E. For products specified by naming only one (1) product and Manufacturer and stating no substitutions will be accepted, there is no option and no substitutions will be allowed. This option must have written approval by the Owner before bidding.

1.04 SUBSTITUTIONS

A. A product or construction method that varies from a product or construction method specified in one or more consequential characteristics, reference standards, or technical performance requirements shall be considered a substitution.

B. Professional will not consider requests for substitutions during bidding.

C. Within thirty (30) days after the Contact has been signed, the Professional will consider formal requests from the Contractor for substitution of products in place of those specified. Submit five (5) copies of the request for substitutions. Include in the request:

1. Narrative summarizing characteristics, reference standards, or technical performance requirements that product varies from and how the proposed product or construction method will meet or exceed project requirements
2. For products:
    a. Product identification including Manufacturer's name and address.
    b. Manufacturer's literature: Product description, performance and test data and reference standards.
    c. Samples.
    d. Name and address of similar projects on which product was used and date of installation.
3. For construction methods:
    a. Detailed description of proposed method.
    b. Drawings illustrating methods.
4. Agreement to pay for any additional professional costs if acceptance of substitution will require substantial revision of Contract Documents.
5. Data relating to any delays to the construction schedule if any will result from proposed substitution.
6. Accurate cost data on proposed substitution if any project cost increases are anticipated or any cost savings are being offered for proposed substitution.

D. In making request for substitution, Contractor represents:
1. Proposed product, or method, has been investigated and determined that it is equal or superior in all respects to that specified.
2. The same or better guarantee and/or warranty will be provided for substitutions for product or method specified.
3. Installation of accepted substitutions will be coordinated into the Work, making such changes required of work to be complete in all respects at no additional cost to the Owner.
4. All claims for additional costs related to substitution, including any delays to the construction schedule, which consequently become apparent will be waived.
5. Unless specifically identified in substitution submittal and such delay is specifically agreed to by Change Order to the Contract, substitution will not cause any delay to the construction schedule.
6. Proposed product, or method, will not result in any additional costs to the Owner.

E. Substitutions will not be considered if:
1. Indicated, or implied, on shop drawings or product data submittals without formal request submitted in accordance with this Section.
2. Acceptance will require substantial revision of Contract Documents unless compensation for such additional professional costs are paid by Contractor at no additional cost to the Owner.
3. In the Professional's judgment, the product, or material, is not equal.

F. For products where all named products are of domestic manufacture, substitutions of products of foreign manufacture will not be considered unless Contractor can sufficiently document that one or more of the following conditions exist:

1. No product of domestic manufacture meeting the product specifications is readily available that can be provided within the time constraints of the project requirements.
2. Cost to provide a product of domestic manufacture meeting the product specifications is significantly greater than proposed product substitute.

G. Substitutions of products with those of less percentage of recovered material than named product(s) shall only be considered where Contractor can sufficiently document that one or more of the following conditions exist:

1. No product of equal or greater percentage of recovered material as named product(s) is available that can be provided within the time constraints of the project requirements.
2. Cost to provide a product of equal or greater percentage of recovered material as named product(s) meeting the product specifications is significantly greater than that of named product(s).

CUTTING AND PATCHING
SECTION 01 7329

1.01 **GENERAL DESCRIPTION**

A. **Scope**: To set forth broad, general conditions covering cutting and patching that applies to everyone and everything on the job.

B. Execute cutting including excavating, fitting, or patching of work required to:
1. Make several parts fit properly.
2. Uncover work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to Contract requirements.
5. Install specified work in existing construction.

C. In addition to Contract requirements, upon Professional's written instructions:
1. Uncover work for observation of covered work.
2. Remove samples of installed materials for testing.
3. Remove work to provide alteration of existing work.

D. Do not cut or alter work of another Contractor without permission.

E. **Payment of Costs**: Costs caused by ill-timed, or defective work, or work not conforming to Contract Documents will be borne by party responsible for ill-timed, defective work, or non-conforming work.

1.02 **MATERIALS/PRODUCTS**

A. **Materials for Replacement or Work Removed**: Comply with Specifications for type of work to be accomplished.

1.03 **EXECUTION**

A. **Inspection**: Inspect existing conditions of work, including elements subject to movement, or damage during cutting and patching.

B. **Preparation Prior to Cutting**: Provide shoring, bracing and support, as required, to maintain structural integrity of the building. Provide protection for other portions of work and protection from the elements.

C. **Performance**:
1. Execute cutting and demolition by methods which prevent damage to other work and will provide surfaces to receive installation of repairs and new work.
2. Execute excavating and backfilling by methods which prevent damage to other work and prevent settlement.
3. Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.
4. Refinish entire surfaces, as necessary, to provide an even finish. Refinish continuous surfaces to the nearest intersection and assemblies entirely.

CLEANING
SECTION 01 7400

1.01 **DESCRIPTION**

A. **Scope**: Maintain premises and public properties from accumulations of waste, debris and rubbish caused by operations. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials and clean all sight-exposed surfaces; leave Project clean and ready for occupancy.

1.02 **PRODUCTS**

A. **Materials**: Use only cleaning materials recommended by Manufacturer of surface to be cleaned. Use cleaning materials only on surfaces recommended by the cleaning materials Manufacturer.

1.03 **EXECUTION**

A. **During Construction**: Execute cleaning to insure that building, grounds and public properties are maintained free from accumulations of waste materials and rubbish. Wet down dry materials and rubbish to lay dust and prevent blowing dust. At reasonable intervals during progress of work, clean site and public properties and dispose of waste materials, debris and rubbish. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off Owner's property. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights. Schedule cleaning operations so that dust or other contaminants resulting from cleaning process will not fall on wet or newly painted surfaces.

B. **Final Cleaning**: Employ experienced workmen, or professional cleaners, for final cleaning. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces and concealed spaces. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from sight-exposed finishes. Repair, patch and touch up marred surfaces to specified finish to match adjacent surfaces. Broom clean paved surfaces; rake clean other surfaces of grounds. Replace air conditioning filters, if units were operated during construction. Clean ducts, blowers and coils if air conditioning units were operated without filters during construction. Maintain cleaning until Project, or respective portions thereof, is occupied by Owner.

STARTING OF SYSTEMS
SECTION 01 7500

1.01 **GENERAL**

A. **Scope**: This Section describes the procedures for start up of all building equipment and systems including necessary demonstration and instructions.

1.02 **STARTING SYSTEMS**

A. Coordinate Schedule for start-up of various equipment and systems.

B. Notify Professional and Owner seven (7) days prior to start-up of each system.

C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.

D. Verify that tests, meter readings and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of responsible Contractors' personnel in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require Manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.03 **DEMONSTRATION AND INSTRUCTIONS**

A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of Substantial Completion.

B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

CONTRACT CLOSEOUT
SECTION 01 7700

1.01 **DESCRIPTION**

A. **Scope**: The work required in this Section consists of the final inspections and the submission of all closeout documents and related items to complete the Work indicated on the Drawings and described in the Project Manual.

1.02 **FINAL INSPECTIONS**

A. **Professional's Review**: The Contractor shall make written notice that the Work of a Job Order is ready for final inspection and acceptance by the Owner to the Professional; such notice to be given not less than ten (10) days prior to the date desired for inspection. The Professional will promptly visit the site and assess the state of Work of the Job Order to determine if it is ready for final inspection by the Owner. If, in the Professional's judgment, the Work of the Job Order is not ready for final inspection, the Professional will report the reasons for such determination to the Contractor. In such case, the Contractor shall then submit a revised request for final inspection when those reasons have been resolved. Once the Professional determines the Work of the Job Order is ready for final inspection, the Prime Professional will call for final inspection of the Project with the Owner for the purpose of determining whether the Work of the Job Order is acceptable under the Contract Documents.

B. **Owner's Inspection**: After the Professional has ascertained the Work of the Job Order to be ready, an Owner's inspection will be scheduled within ten (10) days thereafter. The Contractor will have not more than thirty (30) days thereafter, unless a longer time for specific items is mutually agreed to in writing by the Owner and Contractor to make any corrections of the final punch list items and to submit closeout documents.

C. **Correction of Work Before Final Payment**: The Contractor shall address all defects or discrepancies noted on the final punch list and promptly remove from the Owner's premises all materials condemned for failure to conform to the Contract, whether incorporated in the Work or not, and the Contractor shall, at his own expense, replace such condemned materials with those conforming to the requirements of the Contract. Failure to remedy such defects or discrepancies after thirty (30) days, unless a longer time for specific items is mutually agreed to in writing by the Owner and Contractor, will allow the Owner to make good such defects and such costs shall be deducted from the balance due the Contractor, or charged to the Contractor in the event no payment is due.

1.03 **CLOSEOUT DOCUMENTS**

Unless otherwise notified, the Contractor shall submit to the Owner through the Professional, three (3) copies of the following before final payment is made:

A. **Request for Final Payment**: AIA Document G702, current edition, completed in full or a computer generated form having similar data.

B. **Consent of Surety Company to Final Payment**: AIA Document G707, current edition, completed in full by the Bonding company.

C. **Power of Attorney**: Closeout documents should be accompanied by an appropriate Power of Attorney.

D. **Release of Liens and Certification that All Bills Have Been Paid**: AIA Document G706A, current edition, completed in full or a sworn statement and affidavit from the Contractor to the Owner stating that all bills for this job have been paid and that the Owner is released from any and all claims and/or damages.

E. **Contractor's Affidavit of Payment of Debts and Claims**: AIA Document G706, current edition, completed in full.

F. **Guarantee of Work**: Sworn statement that all work is guaranteed against defects in materials and workmanship for one (1) year from date of Owner's acceptance, except where specified for longer periods.

1. Word the Guarantee as follows, or in a similar manner:
   We hereby guarantee all work performed by us on the above captioned Project to be free from defective materials and workmanship for a period of one (1) year or such longer period of time as may be called for in the Contract Documents for such portions of the Work.
2. All guarantees and warranties shall be obtained in the Owner's name.
3. Within the Guaranty period, if repairs or changes are requested in connection with guaranteed work which, in the opinion of the Owner, are rendered necessary as a result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the Contract, the Contractor shall promptly, upon receipt of notice from and without expense to the Owner, place in satisfactory condition building, site, equipment or contents thereof. The Contractor shall make good any work, materials, equipment or contents of said buildings or site which may be disturbed by fulfilling any such Guaranty.
4. If, after notice, the Contractor fails to proceed promptly to comply with the terms of the Guaranty, the Owner may have the defects corrected and the Contractor and his Sureties shall be liable for all expense incurred.
5. All special guarantees applicable to definite parts of the work stipulated in the Project Manual or other documents forming part of the Contract shall be subject to the terms of this paragraph during the first year of the life of such special guaranty.

G. **Project Record Documents**: Furnish all other record documents as set forth in Section 01 7800 entitled *Project Record Documents*. Failure provide such documents within thirty (30) days of Request for Final Payment shall result in the Owner, in consultation with the Professional, determining a fair market value of such documents with such costs to be retained or deducted from the balance due the Contractor, or charged to the Contractor in the event no payment is due.

H. **Additional Documents Specified Within the Project Manual**: Provide all additional certificates, warranties, guarantees, bonds or documents as called for in the individual sections of the Project Manual. The Contractor is responsible for examining the Project Manual for these requirements. Failure provide such documents within thirty (30) days of Request for Final Payment shall result in the Owner, in consultation with the Professional, determining a fair market value of such documents with such costs shall be deducted from the balance due the Contractor, or charged to the Contractor in the event no payment is due.

PROJECT RECORD DOCUMENTS
SECTION 01 7800

1.01 **DESCRIPTION**

A. **Scope**: To set forth the procedure and requirements for keeping project record documents.

B. **Maintenance Documents**:

1. Throughout the Contract, maintain one (1) copy of all of the following: Contract Drawings, Project Manual, Addenda, Change Order(s), reviewed shop drawings, reviewed submittals, hardware schedules, field, and laboratory test records, equipment brochures, parts lists, operating instructions and other modifications to the Contract.
2. Store documents on site apart from documents used for construction.
3. Maintain documents in clean, dry, legible condition. Do not use record documents for construction purposes.
4. Make documents available, at all times, for inspection by the Professional, Commissioning Authority Professional, and the Owner.
5. Keep documents in 8 ½" x 11" loose leaf binders. Clearly label each binder on the spine. Sub-divide with permanently marked tabs of card stock. Provide a main tab for each specification section. Provide sub-tabs for each major piece of equipment or component.
6. Format for information behind each tabbed piece of equipment/component shall be:
    a. Contractor/Installer Information: Include address, phone number and contact name. Include emergency service contact information as applicable.
    b. Manufacturer Information: Include address, phone number and contact name.
    c. Shop Drawings and Product Data
    d. Operation and Maintenance Instructions
    e. Control Drawings

C. **Recording**:

1. **General**: Mark all modifications in red pencil. Keep record documents current. Do not permanently conceal any work until required information has been recorded.
2. **Contract Drawings**: Legibly mark to record actual construction.
    a. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
    b. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
    c. Field changes in dimension and detail.
    d. Changes made by change order(s) or field order(s).
3. **Project Manual and Addenda**: Legibly mark up each section to record Manufacturer, trade name, catalog number and Supplier of each product and item of equipment actually installed.
4. **Shop Drawings**: Maintain as record documents. Legibly mark drawings to record changes made after review.

D. **Submittal**: At completion of Project, deliver two (2) copies of each record document to the Professional, who will transmit both sets to the Institution or Agency. Additionally, provide to Owner updated As-Built Contract Documents in electronic format utilizing electronic format copy of Contract Documents furnished by Professional or by scanning of marked-up contract Documents.

SPECIAL REQUIREMENTS
SECTION 01 8000

PART 1 - SUMMARY OF WORK SUPPLEMENT

1.01 **WORK SEQUENCE**

A. Owner will occupy the building during construction, coordinate with Owner's Representative in scheduling work to vacate the areas as the Contractor requires.

B. Construct work in stages as follows:
1. _____
2. _____
3. _____

1.02 **PARTIAL OWNER OCCUPANCY**

A. Schedule early completion of designated areas for Owner's usage prior to substantial completion of entire Project as follows: _____

B. Owner will occupy the following areas throughout the Project or during portions of the Project as follows:

_____

C. Prior to occupancy of any portion of the Project, a *Certificate of Substantial Completion* for designated areas shall be executed establishing responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance for such portion of the Work.

PART 2 - ALLOWANCE SUPPLEMENT

2.01 **SCHEDULE OF ALLOWANCES**

A. Include in the Bid, for inclusion in the Contract Sum, the amount of $_____for purchase of

_____

(Refer to Section _____, _____)

B. Include in the Bid, for inclusion in the Contract Sum, the amount of $_____for purchase of

_____

(Refer to Section _____, _____)

PART 3 - ALTERNATE SUPPLEMENT

3.01 **DESCRIPTION OF ALTERNATES**

N/A

PART 4 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

4.01 **SUPPLEMENT FIELD OFFICE**

4.02 **UTILITIES**

4.03 **PROJECT SIGN**

PART 5 - ANTICIPATED DELAYS

5.01 **ADVERSE WEATHER**

As included in Article 8 - Time of the General Conditions, weather delays will be allowed as follows:

A. Rain Days: The contractor shall figure the following number of rain days for each month listed below in his schedule. These are based on a seven-year average from data obtained from NOAA.

January - 4 days	February - 3 days	March - 3 days	April - 2 days
May - 3 days	June - 3 days	July- 4 days	August - 2 days
September - 3 days	October - 3 days	November - 3 days	December- 2 days

2. Request for rain days shall not be made unless the number of days per month when the rain precipitation amounting to 1/10" or more exceeds the number of days on the above chart.

3. For an extension of time for rain days to be considered, the contractor must document that the exterior work was delayed due to inclement weather conditions. In addition, the contractor shall provide the Professional with independent verification of the quality of days when rainfall exceeded 1/10" during each billing period.

PART 6 – INSTITUTION/AGENCY REQUIREMENTS

6.01 **PROHIBITED ACTIVITIES**

6.02 **USE OF PREMISES**

SECTION 26 01 00

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section

B. Section Includes: This section provides basic electrical requirements.

1.02 BASIC ELECTRICAL REQUIREMENTS

A. Quality Assurance:

1. Workers possessing the skills and experience obtained in performing work of similar scope and complexity shall perform the Work of this Division.

2. Refer to other sections of the Specifications for other qualification requirements.

B. Drawings and Specifications Coordination:

1. For purposes of clearness and legibility, Drawings are essentially diagrammatic and the size and location of equipment is indicated to scale whenever possible. Verify conditions, dimensions, indicated equipment sizes, and manufacturer's data and information as necessary to install the Work of this Division. Coordinate location and layout with other Work.

2. Drawings indicate required size and points of termination of conduits, number and size of conductors, and diagrammatic routing of conduit. Install conduits with minimum number of bends to conform to structure, avoid obstructions, preserve headroom, keep openings and passageways clear, and comply with applicable code requirements.

3. Routing of conduits may be changed provided that the length of any conduit run is not increased more than 10 percent of length indicated on the Drawings.

4. Outlet locations shall be coordinated with architectural elements prior to start of construction. Locations indicated on the Drawings may be distorted for clarity.

5. Coordinate electrical Work with all other Work.

6. The scope of the electrical work includes furnishing, installing testing and warranty of all Electrical work and complete electrical systems shown on the electrical drawings and specified herein.

7. The drawings and specifications complement each other and together complete the contract documents for the electrical work included in this project. Neither the drawings or the specifications are complete without the other. Any item mentioned in either document is binding. Where conflicts arise between the drawings and the specifications, the more stringent requirement shall prevail.

8. The contractor shall provide and install all electrical systems to provide a complete package as indicated by the contract documents. The documents are intended to provide an outline for the required installations. The contractor shall ultimately provide a complete and operational system at the conclusion of the project.

9. Details are provided as they relate to the installation. Contractor shall provide and install all miscellaneous components, parts, materials, fasteners, splices, and any other incidental items necessary to provide a complete installation.

C. Terminology:

1. Signal Systems: Applies to clock, bell, fire alarm, annunciator, sound, public address, buzzer, telephone, television, inter-communication, and security systems.

2. Low Voltage: Applies to signal systems operating at 120 volts and less, and power systems operating at less than 600 volts.

3. UL: Underwriter's Laboratories Inc, Nationally Recognized Testing Laboratory (NRTL), or equal.

D. Regulations: Work shall comply with the requirements of authorities having jurisdiction and the Electrical and Building Codes. Material shall conform to regulations of the National Board of Fire Underwriters for electrical wiring and apparatus. Materials shall be new and listed by UL, or another NRTL.

E. Structural Considerations for Conduit Routing:

1. Where conduits pass through or interfere with any structural member, or where notching, boring or cutting of the structure is necessary, or where special openings are required through walls, floors, footings, or other buildings elements, contractor shall submit shop drawings to the architect for approval.

2. Holes required for conduit entrances into speaker poles, floodlight poles or other poles, shall be drilled with the conduit nipple or coupling welded to poles. Welds shall be provided by the electric arc process and shall be continuous around nipple or coupling.

F. Electrically Operated Equipment and Appliances:

1. Furnished Equipment and Appliances:

a. Work shall include furnishing and installing wiring enclosures for, and the complete connection of electrically operated equipment and appliances and electrical control devices which are specified to be furnished and installed in this or other sections of the Specifications, wiring enclosures shall be concealed except where exposed Work is indicated on the Drawings.

b. Connections shall be provided as necessary to install equipment ready for use. Equipment shall be tested for proper operation and, if motorized, for proper rotation. If outlets are of incorrect electrical characteristics or any specified equipment fails to operate properly, repair and/or replace the outlet and/or equipment.

2. Equipment and Appliances Furnished by Others:

a. Equipment and appliances indicated on Drawings as "not in contract" (NIC), "furnished by others," or "furnished by the Owner," will be delivered to the Project site. Required electrical connections shall be performed for such equipment and appliances. Motorized equipment will be furnished factory-wired to a control panel or junction box unless otherwise indicated. Appliances will be furnished equipped with portable cord and cap. Provide disconnect switches where required.

b. Connections to equipment furnished under this Division shall be part of the Work of this section. Work shall include internal wiring, installation, connection and adjustment of bolted drive motors in which the motor is supplied as a separate unit, and connections only for equipment furnished with factory installed internal wiring, except as further limited by Drawings and this Specification. Work shall include furnishing and installing suitable outlets, disconnecting devices, starters, push-button stations, selector switches, conduit, junction boxes, and wiring necessary for a complete electrical installation. Work shall also include furnishing and installing conduit and boxes for other systems, furnished under Mechanical Divisions. Devices and equipment furnished shall be of same type used elsewhere on the Work or as specified.

c. Electrical equipment furnished under other sections, for installation and connection under Work of this section, will be delivered to the Project site ready for installation.

d. Equipment furnished under other sections, and requiring electrical connection under this section, will be set in place as part of the Work of the section furnishing such equipment unless noted otherwise. If electrical connections exceed the requirements of the specified equipment, it shall be the responsibility of the contractor or vendor supplying the equipment to compensate the electrical

contractor for any and all work to make the electrical connections to the equipment being supplied. Any discrepancies shall immediately be brought to the engineers' attention for coordination between all other disciplines. All increased costs shall be the responsibility of the contractors, not the owner, architect, or engineer.

e. Suitability and condition of equipment furnished under other sections shall be determined in advance of installation. Immediate notice of damage, unsuitability, or lack of parts shall be given to the entity providing such equipment.

G. Protection of Materials:

1. Protect materials and equipment from damage and provide adequate and proper storage facilities during progress of the Work. Damaged materials and/or equipment shall be replaced.

H. Cleaning:

1. Exposed parts of Work shall be left in a neat, clean, usable condition. Finished painted surfaces shall be unblemished and metal surfaces shall be polished.

2. Thoroughly clean parts of apparatus and equipment. Exposed parts to be painted shall be thoroughly cleaned of cement, plaster, and other materials. Remove grease and oil spots with solvent. Such surfaces shall be wiped and corners and cracks scraped out. Exposed rough metal shall be smooth, free of sharp edges, carefully steel brushed to remove rust and other spots, and left in proper condition to receive finish painting.

3. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

I. Permits and Regulations:

1. Include payment of all permit and inspection fees applicable the work in this Division.

2. Work must conform to the National Electric Code, National Electrical Safety Code, and other applicable local, state, and federal laws, ordinances, and regulations. Where drawings or specifications exceed code requirements, the drawings and specifications shall govern. No work shall be installed which is less than minimum legal standards.

3. All work performed under this Division shall be inspected and approved by the Local Authority having Jurisdiction.

J. Site Inspection:

1. Each and all bidders shall inspect the project site prior to bidding.

2. Existing site conditions shall be compared with the information shown on the drawings. Immediately report any discrepancies to the Architect. After project bid date, no allowances will be made for failure to have made inspections.

3. During construction, the contractor shall exercise care and take appropriate precautionary measures to prevent any damage to the existing structures, sidewalks, utilities, communications, etc. during the project. The Contractor shall correct all damage caused by or during the project. Contractor shall provide not less than (2) and not more than (10) working days advance written, electronic, or telephonic notice of the commencement, extent, location and duration of the excavation work to Mississippi One-Call System, Inc. (1-800-227-6477) and any nonmembers operator(s) of any underground utility lines or underground facilities in and near the excavation area, so that Mississippi One-Call System, Inc operator(s) and any non-member operator(s) may locate and mark the location of underground utility lines and underground facilities in the excavation area.

K. Utility Coordination:

1. Contractor shall inspect and verify the existing utilities at the project site prior to bidding.

L. Temporary Lighting and Power for Construction:

1. The electrical contractor shall provide and install temporary lighting during the period of construction. Temporary lighting shall be provided to meet all local ordinances, codes, and safety requirements. Lighting shall be installed in all open, general, and thoroughfare areas of construction. This shall not include any task lighting specifically required by any trade to complete their work or installations.

2. The electrical contractor shall provide and install temporary power during the construction period as required to complete the project installation. Contractor shall coordinate with the general contractor, utility company, and/or owner to provide 120/240 volt power for the project. All devices shall be provided with ground fault circuit protection. Power shall be provided in central work area(s). This shall not include any remote power needs for any specific trades. For power requirements at voltages other than those listed above, the contractor shall coordinate connection requirements with the local utility company.

3. All temporary lighting and power installations shall meet local and national codes and be approved by the local authority having jurisdiction.

4. Temporary services shall be removed at completion of the project. Permanent utilities shall not be used during the Project except with the written permission of the Owner.

1.03 SUBMITTALS

A. Where indicated submit to architect, (1) copy electronic PDF of Shop Drawings including control diagrams, list of materials, catalog cuts, technical data, manufacturer's specifications, and applicable installation details.

1.04 RECORD DRAWINGS

A. The Electrical Contractor shall maintain, at the project site, a separate set of prints of the contract documents and shall show all changes and variations, in a neat and clearly discernible manner, which are made during construction. Upon completion of the work, these drawings shall be turned over to the Architect. Provide the following as-built documents including all contract drawings regardless of whether corrections were necessary and include in the transmittal: “2 sets of CDs and prints for Owner’s use, one set of CDs, prints for Architect / Engineers Records”. Delivery of these as-built electronic files and prints are a condition of final acceptance.

1.05 OPERATION AND MAINTENANCE MANUALS

A. The Electrical Contractor shall submit to architect (3) copies each of operating and maintenance manuals for each piece of equipment applicable to the project.

B. All shop drawings, installation, operation, and maintenance manuals, wiring diagrams, parts lists, and other information including warranties and technical support, shall be obtained from each manufacturer.

C. Assemble all information into three-ring binders or other suitable binding. Add an index and/or tabbed and labeled sections of all items submitted.

D. The Electrical Contractor shall at all times, maintain a clean set of construction document plans on site. Any and all deviations from the construction documents shall be marked, and clearly noted in red ink. All changes shall exactly indicate the revisions or changes to the design documents. Upon completion of the project, (2) clean sets of "red-line" construction as-built documents shall be submitted to the architect. Unclear, illegible, or inaccurate plans will be returned to the contractor for correction and resubmission. As-built documents shall be corrected by the Electrical Contractor and resubmitted at no additional cost.

1.06 INSPECTIONS AND PUNCH LIST

A. The Electrical Contractor shall survey and inspect his work and develop his own punch list to confirm that work is complete and finished. He shall then notify the General Contractor that work is complete and ready for inspection by the Architect. It is not the Architects or Engineers

obligation to perform a final inspection until the contractor states his work has been inspected and is complete and ready for final inspection.

B. Request to the Architect, Engineer, or Owner for final inspection may be accompanied by a limited list of known deficiencies with a brief explanation or status of deficiencies and schedule for completion of each. Correction of these items shall be completed within (30) days of inspection or before final acceptance of occupancy.

1.07 WARRANTY

A. The Electrical Contractor shall warrant all workmanship, equipment, and materials installed under this contract for a period of (1) year minimum from the date of final acceptance as agreed between the Contractor and the Architect, unless indicated by other sections of these specifications.

B. Any equipment, materials, etc. proving to be defective during the warranty period shall be corrected or replaced without any expense to the Owner or other parties. This provision shall not be construed to include general maintenance items or luminaire lamps or correcting errors on the part of the owner, owner's personnel, or owner's representative.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and Equipment furnished under this contract shall be in strict accordance with the specifications and drawings and shall be new and of best grade and quality. When two or more items of equal and similar materials and construction are required, they shall be of the same manufacturer.

B. All electrical equipment and materials shall bear the Underwriters Laboratories, Inc. label, and shall comply with the NEC and NFPA requirements as applicable.

2.02 MATERIALS AND EQUIPMENT SELECTION

A. Selection of Materials and Equipment furnished under this contract shall be determined by the following:

1. Where trade names, brands, and manufacturer's part numbers are listed, the exact equipment listed shall be furnished. Where more than one name is used, the contractor shall have the option of selecting between those specified. All products used shall be equal to that specified and shall be of best quality.

2. When the words "or equal" appear, specific approval must be obtained from the Architect during the bidding period in sufficient time to be included in an addendum. The same shall apply for equipment and materials not named in the specifications, where approval is sought.

3. Alternate materials and/or equipment must be submitted for approval a minimum 2 weeks prior to project bid date.

B. Before bidding, when preparing shop drawings, and prior to rough-in for installation, the contractor shall verify that adequate space is available for entry and installation of the item including any accessories. Also that adequate space is available for servicing equipment and required code clearances are satisfied.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Advise the general contractor or architect before starting the Work of this Division.

B. Exposed conduits shall be painted to match the surfaces adjacent to installation. Refer to painting and coating section of specifications.

C. Salvaged materials, if applicable, removed from buildings shall be removed from the Project site as required by the general contractor.

D. Trenches outside of barricade limits shall be backfilled and paved within 24 hours after being inspected. Provide traffic plates during the time that trenches are open in traffic areas and in areas accessible to nonconstruction personnel.

E. Where structural walls are cored for new conduit runs, separation between cored holes shall be 3 inches edge to edge, unless otherwise required by the Architect. All coring to be laid out and reviewed by Architect prior to drilling. Contractor to verify location of structural steel, rebar, stress cabling, or similar prior to lay out.

F. Electrical equipment shall be braced and anchored as indicated on the Drawings.

3.02 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 26 01 11

WORK IN EXISTING FACILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section

B. Section Includes: This section provides electrical requirements for demolition or rework of existing systems. Work shall include all existing electrical including auxiliary systems. Coordinate with owner and General Contractor for removal and rework of all electrical systems.

1.02 DEMOLITION OF EXISTING ELECTRICAL SYSTEMS

A. In reworked and renovated areas, remove all electrical equipment (AS NOTED) including but not limited to: Light fixtures, panelboards, switches, receptacles, auxiliary system devices, telephone outlets, life safety devices, and fire alarm; unless otherwise noted. Remove existing branch circuits, conduits, wiring, junction boxes, hangers, fittings, etc. serving equipment to be removed. Abandon conduits concealed in concrete, but remove conductors. Leave existing branch circuits and feeders which run through reworked areas and serve existing equipment to remain in service, continuous and uninterrupted. Repair, reterminate, re-support, etc., any damaged circuits.

B. Abandon junction boxes where devices are located in block walls. Remove any plates or extension rings. Fill box with grout and finish over to match adjacent wall. Remove any wiring and cut off flush any conduits protruding from wall.

C. Where below grade conduits are abandoned, cut off 2-3" below slab, grout over and finish smooth to match adjacent flooring, or finish ready to accept floor covering.

1.03 CUTTING, PATCHING, AND REPAIRING

A. Electrical contractor shall coordinate with General Contractor for all cutting, patching, and repairing. Electrical contractor shall perform all cutting or allow general contractor to perform cutting in a professional manner. Flooring and walls shall be cut in straight lines and parallel or perpendicular to walls. Electrical contractor shall coordinate and notify General Contractor of all cutting prior to bid and shall be responsible for any costs associated with cutting, patching, and repairing.

B. Do not pierce or cut any existing walls below grade.

C. Do not cut any structural walls or structural members, unless receiving approval in writing from the architect and structural engineer.

D. All new work shall match and be comparable to existing conditions or new adjacent finishes. Architect and engineer reserve the right to reject any unsuitable work.

1.04 ELECTRICAL SYSTEMS

A. Electrical, low voltage, systems wiring, life safety, etc. in areas outside of work area shall remain in service at all times. Provide and install necessary temporary wiring as required to maintain continuity of all electrical systems outside of the work area.

B. Where service interruptions are required, obtain approval for interruption in writing from Owner 10 days prior to interruption. Include schedule of work to be performed and the time required to accomplish work in request for interruption. Work during service interruptions may be required after normal working hours. Include premium (overtime) time labor in bid. No service interruptions shall occur until written approval is granted from the owner.

1.05 MATERIAL TO BE REMOVED/SALVAGED

A. Where noted, salvaged materials are to be reused. Clean any reused materials prior to reinstalling and at the completion of the project.

B. When materials are demolished and shown to be removed, the owner has the right to retain any desired/salvageable materials.

C. Discard or remove from site any materials not retained by the owner.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Advise the general contractor or architect before starting the Work of this Division.

B. Demolished or Salvaged materials, if applicable, removed from buildings shall be removed from the Project site as required by the general contractor.

3.02 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section

B. Section Includes: Low-voltage wire, splices, terminations and installation.

1.02 SUBMITTALS

A. None.

PART 2 - PRODUCTS

2.01 WIRES

A. Wires shall be single conductor type THHN or THWN insulated with polyvinyl chloride and covered with a protective sheath of nylon, rated at 600 volts. Wires may be operated at 90 degrees C. maximum continuous conductor temperature in dry locations, and 75 degrees C. in wet locations and shall be listed by UL Standard 83 for thermoplastic insulated wires, listed by Underwriter's Laboratories (UL) for installation in accordance with Article 310 of the National Electrical Code (NEC). Conductors shall be solid or stranded copper for 12 AWG and smaller conductors, and stranded copper for 10 AWG and larger conductors. Conductors shall be insulated with PVC and sheathed with nylon. Wires shall be identified by surface markings indicating manufacturer's identification, conductor size and metal, voltage rating, UL symbol, type designations and optional rating. Indentations for lettering is not permitted. Wires shall be tested in accordance with the requirements of UL standard for types THWN, or THHN.

B. Conductors shall be solid Class B or stranded Class C, annealed uncoated copper in accordance with UL standards, or another Nationally Recognized Testing Laboratory (NRTL).

2.02 STANDARDS

A. THWN/THHN wires shall comply with the following standards:

1. UL 83 for thermoplastic insulated wires.

2. UL 1063 for machine tool wires and cables.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Wires shall not be installed until debris and moisture is removed from conduits, boxes, and cabinets. Wires stored at site shall be protected from physical damage until they are installed and walls are completed.

B. Wire-pulling compounds furnished as lubricants for installation of conductors in raceways shall be compounds approved and listed by UL, NRTL, or equal. Oil, grease, graphite, or similar substances are not permitted. Pulling of 2 AWG or larger conductors shall be performed with a cable pull machine. Any runs shorter than 50 feet are exempt. When pulling conductors, do not exceed manufacturer’s recommended values.

C. At outlets for light, power, and equipment, pigtail splices with 8-inch circuit conductor leads for connection to fixtures, equipment, and devices.

D. Pressure cable connectors, pre-insulated Scotchlok, 3M, or equal, Y, R or B spring-loaded twist-on type, may be furnished in splicing number 8 AWG or smaller wires for wiring systems.

E. All Joints, splices, taps, and connections to panelboard neutral, bonding or grounding conductors, conductors to ground busses, and transformer connections for wires 6 gauge and larger shall be performed with high-pressure cable connectors approved for installation with copper conductors. Connectors shall be insulated with heavy wall heat shrink WCSM, or cold-applied roll-on sleeve RVS. Insulation level shall be a minimum of 600V and joints, splices, and taps shall be qualified to ANSI C 119.2, UL, NRTL, or equal listed mechanical pressure connections.

F. Connections to any bussing and high-press cable connectors shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade 5 machine screws secured with constant pressure-type locking devices.

G. Connection of any bonding or grounding conductors shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade 5 machine screws secured with constant pressure-type locking devices.

H. Wiring in panelboards, panel cabinets, pull boxes, and other cabinets, shall be neatly grouped and tied in bundles with nylon ties at 10-inch intervals. In panelboards, panels and terminal blocks, wires shall be fanned out to terminals. If bundles are longer than 24 inches, a maximum of 9 current carrying conductors may be bundled together.

I. Install conductor lengths with a minimum length within the wiring space. Conductors must be long enough to reach the terminal location in a manner that avoids strain on the connecting lug.

J. Maintain the conductor required bending radius.

K. Neutral conductors larger than 6 gauge, which are not color identified throughout their entire length, shall be taped, painted white or natural gray, or taped white where they appear in panelboards, cabinet, gutters or pull boxes. Neutral conductors 6 gauge and smaller shall be white color identified throughout their entire length.

L. Wiring systems shall be free from short circuits and grounds, other than required grounds.

3.02 COLOR CODES

A. General Wiring:

1. Color code conductor insulation as follows:

SYSTEM VOLTAGE		
Conductor	208Y/120	480Y/277
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White or Gray	White with colored stripe

Neutrals shall be colored-distinguished if circuits of two voltage systems are used in the same raceway.

2. For phase and neutral conductors 6 gauge or larger, permanent plastic-colored tape may be furnished to mark conductor end instead of coded insulation. Tape shall cover not less than 2 inches of conductor insulation within enclosure.

3.03 TAPE AND SPLICE KITS

A. Splices, joints, and connectors joining conductors in dry and wet locations shall be covered with insulation equivalent to that provided on conductors. Free ends of conductors connected to energized sources shall be taped. Voids in irregular connectors shall be filled with insulating compound before taping. Thermoplastic insulating tape approved by UL, NRTL, or equal for

installation as sole insulation of splices shall be furnished and shall be installed according to manufacturer's printed specifications.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section

B. Section Includes:

1. Raceways and wire ways
2. Conduit installation.
3. Underground requirements.
4. Boxes, enclosures, keys and locks.
5. Identifications and signs.

C. Related Sections:

1. Section 26 01 00: Basic Electrical Requirements.

D. Applicable Standards and Codes

1. EIA/TIA 569 Standards.
2. National American Standards Institute (ANSI)
3. National Electrical Manufacturer’s Association (NEMA)
4. Nationally Recognized Testing Laboratory (NRTL)
5. National Electrical Code (NEC)
6. Underwriters Laboratory (UL)

1.02 SUBMITTALS

A. None.

PART 2 - PRODUCTS

2.01 RACEWAYS

A. Conduit Materials:

1. Metallic conduit, and tubing shall be manufactured under the supervision of an UL, or another NRTL factory inspection and label service program. Each 10-foot length of conduit and tubing shall bear the UL or another NRTL label and manufacturer's name.
2. Rigid metallic conduit shall be rigid steel, heavy wall, mild steel, zinc-coated, with an inside and outside protective coating manufactured in accordance with ANSI C 80.1. Couplings, elbows, bends, condulets, bushings and other fittings shall be the same materials and finish as the rigid metallic conduit. Fittings, connectors, and couplings shall be threaded type, manufactured in accordance with ANSI C 80.1 and UL 6.
3. Electrical metallic tubing shall be steel tubing, zinc-coated with a protective enamel coating inside, manufactured in accordance with NEMA C 80.3. Fittings, couplings, and connectors less than 2" shall be steel, gland compression type. Fittings, couplings, and connectors 2" and larger shall be steel, set screw type or gland compression type. All parts shall be manufactured in accordance with NEMA C80.3 and UL 6A Electrical

metallic tubing is designated hereinafter as EMT. Steel and rain tight fittings shall be approved and listed for the intended application.

4. Flexible metallic conduit shall be of flexible interlocking strip construction with continuous zinc coating on strips, manufactured in accordance with UL 1.

   a. Connectors and couplings shall be required fittings of the type, which threads into convolutions of flexible conduit.

   b. Nonmetallic flexible conduit is not allowed.

5. Liquid-tight flexible metal conduit shall be galvanized heavy wall, flexible locked metallic strip construction, UV rated, with smooth moisture and oil-proof, abrasion-resistant, extruded plastic jacket. Connectors shall be as required for installation with liquid-tight flexible conduit and shall be installed to provide a liquid-tight connection.

6. Non-metallic conduit shall be rigid PVC electrical conduit extruded to schedule 40 dimensions of Type II. Grade 1 high impact, polyvinyl chloride, sweeps, couplings, reducers and terminating fittings shall be listed under the UL, or another NRTL, and shall bear the manufacturer's listed marking.

7. Conduit size shall be 1/2" minimum for above grade installations and 3/4" minimum for below grade or in-slab installations.

8. Metal Clad (MC) cable system is not allowed. Except for fixture whip connections (6' maximum length).

B. Sleeves for Conduits: Sleeves shall be adjustable type, of 26 gage galvanized iron, Adjust-to Crete Co. Adjust-to-Crete, or Jet Line Products Inc. Jet-Line, or equal.

C. Where conduit enters a building through a concrete foundation below grade, or ground water level, or where it is necessary to seal around a conduit where it passes through a concrete floor or wall, provide O-Z/Gedney Type FSK Thru Wall and Floor Seal, or equal.

D. Wireways shall be 16 gage galvanized steel enclosed hinge/screw wiring troughs, surface metal raceway, wireway, and auxiliary gutter designed to enclose electrical wiring. Wireway fittings shall be furnished with removable covers and sides to permit complete installation of conductors throughout the entire wireway run. Cover shall be furnished with keyhole slots to accept captive screws locking the cover securely closed. Wireways shall be UL or another NRTL listed, and shall be Square D Type LDG NEMA-1 enclosure for interior applications, or Type RD NEMA-3R enclosure for exterior applications, or equal by Cooper B-line, Hoffman, Wire Guard, or Circle AW.

E. Penetration in Fire-Rated Structures: Provide 3M, or equal, caulk and fire barriers for installing fire-rated seals around penetrations through floors, walls, and shafts. Fire stop system must be UL, or another NRTL listed, and classified for through-penetration applications of metallic conduits and busways.

F. Pull Wires: Install 1/8 inch polypropylene cords in empty or spare conduits.

2.02 BOXES, ENCLOSURES, KEYS AND LOCKS

A. Outlet Boxes and Fittings:

1. Outlet boxes installed in concealed Work shall be galvanized steel, pressed, or welded type, with knockouts.

2. In exposed Work, where conduit runs change direction or size, outlet boxes and conduit fittings shall be cast metal with threaded hubs cast integral with box or fitting.

3. Fittings shall be cast metal and non-corrosive. Ferrous metal fittings shall be cadmium-plated or zinc galvanized. Castings shall be true to pattern, smooth, straight, with even edges and corners, of uniform thickness of metal, and shall be free of defects.

4. Covers for fittings shall be galvanized steel or non-corrosive aluminum and shall be designed for particular fitting installed.

5. Light fixture outlets shall be 4-inch octagon, 4-inch square, 2-1/8 inches deep or larger, depending upon number of conductors or conduits therein. Plaster or tile rings shall be furnished for suitable mounting of light fixture.

6. For local device outlets provide 4-inch square 2-1/8 inch deep, boxes for single gang, 4-11/16 inch square boxes for two-gang, and special solid gang boxes with gang plaster ring for more than 2 switches.

7. Plaster or tile rings shall be provided on flush-mounted outlet boxes except where otherwise indicated or specified. Plaster or tile rings shall be same depth as finished surface. Install approved ring extension to obtain depth to finish surface.

8. In plywood wall or drywall construction, and where flexible steel conduit is fished into walls, one-gang and 2-gang outlets for wiring devices may be sectional steel boxes with plaster ears. Boxes shall be fastened to plywood with flat-head screws in each plaster ear screw hole.

9. Factory made knockout seals shall be installed to seal box knockouts, which are not intact.

10. Where flexible conduit is extended from flush outlet boxes, provide and install weatherproof universal box extension adapters.

B. Junction and Pull boxes:

1. Junction and pull boxes, in addition to those indicated, shall only be used in compliance with codes, recognized standards, and Contract Documents.

2. Interior and non-weatherproof boxes shall be constructed of blue or galvanized steel with ample laps, spot welded, and shall be rigid under torsion and deflecting forces. Boxes shall be furnished with auxiliary angle iron framing where necessary to ensure rigidity.

3. Covers shall be fastened to box with a sufficient number of brass machine screws to ensure continuous contact all around. Flush type boxes shall be drilled and tapped for cover screws if boxes are not installed plumb. Surfaces of pull and junction boxes and covers shall be labeled in black marker ink designating system, panelboard and circuit designation contained in box. In exposed Work, designation shall be installed on inside of pull box or junction box cover.

4. Weatherproof NEMA 3R pull and junction boxes shall conform to foregoing for interior boxes with following modifications:

   a. Cover of flush mounting boxes shall be furnished with a weather-tight gasket cemented to, and trimmed even with, cover all around.

   b. Surface or semi-flush mounting pull and junction boxes shall be UL, or another Nationally Recognized Testing Laboratory (NRTL) listed as rain-tight and shall be furnished complete with threaded conduit hubs.

   c. Exposed portions of boxes shall be galvanized and finished with one prime coat and one coat of baked-on gray enamel, unless already furnished with factory baked-on finish.

5. Junction and pull boxes shall be rigidly fastened to structure and shall not depend on conduits for support.

6. Polymer Concrete Boxes:

a. Polymer concrete boxes are to be made from aggregates in combination with polymer resin, combined and processed by mixing, molding, and curing, and reinforced with fiberglass.

b. Boxes are to be high strength, impact resistant, corrosion resistant, nonflammable, and noncorrosive.

c. Enclosures, boxes and covers are required to conform to all test provisions of the most current ANSI/SCTE 77 “Specification For Underground Enclosure Integrity”

d. All components in an assembly (box & cover) are manufactured using matched surface tooling.

e. Covers shall be marked as electrical, power, communications, fiber, signal, etc. as required.

7. Cast Boxes at Pole Bases: Where indicated on drawings for poles with camera mounts, boxes shall be cast with weatherproof removable doors. Boxes shall be NEMA 4X. Carlon E1212C24 (or equal) with dividers for low voltage and (1) 20 amp duplex receptacle inside of each box.

C. Keys and Locks:

1. Provide 2 keys with furnished door locks for all enclosures or cabinets.

2.03 IDENTIFICATION AND SIGNS

A. Identification Plates:

1. Provide identification plates for the following unless otherwise specified, for control panels, push-button stations, time switches, contactors, motor starters, motor switches, panelboards, and terminal cabinets.

2. Identification plates shall be of plastic stock and shall adequately describe function, voltage and phase of identified equipment. Where identification plates are detailed or described on Drawings, inscription and size of letters shall be as indicated. For lighting and power panels, identification plates shall indicate panel designation, voltage, and phase of panel. For terminal cabinets, identification plates shall indicate system contained in terminal cabinet.

3. Identification plates shall be black-and-white nameplate stock of bakelite with characters cut through black exposing white. Plates shall be furnished with beveled edges and shall be securely fastened in place with No. 4 Phillips-head, cadmium-plated steel, self-tapping screws. Characters shall be 3/16 inch high, unless otherwise indicated.

B. Markings:

1. Install identification markings to surface-mounted starters, disconnect switches, contactors, and other devices controlling motors and appliances. Provide abbreviations required along with an identifying number. Markings to be provided with locking type stencils using paint of a contrasting color. Figures shall be 3/8 inch high unless otherwise indicated. Self-sticking plastic labels, with embossed characters made with a typewriter may be installed instead of stencils and paint; self adhesive plastic, or self sticking laminated plastic labels may be installed.

PART 3 - EXECUTION

3.01 CONDUIT INSTALLATION

A. General Requirements:

1. Provide complete and continuous systems of rigid metallic conduit, outlet boxes, junction boxes, fittings and cabinets for systems of electrical wiring including lighting, power, and systems, except as otherwise specified.

2. EMT may be installed in interior concealed or exposed applications where not subject to damage. EMT shall not be installed in concrete, directly buried underground, outdoors, or where subject to damage.

3. Within buildings, flexible metallic conduit may be installed instead of rigid steel conduit where permitted by code. Flexible metallic conduit shall not be installed for conduit installations longer than 6 feet (inclusive of fittings and boxes), in concealed ceilings or walls, and where conduit size is 1-1/2 inches or greater.

4. Flexible metallic conduit shall be installed for final connection of motor terminal boxes, shop equipment, mechanical equipment, HVAC equipment and other equipment, or for frequent interchange, and shall be of sufficient length, not exceeding 36 inches, to permit full travel or adjustment of motor on its base. Flexible metallic conduit shall not be used for equipment not requiring adjustment or frequent interchange.

5. Liquid-tight flexible metallic conduit shall be installed at exterior locations or where subject to liquid or oil exposure, except where otherwise specified, for final connection of equipment and as listed above.

6. Connectors for flexible metal conduit and liquid-tight flexible metallic conduit shall be compatible with the conduit, and of the types which threads into convolutions of conduit. Connectors for watertight flexible metal conduit shall be as required for installation and shall be installed to provide a watertight connection.

7. Exposed conduit shall be installed vertically and horizontally following the general configuration of the equipment, using cast threaded hub conduit fittings where required and shall be clamped to equipment with suitable iron brackets and one hole pipe strap.

8. If connection is from a flush wall-mounted junction box, install an approved extension box.

9. Underground feeder distribution conduits for systems may be non-metallic conduit instead of rigid conduit except where otherwise specified or indicated.

10. Conduit shall be concealed unless otherwise indicated. Conduits exposed to view, except those in attic spaces and under buildings, shall be installed parallel or at right angles to structural members, walls, or lines of building. Conduits shall be installed to clear access openings.

11. Bends or offsets will not be permitted unless absolutely necessary. Radius of each conduit bend or offset shall be as required by ordinance. Bends and offsets shall be performed with standard industry tools and equipment or may be factory fabricated bends or elbows complying with requirements for radius of bend specified. Heating of metallic conduit to facilitate bending is not permitted. Public telephone conduit bends and offsets shall be provided with a radius which is not less than 10 times trade size of conduit unless otherwise permitted. Refer to underground installation, specified in this section, for radius of bends and offsets required for underground installations.

12. Running threads are not permitted. Provide conduit unions where union joints are necessary. Conduit shall be maintained at least 6 inches from covering of hot water and

steam pipes and 18 inches from flues and breechings. Open ends of conduits shall be sealed with permitted conduit seals during construction of buildings and during installation of underground systems.

13. Expansion Joints/Seismic Separations/Separations between buildings/Locations Indicated: Provide Thomas & Betts XJG-TB, O-Z Electrical Mfg. Co. Inc. Type AX with bonding strap and clamps. At exterior locations, provide Thomas & Betts XJG-TB, O-Z Electrical Mfg. Co. Inc. Type EX, or equal. Provide O-Z Electrical Mfg. Co. Type AXDX, or equal Combination Deflection/Expansion Fittings at all seismic separations. Provide manufactures internal and external Bonding Jumpers at all locations. Liquid-tight flexible conduit shall not be approved at expansion joints or seismic separations.

14. Where conduits are terminated in groups at panelboards, cabinets, etc., provide templates or spacers to fasten conduits in proper position and to preserve alignment.

15. Where auxiliary supports, saddles, brackets, etc., are required to meet special conditions, they shall be fastened rigid and secure before conduit is attached.

16. Conduit in ceiling spaces, stud walls, and under floors, shall be supported with factory fabricated pipe straps or shall be suspended with pipe hangers or pipe racks. Pipe straps shall be attached to and shall fasten conduit tight at point of support against ceiling and floor joists, rafters, and wall studs, or 2-inch x 4-inch headers fitted between joists or wall studs.

17. Conduits installed on exposed steel trusses and rafters shall be fastened with factory fabricated conduit straps or clamps, which shall fasten conduit tight against supporting member at point of support.

18. Conduits installed under buildings shall be strapped with factory fabricated conduit straps to underside of concrete floor or joists, or wood floor joists, or shall be suspended with pipe hangers or pipe racks. Conduits under building are not permitted to be placed directly on grade; they shall be suspended from building or shall be buried below surface or ground. 1-1/4 inch and larger conduits under buildings shall be installed with conduit hangers or racks.

19. Pipe hangers for individual conduits shall be factory fabricated. Steel rods shall be 3/8 inch for 2-inch conduit hangers and smaller and shall be 1/2 inch for 2-1/2 inch conduit hangers and larger.

20. Pipe racks for groups of parallel conduits and for supporting total weights not exceeding 500 pounds shall be trapeze type and shall consist of a cross channel, Steel City Kindorf B-900, Unistrut P-1000, or equal, suspended with a 3/8 inch minimum diameter steel rod at each end. Rods shall be fastened with nuts, top and bottom to cross-channel and with square washers on top of channel. Conduits shall be clamped to top for cross-channel with conduit clamps, Steel City Kindorf C-105 or Unistrut P-1111 through P-1124. Conduits shall not be stacked one on top of another, but a maximum of 2 tiers may be on same rack providing an additional cross-channel is installed. Where a pipe rack is to be longer than 24 inches, or if the supported weight exceeds 500 pounds, submit Shop Drawings of installation to the Architect for review.

21. Conduits suspended on rods more than 2 feet long shall be rigidly braced to prevent horizontal motion or swaying.

22. Factory fabricated pipe straps shall be one or 2-hole formed galvanized clamps, heavy-duty type, except where otherwise specified.

23. Hangers, straps, rods, or pipe supports under concrete shall be attached to inserts set at time concrete is placed, or with approved concrete anchors. Under wood, install bolts, lag bolts, or lag screws; under steel joists or trusses, install beam clamps. Contractor shall submit size of anchors, bolts, screws, and installation method to Architect for approval prior to start of any work.

24. Conduits shall be supported at intervals required by code, but not to exceed 10 feet. One inch and smaller exposed conduits shall be fastened with one-hole malleable iron straps. Perforated straps and plumber's tape is not permitted for the support of conduits.

25. Conduits stubbed up through a roof or facade shall be flashed with a waterproof flashing. Refer to roofing specification for additional requirements.

26. Bushings and locknuts for rigid steel conduit shall be steel threaded insulating type. Setscrew bushings are not permitted.

27. Flex conduits shall be cut square and not at an angle.

28. Routing of conduits may be changed providing length of any conduit run is not increased more than 10 percent of the length indicated on Drawings.

B. Underground Requirements:

1. Underground conduits and raceways shall be buried to a depth of not less than 24 inches below finished grade to top of the conduit envelope, unless otherwise specified.

2. Assemble sections of conduit with required fittings. Cut ends of conduit shall be reamed to remove rough edges. Joints in conduits shall be provided liquid-tight. Bends at risers shall be completely below surface where possible.

3. The architect or engineer will observe underground installations before and during conduit placement. A mandrel shall be drawn through each run of conduit in presence of the architect or engineer before and after placement. Mandrel shall be 6 inches in length minimum, and have a diameter that is within 1/4 inches of diameter of conduit to be tested.

4. Non-metallic conduit installations shall comply with following additional requirements. Joints in PVC conduit shall be sealed by means of required solvent-weld cement supplied by conduit manufacturer. Non-metallic conduit bends and deflections shall comply with requirements of applicable electrical code, except that minimum radius of any bend or offset for conduits sized from 1/2 inch to 1-1/2 inches inclusive shall not be less than 24 inches. Bends at risers and risers shall be galvanized, rigid steel conduit. Conduits below slab shall be painted with epoxy, resin paint.

5. All below grade non-metallic conduits shall have galvanized, rigid steel 90’s painted epoxy, resin paint.

6. Furnish and install a 6-inch wide, polyethylene, red underground barrier type 12 inches above full length of conduits reading, "CAUTION ELECTRIC LINE BURIED BELOW".

7. Underground conduit systems provided for utility companies shall be furnished to meet the requirements of the utility companies requiring service.

8. Protect inside of conduit and raceway from dirt and rubbish during construction by capping openings.

9. Add bell-end bushings for conduit stub-up including underground entries to pull boxes, and manholes. Under floor standing switchboards and motor control centers provide a 4” galvanized nipple with ground bushing.

10. Underground conduit for systems operating above 600 volts shall be a minimum size of 4 inches.

11. All underground conduits and raceways shall be swabbed prior to wire pull.

C. General Installation Requirements for Computer Network System Conduits:

1. Location of outlet boxes and equipment on Drawings is approximate, unless dimensions are indicated. Drawings shall not be scaled to determine position and routing of

wireways, drops, and outlet boxes. Location of outlet boxes and equipment shall conform to architectural features of the building and other Work already in place and must be ascertained in the field before start of Work.

2. The maximum pulling tensions of the specified cables shall not be exceeded and proper radius of cable bends shall be maintained.

3. For computer network wiring, conduit types shall be limited to rigid metal conduit, electrical metallic tubing, schedule 40 PVC, multi-cell raceways, and flexible metallic conduit for lengths less than 6 feet.

4. Interior section of conduit run shall be not longer than 100 feet and shall not contain more than 2 bends of 90 degrees between pull points or pull boxes.

5. The inside radius of a conduit bend shall be at least 6 times the internal diameter of the conduit. When the conduit size is greater than 2 inches, the inside radius shall be at least 10 times the internal diameter of the conduit. For fiber-optic cable, the inside radius of a conduit bend shall be at least 10 times the internal diameter of the conduit.

6. Conduit shall be sized in accordance with Table 4.4-1 of EIA/ TIA 569 standard.

7. Splicing or terminating cables in pull boxes is not permitted.

8. For indoor application, a pull box shall be provided in conduit run where:

    a. The length is over 100 feet.

    b. There are more than 2 bends of 90 degrees.

    c. There is a reverse bend in the run.

9. Boxes shall be provided in a straight section of conduit and shall not be installed in lieu of a bend. The corresponding conduit ends are to be aligned with each other. Conduit fittings shall not be installed in place of pull boxes.

10. Where a pull box is provided with raceways, pull box shall comply with the following:

    a. For straight pull-through, provide a length of at least 8 times the trade-size diameter of the largest raceway.

    b. For angle and U-pulls:

        1) Provide a distance between each raceway entry inside the box and the opposite wall of the box of at least 6 times the trade-size diameter of the largest raceway, this distance being increased by the sum of the trade-size diameters of the other raceways on the same wall of the box.

        2) Provide a distance between the nearest edges of each raceway entry enclosing the same conductor of at least:

            a) Six times the trade-size diameter of the raceway; or

            b) Six times the trade-size diameter of the larger raceway if they are of different size.

            c) For a raceway entering the wall of a pull box opposite to a removable cover, provide a distance from the wall to the cover of not less than the trade-size diameter of the largest raceway plus 6 times the diameter of the largest conductor.

11. Drawings generally indicate Work to be installed, but do not indicate all bends, transitions of special fittings required to clear beams, girders or other Work already in place. Investigate conditions where conduits and wireways are to be installed, and furnish and install required fittings.

D. Concrete Walls, Beams, and Floors: Provide sleeves where conduits pierce concrete walls, beams, and floors, except floor slabs on grade. Sleeves shall provide 1/2 inch clearance around conduits. Sleeves shall not extend beyond exposed surfaces of concrete and shall be securely fastened to forms. Provide fire caulk materials as required. Where conduits pass through walls below grade, caulk with required sealant and backer materials between conduit and sleeve to provide a watertight joint.

3.02 INSTALLATION AND SUPPORT OF BOXES

A. Install outlet boxes flush with finished surface of wall or ceiling. Install plumb and securely fastened to structure, independent of conduit. Except where otherwise indicated, provide factory-fabricated bar hangers to support outlet boxes. When installation is performed in fire rated walls, maintain the wall's rating integrity by means of approved fire stop methods.

B. Do not install junction boxes back-to-back in walls. Maintain a minimum of 4" separation measured edge-to-edge between boxes. Where separation is not possible, install sound proofing material in boxes to minimize noise transfer between rooms. In fire rated walls, boxes may be no larger than 4" x 4" and are to be separated 24" minimum, measured edge-to-edge.

C. Outlet boxes installed in suspended or furred ceilings with steel runner or furring channels shall be supported.

D. Heights of outlets and equipment indicated on Drawings shall govern. In absence of such indications and if applicable to the project, the following heights shall be maintained with heights measured to centerline unless otherwise noted:

1. Install wall-mounted telephones, light switches, other switches, 48 inches above finished floor. Refer to other Division 26 Sections.

2. Install power receptacle outlets, telephone outlets, and data outlets 18 inches above finished floor.

3. Install panelboards and terminal cabinets 6 feet-6 inches from finish floor to top of cabinet.

3.03 COVER PLATES

A. Provide a plate on each outlet device as indicated or required. Plates shall be of stainless steel unless otherwise specified. Any unused device shall have a Stainless Steel blank cover.

B. Flush wiring device and system outlets indicated to be blank covered, shall be covered with blank stainless steel plates. Flush lighting outlets to be blanked shall be covered with decorative, blank cover plates, painted to match surrounding finish. Provide stainless steel covers to blank indicated or required surface-mounted outlets.

C. In the following cases, and at required locations. Switch and receptacle plates shall be engraved with the device(s), or fixtures being controlled, or as indicated:.

1. Three-gang and larger gang switches.

2. Switches so located that operator cannot see fixtures, or items of equipment controlled while his hand is on the switch.

3. Switches not in same room with fixtures or items of unit heaters, air curtains, fly fans, etc.

4. Receptacles operating at other than 120 V shall be labeled with the operating voltage.

5. Where indicated on Drawings.

D. Designations shall be as indicated on Drawings or as specified by Architect.

3.04 IDENTIFICATION OF CIRCUITS AND EQUIPMENT

A. Provide descriptive nameplates or tags permanently attached to panelboards, circuit breakers, disconnect switches, starters, pushbutton control stations and other apparatus installed for operation or control of circuits.

B. Provide nameplates of engraved laminated plastic, or etched metal. Submit Shop Drawings denoting dimensions and format to Architect before installation. Fasten to equipment with escutcheon pins, rivets, self-tapping screws, or machine screws. Self-adhering or adhesive backed nameplates are not permitted.

C. Fasten tags to feeder wiring in conduits at every point where runs are broken or terminated, including pull wires in empty conduits. Indicate circuit, phase, and function. Tag branch circuits in panel boards. Tags may be manufactured of pressure-sensitive plastic or embossed self-attached stainless steel or brass ribbon.

D. Provide circuit identification cards and cardholders in all panel boards. Cardholders shall consist of metal frame retaining a clear plastic cover permanently attached to inside of panel door. List of circuits shall be typewritten on a card. Circuit description shall include name or number of circuit, area and connected load.

E. Junction and pull boxes shall have covers stenciled with box number when indicated on Drawings, or circuit numbers according to panel schedules. Data shall be lettered in a visible manner with a color contrasting with finish.

F. Name shall be correctly engraved, with a legend indicating function or areas, when required by codes or indicated on Drawings.

G. Provide wire marker indicating circuit number for each conductor located within each electrical panel, large junction box or trough, etc.

3.05 PROTECTION

A. Protect Work of this section until Substantial Completion.

3.06 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

END OF SECTION

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section

B. Section Includes:

1. Receptacles
2. Coverplates

C. Related Sections:

1. Section 26 01 00: Basic Electrical Requirements.

1.02 SUBMITTALS

A. Provide in accordance with Division 01.

B. Shop Drawings:

a. Include manufacturer's cut sheets for each type device being installed listing description, manufacturer, and part number.

b. Include manufacturer's cut sheets for each device coverplate being installed listing description, manufacturer, and part number.

C. Installation Instructions: Submit manufacturer's written installation instructions including any warning labels and instruction manuals.

1.03 QUALITY ASSURANCE

A. Receptacles shall comply with NEMA WD 1, NEMA WD 6, and UL 498.

B. Switches shall comply with NEMA WD 1 and UL 20.

PART 2 - PRODUCTS

2.01 RECEPTACLES AND SWITCHES

A. Receptacles:

1. Color: Coordinate with architect

2. Duplex receptacles shall be heavy-duty specification grade, grounding type. Terminal screws shall be back and side wired with internal screw pressure plates. Mounting strap shall feature heavy-duty brass construction. Receptacle back body shall be PVC. Receptacle face shall be impact resistant nylon. Receptacles shall have triple wipe brass power contacts.

NEMA #	Pass & Seymour	Hubbell	Leviton
NEMA 5-20	PS5362	HBL5362	5362

3. Provide specification grade ground-fault circuit interrupter (GFCI) type receptacles in accordance with UL standards. GFCI receptacles shall have a trip indication light. Receptacle terminal screws shall be back and side wire with internal screw pressure

plates. Test and reset buttons shall match device body in color. GFCI receptacles shall be manufactured in standard configuration for installation with stainless steel smooth plates.

NEMA #	Pass & Seymour	Hubbell	Leviton
(20 amps) NEMA 5-20R	2094	GFR5352	8898

4. Exterior mounted receptacles shall be mounted inside weatherproof enclosure. Provide weather resistant receptacles stamped “WR”, except where otherwise indicated or specified, consisting of GFCI receptacles, as specified herein, and metal plates with die-cast hinged, "in-use" covers and weatherproof mats.

5. Receptacles within 6 feet of water fountains, counter tops, or any sources of water shall be GFCI type.

6. Single receptacles shall be heavy-duty specification grade, grounding type. Terminal screws shall be back and side wire with internal screw pressure plates. Mounting strap shall feature heavy-duty brass construction. Receptacle back body shall be thermoplastic. Receptacle face shall be impact resistant nylon. Receptacles shall have triple wipe brass power contacts. For circuits consisting of one single receptacle only, ampere rating of receptacle shall be same as circuit breaker or fuse.

NEMA #	Pass & Seymour	Hubbell	Leviton
(20 amps) NEMA 5-20R	5361	HBL5361	5361

7. For equipment receptacles, provide 2-wire or 3-wire, grounding type, rated 30 or 50 amps at 125/250 volts, NEMA rating as noted on drawings or as required for equipment, with 2-gang stainless steel plates.

PART 3 - EXECUTION

3.01 INSTALLATION OF DEVICES

A. Installation shall be in accordance with the NEC and as shown as on the drawings.

B. Ground terminal of each receptacle shall be bonded to the outlet box with an approved green bonding jumper, and also connected to the green equipment grounding conductor.

C. Ensure that devices and their boxes are protected until completion of project.

D. Do not install junction boxes back-to-back in walls. Maintain a minimum of 4" separation measured edge-to-edge between boxes. Where separation is not possible, install sound proofing material in boxes to minimize noise transfer between rooms. In fire rated walls, boxes may be no larger than 4" x 4" and are to be separated 24" minimum, measured edge-to-edge.

E. Do not cut holes for boxes with routers that are designed to ride along the inside of device back box. Replace any damaged wiring from router cut outs.

F. Keep outlet boxes free of plaster, drywall compounds, mortar, cement, paint, dust, or other materials that may contaminate the devices, conduits, wiring, cables, etc.

G. Install device boxes in brick or block walls so the cover plate does not cross a joint unless the joint is toweled flush with the face of the wall.

H. Cut outs around device boxes shall be completed such that a standard faceplate completely covers the cut out. Walls shall be patched accordingly where oversize cut outs occur.

I. Install proper size and depth tile extension rings at outlet back boxes based on wall types and thickness.

J. Do not install wiring devices until all wall preparation, painting, finishing, is complete.

K. Do not strip insulation from wiring until devices are being installed.

L. Replace any devices that have been damaged or show signs of use during construction phase of project before finishes were complete.

M. Keep devices in their package or protected until time of installation.

N. Connect devices using pigtail connections of not less than 6". Where conductors larger than #12 AWG have been installed, use #12 AWG for pigtail connections to devices.

O. Remove fiber or plastic washers prior to installation to ensure metal-to-metal contact.

P. Provide barriers in multigang outlet boxes to separate systems of different voltages, Normal Power and Emergency Power systems, and in compliance with the NEC.

Q. Coordinate with other work, including painting, electrical boxes and wiring installations, as necessary to interface installation of wiring devices with other work. Coordinate the electrical work with the work of other trades to ensure that wiring device flush outlets are positioned with box openings aligned with the face of the surrounding finish material. Pay special attention to installations in cabinet work, and in connection with laboratory equipment.

R. Exact field locations of floors, walls, partitions, doors, windows, and equipment may vary from locations shown on the drawings. Prior to locating sleeves, boxes and chases for roughing-in of conduit and equipment, the Contractor shall coordinate exact field location of the above items with other trades. In addition, check for exact direction of door swings so that local switches are properly located on the strike side.

S. Test wiring devices for damaged conductors, high circuit resistance, poor connections, inadequate fault current path, defective devices, or similar problems using a portable receptacle tester. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.

T. Test GFCI devices for tripping values specified in UL 1436 and UL 943.

U. Heights of outlets and equipment indicated on Drawings shall govern. In absence of such indications and if applicable to the project, the following heights shall be maintained with heights measured to centerline unless otherwise noted:

1. Install power receptacle outlets, telephone outlets, and data outlets as noted on drawings.

3.02 COVER PLATES

A. Provide a plate on each outlet device as indicated or required. Plates shall be of stainless steel unless otherwise specified.

B. Flush wiring device and signal system outlets indicated to be blank covered, shall be covered with blank stainless steel plates. Flush lighting outlets to be blanked shall be covered with decorative, blank cover plates, painted to match surrounding finish. Provide stainless steel covers to blank indicated or required surface-mounted outlets. All flush wiring device and outlets that are not utilized, shall have a blank cover plate.

3.03 PROTECTION

A. Protect Work of this section until Substantial Completion.

3.04 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

END OF SECTION

SECTION 26 51 00

LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of the General and Supplementary Conditions and Division 01 apply to this section.

B. Section Includes: Furnishing and installing lighting fixtures, including lamps, ballasts/drivers, wiring, and lighting controls.

C. Light fixtures model numbers were determined at the time this specification was written; model numbers may need to be modified, or may require the addition or deletion of options to fully meet specification requirements.

D. Related Sections:

1. Section 26 01 00: Basic Electrical Requirements

2. Section 26 05 33: Raceway and Boxes for Electrical Systems.

1.02 SUBMITTALS

A. Provide in accordance with Division 01.

B. List of Materials: Submit a complete list of materials proposed for this section.

C. Shop Drawings: Provide detailed and dimensioned Shop Drawings or manufacturer’s data sheet with specific model and part numbers indicating kind, weight and thickness of materials, method of fitting and fastening parts together, location and number of sockets, size of lamps, and complete details of method of fitting suspension and fastening fixtures in place.

D. Submittals must comply with contract general provisions.

1.03 MOUNTING REQUIREMENTS

A. Design of lighting fixtures, accessories, supports, and method of fixture installation shall comply with requirements of ceiling type which fixture is installed.

B. Provide suspension points at no more than 2 feet from fixture ends. Spacing between supports shall not exceed 8 feet.

C. For fixtures mounted in grid ceiling, provide fixture supports at all (4) corners of the fixture independent of ceiling grid system, or manufacturer’s approved ceiling support system.

1.04 QUALITY ASSURANCE

A. Components and fixtures shall be listed and approved for the intended application by Underwriter's Laboratories (UL), or other Nationally Recognized Testing Laboratory (NRTL).

B. Owners approval shall be obtained for any equipment or materials substitutions.

1.05 GUARANTEE

A. Provide a 1 year labor warranty.

B. Provide material warranty as specified:

1. Lamps: 1 years

2. Ballasts/Drivers: 5 years

C. Warranty period begins at substantial completion or project acceptance for beneficial occupancy.

PART 2 - PRODUCTS

2.01 MATERIAL AND FABRICATION

A. Lighting fixtures shall be the type indicated on Drawings and as specified. Fixtures of same type shall be of one manufacturer.

B. Fixtures shall be of the types and manufacturers described in the Luminaire Schedule of the Drawings, with lamps, wattage and voltage as indicated. Alternate fixtures must be submitted for approval minimum 2 weeks prior to project bid date.

C. All fixtures shall be baked-on enamel or powder-coated, unless otherwise specified in subsections below.

2.02 LAMPS AND BALLASTS/DRIVERS

A. LED Fixtures, Driver, and Characteristics

1. LED Fixture

a. Cast aluminum heat sink integrated directly with housing.

b. Replaceable PC board with quick connects.

c. High lumen output LED's with 50,000 hours life expectancy.

d. No lead or mercury.

2. Optics System

a. Computer-optimized internal reflector with specular finish with diffusing lens to conceal the LED's for uniform luminance.

b. Low glare, lumens as noted on drawings.

3. LED Driver

a. Non-dimming and/or optical 0-10V dimming driver accommodating 120 or 277 volts AC at 60 Hz.

b. Power factor 0.9 minimum.

c. Driver to accept 120 or 277 volts AC.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install a lighting fixture for each lighting outlet indicated and mark new ballasts/drivers with day of installation.

B. Fixture voltage shall be as indicated on Drawings.

C. Install recessed and surface-mounted fixtures, with plaster frames compatible with ceiling and wall systems employed; secure fixtures mechanically to frames.

D. Align rows of suspended and surface-mounted fixtures to form straight lines at uniform elevations.

E. Recessed fixtures shall fit snugly against ceilings to prevent light leakage.

F. Support suspended recessed fixtures in T-bar ceilings. Fixture installation shall be coordinated with acoustical ceiling installation.

G. Where emergency battery packs are installed, provide constant hot for emergency fixtures. Unless noted otherwise, when powering unit inverter power packs, use the same circuit that powers the switched ballast/driver to power the inverter.

H. Where emergency ballast(s)/driver(s) are specified within the fixture, provide constant hot for the ballast(s)/driver(s). Nonemergency ballasts/drivers within the same fixture shall be switched as indicated, unless noted otherwise.

I. Surface mount fixtures shall be attached to structure. Toggle bolts are NOT permitted. Provide backing where required.

3.02 TESTING

A. Check and adjust fixtures for required illumination.

B. Replace defective lamps and ballasts/drivers.

C. Test and adjust lighting control equipment for proper operation.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.04 CLEANUP

A. Remove rubbish, debris, and waste materials from all areas of work each day.

B. Clean fixture surfaces of dirt, cement, plaster and debris. Furnish cleansers compatible with material surfaces being cleaned.

3.05 HAZARDOUS WASTE DISPOSAL

A. All hazardous waste disposal shall be handled and disposed of by an approved, licensed contractor.

B. Any and all ballasts are assumed to contain PCB unless clearly marked “NO PCB.”

C. Place ballasts and lamps in appropriate containers provided by hazardous waste contractor labeled clearly with:

1. Project Name

2. Quantity of lamps

3. Date lamps became waste

D. Store, remove, transport and dispose of hazardous materials in all accordance with state and federal regulations.

E. Provide Owner with copy of manifest and certificate of destruction.

END OF SECTION

SECTION 26 56 00

EXTERIOR SITE LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of the General and Supplementary Conditions and Division 01 apply to this section.

B. Section Includes: Furnishing and installing lighting poles and fixtures, including lamps, ballasts/drivers, wiring, and lighting controls.

C. Light fixtures model numbers were determined at the time this specification was written; model numbers may need to be modified, or may require the addition or deletion of options to fully meet specification requirements.

D. Related Sections:

1. Section 26 01 00: Basic Electrical Requirements
2. Section 26 05 19: Low Voltage Electrical Power Conductors
3. Section 26 05 26: Grounding and Bonding for Electrical Systems
4. Section 26 05 33: Raceway and Boxes for Electrical Systems

1.02 SUBMITTALS

A. Provide in accordance with Division 01.

B. List of Materials: Submit a complete list of materials proposed for this section.

C. Shop Drawings:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. Provide detailed and dimensioned Shop Drawings or manufacturer's data sheet with specific model and part numbers indicating kind, weight and thickness of materials, method of fitting and fastening parts together, location and number of sockets, size of lamps, and complete details for mounting and installation.
3. Include electrical ratings, dimensions, mounting, details, materials, required clearances, terminations, wiring and connection diagrams, photometric data, ballasts, poles, luminaries, lamps and controls.

D. Submittals must comply with contract general provisions.

1.03 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

1. Aluminum Association Inc. (AA):
2. American Association of State Highway and Transportation Officials (AASHTO):
3. American National Standards Institute (ANSI):
4. American Society for Testing and Materials (ASTM):

5. Federal Aviation Administration (FAA):

6. Illuminating Engineering Society of North America (IESNA)

7. National Electrical Manufacturers Association (NEMA):

8. National Fire Protection Association (NFPA):

9. Underwriters Laboratories, Inc. (UL):

1.04 DELIVERY, STORAGE, AND HANDLING

A. Provide manufacturer's standard provisions for protecting pole finishes during transport, storage, and installation.

B. Do not store poles on ground. Store poles so they are at least one foot above ground level and growing vegetation. Do not remove factory-applied pole wrappings until just before installing pole.

1.05 QUALITY ASSURANCE

A. Components and fixtures shall be listed and approved for the intended application by Underwriter's Laboratories (UL), or other Nationally Recognized Testing Laboratory (NRTL).

B. Owners approval shall be obtained for any equipment or materials substitutions.

1.06 GUARANTEE

A. Provide a 1 year labor warranty.

B. Provide material warranty as specified:

1. Lamps: 1 years

2. Ballasts/Drivers: 5 years

3. Standards: 1 year

C. Warranty period begins at substantial completion or project acceptance for beneficial occupancy.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment shall be in accordance with NEC, UL, ANSI, and as shown on the drawings and specified.

2.02 POLES

A. General:

1. Poles shall be as shown on the drawings, and as scheduled. Finish shall be as specified on the drawings.

2. The pole and arm assembly shall be designed for wind loading of 150 miles per hour, supporting luminaire(s) having the effective projected areas indicated. The effective projected area of the pole shall be applied at the height of the pole base as shown on the drawings.

3. Poles shall be embedded anchor-bolt type designed for use with underground supply conductors. Poles shall have oval-shaped handhole having a minimum clear opening of 2.5 by 5 inches. Handhole cover shall be secured by stainless steel captive screws.
4. Provide a steel-grounding stud opposite hand hole openings.
5. Base shall be fabricated from structural quality materials, circumferentially welded to shaft
6. Base cover shall be 2-piece, heavy wall construction and shall entirely conceal the anchor base, same color as the pole.
7. Anchorage shall be by 3/4" fully galvanized anchor bolts, each supplied with (2) nuts and (2) washers. Anchor bolt lengths shall be as recommended by manufacturer, minimum 30".
8. Hardware: All necessary hardware shall be 300 series stainless steel.

B. Types:

1. Aluminum: Provide aluminum poles manufactured of corrosion resistant AA AAH35.1 aluminum alloys conforming to AASHTO LTS-4 for Alloy 6063-T6 or Alloy 6005-T5 for wrought alloys, and Alloy 356-T4 (3,5) for ASTM B108-03 cast alloys. Poles shall be seamless extruded or spun seamless type. Provide a pole grounding connection designed to prevent electrolysis when used with copper ground wire. Base covers for aluminum poles shall be cast from 356-T6 aluminum alloy in accordance with ASTM B108-03.

2.03 FOUNDATIONS FOR POLES

A. Foundations shall be cast-in-place concrete.

B. Foundations shall support the effective projected area of the specified pole, arm(s), and luminaire(s) under wind conditions previously specified in this section.

C. Place concrete in spirally wrapped treated paper forms for round foundations, and construct forms for square foundations.

D. Rub-finish and round all above-grade concrete edges to approximately 1/4 inch radius.

E. Concrete shall have 3000 psi minimum 28 day compressive strength.

F. Anchor bolt assemblies and reinforcing of concrete foundations shall be as shown on the drawings. Anchor bolts shall be 3/4” diameter by 30” long minimum in a welded cage or properly positioned by tie wire to steel reinforcing.

G. Prior to concrete pour, install a copperclad steel ground rod, not less than 3/4-inch diameter by 10 feet long, below or next to each foundation. Drive the rod vertically under the foundation to a minimum of 24 inches below grade. Bond the rod to the pole with not less than number 6 AWG bare copper wires. The method of bonding shall be approved for the purpose.

H. Where noted on drawings provide and install cast boxes at pole bases for poles with camera mounts, boxes shall be cast with weatherproof removable doors. Boxes shall be NEMA 4X. Carlon E1212C24 (or equal) with dividers for low voltage and (1) 20 amp duplex receptacle inside of each box.

I. Poles noted for camera installation shall have hand-holes and/or threaded provisions for future camera installations.

2.04 LUMINAIRES

A. UL 1598 and NEMA C136.17. Luminaries shall be weatherproof, heavy duty, outdoor types designed for efficient light utilization, adequate dissipation of lamp and ballast heat and safe cleaning and relamping where required.

B. Light distribution pattern types shall be as shown on the drawings.

C. Incorporate ballasts/drivers in the luminaire housing except where otherwise shown on the drawings.

D. Lenses shall be frame-mounted heat-resistant, borosilicate glass, prismatic refractors. Attach the frame to the luminaire housing by hinges or chain. Use heat and aging resistant resilient gaskets to seal and cushion lenses and refractors in luminary doors.

E. Pre-wire internal components to terminal strips at the factory.

F. Bracket mounted luminaries shall have leveling provisions and clamp type adjustable slip-fitters with locking screws.

G. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.

2.05 LAMPS

A. Lamp source shall be LED as noted on drawings.

2.06 BALLASTS OR DRIVERS

A. LED Fixtures, Driver, and Characteristics

1. LED Fixture
    a. Cast aluminum heat sink integrated directly with housing.
    b. Replaceable PC board with quick connects.
    c. High lumen output LED's with 50,000 hours life expectancy.
    d. No lead or mercury.
2. Optics System
    a. Computer-optimized internal reflector with specular finish with diffusing lens to conceal the LED's for uniform luminance.
    b. Low glare, lumens as noted on drawings.
3. LED Driver
    a. Non-dimming driver accommodating voltage as noted on drawings at 60 Hz.
    b. Power factor 0.9 minimum.

2.07 CONTROLS

A. Each Lighting System:

1. Shall be controlled by one of the following methods as shown for each system on the drawings:
    a. A photocell to act as the pilot device. The photocell shall be the type which fails safe to the closed position meeting UL 773 or 773A.

2. Mount and connect photocells for operation.
3. Photocells shall have the following features:
    a. Quick-response, cadmium-sulfide type.
    b. A 15 to 30 second, built-in time delay to prevent response to momentary lightning flashes, car headlights or cloud movements.
    c. Energizes the system when the north sky light decreases to approximately 1.5 footcandles, and maintains the system energized until the north sky light increases to approximately 3 to 5 foot candles.

2.09 EXISTING LIGHTING SYSTEMS

A. For modifications or additions to existing lighting systems, the new components shall be compatible with the existing systems.

B. Provide all new fixtures and lighting standards as noted. Connect site lighting standards to existing circuits and modify electrical connections on interior of building to bypass existing control measures.

C. Existing building mounted lighting shall be connected to existing exterior lighting circuits unless noted otherwise.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install lighting in accordance with the NEC, as shown on the drawings, and in accordance with manufacturer's recommendations.

B. Poles:
    1. Provide pole foundations as detailed on drawings. Provide galvanized nuts, washers, and ornamental covers for anchor bolts. Adjust poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.
    2. After the poles have been installed, shimmed and plumbed, grout the spaces between the pole bases and the concrete base with non-shrink concrete grout material. Poles shall be install level and plumb.

C. Foundation Excavation: Depth shall be as indicated. Dig holes large enough to permit the proper use of tampers to the full depth of the hole. Place backfill in the hole in 6 inch maximum layers and thoroughly tamp. Place surplus earth around the pole in a conical shape and pack tightly to drain water away.

D. Photocell Switch Aiming: Aim switch according to manufacturer's recommendations.

3.02 GROUNDING

A. Ground noncurrent-carrying parts of equipment including metal poles, luminaries, mounting arms, brackets, and metallic enclosures. Where copper grounding conductor is connected to a

metal other than copper, provide specially treated or lined connectors suitable and listed for this purpose.

3.03 TESTING

A. Check and adjust fixtures for required illumination.

B. Replace defective lamps and drivers/ballasts.

C. Test and adjust lighting control equipment for proper operation.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 CLEANUP

A. Remove rubbish, debris, and waste materials from all areas of work each day.

B. Clean fixture and pole surfaces of dirt, cement, plaster, debris, etc. Furnish cleansers compatible with material surfaces being cleaned.

END OF SECTION

SECTION 28 05 00

COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section, Common Work Results for Electronic Safety and Security (ESS), applies to all sections of Division 28.

B. Furnish and install fully functional electronic security, video surveillance system, complete with racks, cameras, switches, wiring, electronic components, power supplies, and all apparatus required for a fully functional system. Capacities of the system and ratings of cable and other items and arrangements for the specified items shall be as noted in this specification. Details of installations are to be determined by specific vendor.

C. Section Includes:

1. Description of Work for Security Surveillance Systems,
2. Electronic security equipment coordination with relating Divisions,
3. Submittal Requirements for Security Surveillance Systems,
4. Miscellaneous Supporting equipment and materials for Security Surveillance Systems,
5. Security Surveillance Systems installation requirements.

1.02 RELATED WORK

A. GENERAL REQUIREMENTS. For General Requirements.

B. FIRESTOPPING. Requirements for firestopping application and use.

C. CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY. Requirements for conductors and cables.

D. GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY. Requirements for grounding of equipment.

E. CONDUITS AND BOXES FOR ELECTRONIC SAFETY AND SECURITY. Requirements for infrastructure.

F. VIDEO SURVEILLANCE. Requirements for security camera systems.

1.03 DEFINITIONS

A. AGC: Automatic Gain Control.

B. BICSI: Building Industry Consulting Service International.

C. CCD: Charge-coupled device.

D. Central Station: A PC with software designated as the main controlling PC of the security access system. Where this term is presented with initial capital letters, this definition applies.

E. Controller: An intelligent peripheral control unit that uses a computer for controlling its operation. Where this term is presented with an initial capital letter, this definition applies.

F. CPU: Central processing unit.

G. EMI: Electromagnetic interference.

H. EMT: Electric Metallic Tubing.

I. File Server: A PC in a network that stores the programs and data files shared by users.

J. GFI: Ground fault interrupter.

K. I/O: Input/Output.

L. LAN: Local area network.

M. LCD: Liquid-crystal display.

N. LED: Light-emitting diode.

O. Location: A Location on the network having a PC-to-Controller communications link, with additional Controllers at the Location connected to the PC-to-Controller link with RS-485 communications loop. Where this term is presented with an initial capital letter, this definition applies.

P. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.

Q. M-JPEG: Motion – Joint Photographic Experts Group.

R. MPEG: Moving picture experts group.

S. NEC: National Electric Code

T. NEMA: National Electrical Manufacturers Association

U. NFPA: National Fire Protection Association

V. NTSC: National Television System Committee.

W. NRTL: Nationally Recognized Testing Laboratory.

X. Open Cabling: Passing telecommunications cabling through open space (e.g., between the studs of a wall cavity).

Y. PC: Personal computer. This acronym applies to the Central Station, workstations, and file servers.

Z. PDF: (Portable Document Format.) The file format used by the Acrobat document exchange system software from Adobe.

AA. RCDD: Registered Communications Distribution Designer.

BB. RFI: Radio-frequency interference.

CC. RS-232: An TIA/EIA standard for asynchronous serial data communications between terminal devices. This standard defines a 25-pin connector and certain signal characteristics for interfacing computer equipment.

DD. RS-485: An TIA/EIA standard for multipoint communications.

EE. TCP/IP: Transport control protocol/Internet protocol incorporated into Microsoft Windows.

FF. UPS: Uninterruptible Power Supply

GG. UTP: Unshielded Twisted Pair

HH. Workstation: A PC with software that is configured for specific limited security system functions.

1.04 QUALITY ASSURANCE

A. Manufacturers Qualifications: The manufacturer shall regularly and presently produce, as one of the manufacturer's principal products, the equipment and material specified for this project, and shall have manufactured the item for at least three years.

B. Product Qualification:

1. Manufacturer's product shall have been in satisfactory operation, on three installations of similar size and type as this project, for approximately three years.

2. The architect reserves the right to require the Contractor to submit a list of installations where the products have been in operation before approval.

C. Contractor Qualification:

1. The Contractor or video surveillance sub-contractor shall be a licensed Contractor with a minimum of five (5) years experience installing and servicing systems of similar scope and complexity. The Contractor shall be an authorized regional representative of the proposed components. The Contractor shall provide three (3) current references from clients with systems of similar scope and complexity which became operational in the past five (5) years. At least two (2) of the references shall be utilizing the same system components, in a similar configuration as the proposed system. The references must include a current point of contact, company or agency name, address, telephone number, complete system description, date of completion, and approximate cost of the project. The owner reserves the option to visit the reference sites, with the site owner's permission and representative, to verify the quality of installation and the references' level of satisfaction with the system. The Contractor shall provide copies of system manufacturer certification for all technicians. The Contractor shall only utilize factory-trained technicians to install, program, and service the equipment. The Contractor shall only utilize factory-trained technicians to install, terminate and service controller/field components. The technicians shall have a minimum of five (5) continuous years of technical experience in electronic security/surveillance systems. The Contractor shall have a local service facility. The facility shall be located within [100] miles of the project site. The local facility shall include sufficient spare parts inventory to support the service requirements associated with this contract. The facility shall also include appropriate diagnostic equipment to perform diagnostic procedures. The architect reserves the option of surveying the company's facility to verify the service inventory and presence of a local service organization.

2. The Contractor shall provide proof the project superintendent has vendor required credentials and is certified to install all equipment.

D. Service Qualifications: There shall be a permanent service organization maintained or trained by the manufacturer which will render satisfactory service to this installation within (8) hours of receipt of notification that service is needed. Submit name and address of service organizations.

1.05 GENERAL ARANGEMENT OF CONTRACT DOCUMENTS

A. The Contract Documents supplement to this specification indicates approximate locations of equipment. The installation and/or locations of the equipment and devices shall be governed by the intent of the design; specification and Contract Documents, with due regard to actual site conditions, recommendations, ambient factors affecting the equipment and operations in the vicinity. The Contract Documents are diagrammatic and do not reveal all offsets, bends, elbows, components, materials, and other specific elements that may be required for proper installation. If any departure from the contract documents is deemed necessary, or in the event of conflicts, the Contractor shall submit details of such departures or conflicts in writing to the architect for his or her comment and/or approval before initiating work.

B. Anything called for by one of the Contract Documents and not called for by the others shall be of like effect as if required or called by all, except if a provision clearly designed to negate or alter a provision contained in one or more of the other Contract Documents shall have the intended effect. In the event of conflicts among the Contract Documents, the Contract Documents shall take precedence in the following order: the Form of Agreement; the Supplemental General Conditions; the Special Conditions; the Specifications with attachments; and the drawings.

1.06 SUBMITTALS

A. Submit in accordance with Sections of these documents. Provide SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. The Architect's approval shall be obtained for all equipment and material before delivery to the job site. Delivery, storage or installation of equipment or material which has not had prior approval will not be permitted at the job site.

C. Submittals for individual systems and equipment assemblies which consist of more than one item or component shall be made for the system or assembly as a whole. Partial submittals will not be considered for approval.

1. Mark the submittals, "SUBMITTED UNDER SECTION_____".
2. Submittals shall be marked to show specification reference including the section and paragraph numbers.
3. Submit each section separately.

D. The submittals shall include the following:

1. Information that confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required.
2. Vendor/Contractor shall Submit a complete system design including but not limited to: Cameras as required to provide best coverage for areas being installed, NVR(s) as required for video storage, racks for equipment, POE switch devices as required for camera connections, monitoring equipment, wiring specifics, and complete wiring details for the entire systems. Contractor shall provide complete designed, installation drawings showing all necessary equipment and wiring diagrams for the complete installation. Contractor may request architectural and electrical background drawings to complete design and shop drawings. Vendor and/or contractor shall be responsible for wiring routes and installation types based on existing ceilings, walls, etc. All wiring is intended to be installed concealed either above ceiling or in conduits, raceways. All wiring installed above ceilings, “open-air” shall be plenum rated (rated for use in open ceiling installations).
3. Parts list which shall include those replacement parts recommended by the equipment manufacturer, quantity of parts, current price and availability of each part.

E. Submittals shall be in full compliance of the Contract Documents. All submittals shall be provided in accordance with this section. Submittals lacking the breath or depth these requirements will be considered incomplete and rejected. Submissions are considered multidisciplinary and shall require coordination with applicable divisions to provide a complete and comprehensive submission package. All submittals shall include adequate descriptive literature, catalog cuts, shop drawings and other data necessary for the architect/engineer to ascertain that the proposed equipment and materials comply with specification requirements. Catalog cuts submitted for approval shall be legible and clearly identify equipment being submitted. Additional general provisions are as follows:

1. The Contractor shall schedule submittals in order to maintain the project schedule.
2. The Contractor shall identify variations from requirements of Contract Documents and state product and system limitations, which may be detrimental to successful performance of the completed work or system.
3. Each package shall be submitted at one (1) time for each review and include components from applicable disciplines (e.g., electrical work, architectural finishes, door hardware, etc.) which are required to produce an accurate and detailed depiction of the project.
4. Manufacturer’s information used for submittal shall have pages with items for approval tagged, items on pages shall be identified, and capacities and performance parameters for review shall be clearly marked through use of an arrow or highlighting. Provide space for Architect and Engineer review stamps.
5. Technical Data Drawings shall be in the latest version of AutoCAD® or similar CAD program, drawn accurately/to scale, and submitted as an electronic PDF. FREEHAND SKETCHES OR COPIED VERSIONS OF THE CONSTRUCTION DOCUMENTS WILL NOT BE ACCEPTED. The Contractor shall not reproduce Contract Documents or copy standard information as the basis of the Technical Data Drawings.
6. Packaging: The Contractor shall organize the submissions according to the following packaging requirements. All submittals shall be electronic (PDF).
    a. Text Material: Where written material is required as part of the manual use the manufacturer's standard printed material, or if not available, specially prepared data, neatly typewritten on 8.5 inches by 11 inches.

b. Drawings: Where drawings and/or diagrams are required as part of the manual, provide scaled PDF drawings.

1) Drawings shall be sized to ensure details and text is of legible size. Text shall be no less than 1/16” tall.

c. Manual Content:

1) Maintenance and Operation Manuals: Submit as required for systems and equipment specified in the technical sections. Furnish one complete manual as specified in the technical section but in no case later than prior to performance of systems or equipment test.

2) Inscribe the following identification on the cover: the words "MAINTENANCE AND OPERATION MANUAL," the name and location of the system, equipment, building, name of Contractor, and contract number. Include in the manual the names, addresses, and telephone numbers of each subcontractor installing the system or equipment and the local representatives for the system or equipment.

3) The manuals shall include:

a) Internal and interconnecting wiring and control diagrams with data to explain detailed operation and control of the equipment.

b) A control sequence describing start-up, operation, and shutdown.

c) Description of the function of each principal item of equipment.

d) Installation and maintenance instructions.

e) Safety precautions.

f) Diagrams and illustrations.

g) Testing methods.

h) Performance data.

i) Pictorial "exploded" parts list with part numbers. Emphasis shall be placed on the use of special tools and instruments. The list shall indicate sources of supply, recommended spare parts, and name of servicing organization.

j) Appendix; list qualified permanent servicing organizations for support of the equipment, including addresses and certified qualifications.

d. Manufacturer’s Data: Where manufacturer's standard printed data is included in the manuals, include only those sheets that are pertinent to the part or product installed. Mark each sheet to identify each part or product included in the installation. Where more than one (1) item in tabular format is included, identify each item, using appropriate references from the Contract Documents. Identify data that is applicable to the installation and delete references to information which is not applicable.

e. Where manufacturer's standard printed data is not available and the information is necessary for proper operation and maintenance of equipment or systems, or it is necessary to provide additional information to supplement the data included in the manual, prepare written text to provide the necessary information. Organize the text in a consistent format under a separate heading for different procedures. Where necessary, provide a logical sequence of instruction for each operating or maintenance procedure. Where similar or more than one product is listed on the submittal the Contractor shall differentiate by highlighting the specific product to be utilized.

f. Certifications: Provide section for Contractor’s manufacturer certifications.

7. Contractor Review: Review submittals prior to transmittal. Determine and verify field measurements and field construction criteria. Verify manufacturer’s catalog numbers and conformance of submittal with requirements of contract documents. Return non-conforming or incomplete submittals with requirements of the work and contract documents. Apply Contractor’s stamp with signature certifying the review and verification of products occurred,

and the field dimensions, adjacent construction, and coordination of information is in accordance with the requirements of the contract documents.

8. Resubmission: Revise and resubmit submittals as required within 15 calendar days of return of submittal. Make resubmissions under procedures specified for initial submittals. Identify all changes made since previous submittal.

9. Product Data: Within 15 calendar days after execution of the contract, the Contractor shall submit for approval a complete list of all of major products proposed for use. The data shall include name of manufacturer, trade name, model number, the associated contract document section number, paragraph number, and the referenced standards for each listed product.

F. Technical Data Package: Technical Data Package shall be one submittal consisting of the following content and organization. The data package shall include the following:

1. Section I - Drawings:

a. General – Drawings shall be legible with all text associated with drawings and details shall be 1/8” tall and meet standards for AutoCAD™ drawings.

b. Cover Sheet – Cover sheet shall consist of Project Title and Address, Project Number, Area and Vicinity Maps.

c. General Information Sheets – General Information Sheets shall consist of General Notes, Abbreviations, Symbols, Wire and Cable Schedule, Project Phasing, and Sheet Index.

d. Floor Plans – Floor plans shall be produced from the Architectural backgrounds issued in the Construction Documents. The contractor shall receive floor plans from the prime A/E to develop these drawing sets. Equipment and devices shall be placed on drawings in scale. All text shall be minimum 1/8” tall. Floor plans shall identify the following:

1) Surveillance devices by symbol,

2) The associated device equipment, catalog, or reference number,

3) Wire & cable types and counts

4) Conduit sizing and routing

5) Conduit riser systems

6) Device and area detail call outs

e. Architectural details – Architectural details shall be produced for each device mounting type,

f. Riser Diagrams – Contractor shall provide a riser diagram indicating riser architecture and distribution of the system throughout the facility (or area in scope).

g. Block Diagrams – Contractor shall provide a block diagram for the entire system architecture and interconnections with subsystems. integration; and data transmission and media conversion methodologies.

h. Interconnection Diagrams – Contractor shall provide interconnection diagram for each device component. Interconnection diagram shall identify termination locations, standard wire detail to include termination schedule.

2. Camera Schedule - A camera schedule shall be developed for each camera. Contractors shall coordinate with the Owner and Engineer to determine camera starting numbers and naming conventions. All drawings shall identify wire and cable standardization methodology. Color coding of all wiring conductors and jackets is required and shall be communicated consistently throughout the drawings package submittal. At a minimum, the camera schedule shall include the following information:

a. Item Number

b. Camera Number

c. Naming Conventions

d. Description of Camera Coverage

e. Camera Location

f. Floor Plan Sheet Number

g. Camera Type

h. Mounting Type

i. Standard Detail Reference

j. Power Input & Draw

k. Power Panel Location

l. Remarks Column for Camera

3. Construction Mock-up (where necessary): In areas with exposed EMT/Conduit Raceways, contractor shall conceal raceway as much as practical and unobtrusively. In addition, historic significance must be considered to determine installation means and methods for approval by the owner. QC meetings shall be conducted in areas with exposed ceilings to discuss complete installations prior to rough-in.

4. Manufacturers' Data: The data package shall include manufacturers' data for all materials and equipment, including cameras, power supplies, switches, racks, local processors, and console equipment provided under this specification.

5. System Description and Analysis: The data package shall include system descriptions, analysis, and calculations used in sizing equipment required by these specifications. Descriptions and calculations shall show how the equipment will operate as a system to meet the performance requirements of this specification. The data package shall include the following:

   a. Central processor memory size; communication speed and protocol description; rigid disk system size and configuration; flexible disk system size and configuration; back-up media size and configuration; response time calculations; start-up operations; expansion capability and method of implementation; sample copy of each report specified; and color photographs representative of typical graphics.

   b. Software Data: The data package shall consist of descriptions of the operation and capability of the system, and application software as specified.

   c. Overall System Reliability Calculations: The data package shall include all manufacturers' reliability data and calculations required to show compliance with the specified reliability.

6. Certifications & References: All specified manufacturer's certifications shall be included with the data package. Contractor shall provide Project references as outlined in "Quality Assurance" Paragraph above.

G. Technical Data Package "Site Conditions"

1. The Successful Contractor shall prepare a report of "Current Site Conditions" and submit a report to the Architect/Engineer documenting changes to the site, particularly those conditions that affect performance of the system to be installed.

2. System Configuration and Functionality: The contractor shall schedule a meeting with owner, architect, and engineer to develop system requirements and functionality including but not limited to:

   a. Baseline configuration

   b. Access levels

   c. Schedules (physical access, holidays, etc.)

   d. Equipmenmt database

   e. System monitoring and reporting (unit level and central control)

f. Naming conventions and descriptors

H. Technical Data Package – Test Procedures

1. Development of Test Procedures: The Contractor/Vendor will prepare performance test procedures for the system testing. The test procedures shall follow the format required by the architect and be customized to the contract requirements. The Contractor will deliver the test procedures to the Architect/Engineer for approval at least 60 calendar days prior to the requested test date.

I. Technical Data Package

1. Performance Verification Test

a. Based on the successful completion and testing of the system, the Contractor shall finalize the test procedures and reports and schedule a demonstration of operating systems to the Architect/Engineer.

2. Training Documentation

a. New Facilities and Major Renovations: Familiarization training shall be provided for new equipment or systems. Training can include site familiarization training for owner and administrative personnel. Training shall include general information on new system layout including closet locations, turnover of the completed system including all documentation, including manuals, software, key systems, and full system administration rights. Lesson plans and training manuals training shall be oriented to type of training to be provided. Training shall be video taped, minimum of (4) hours at each site, unless time limitations are authorized by the owner.

3. System Configuration and Data Entry:

a. The contractor is responsible for providing all system configuration and data entry for the system and subsystems (e.g., video matrix switch, intercom, digital video recorders, network video recorders). All data entry shall be performed per manufacturers' recommendations. The Contractor is responsible for participating in all meetings with the owner to compile the information needed for data entry. These meetings shall be established at the beginning of the project and incorporated into the project schedule as a milestone task. The contractor shall be responsible for all data collection, data entry, and system configuration. The contractor shall collect, enter, & program and/or configure the following components:

1) Physical Access control system components,

2) Video surveillance, control and recording systems,

3) All other security subsystems shown in the contract documents.

J. Technical Data Package (Closeout): Final copies of the manuals shall be delivered to the Architect/Engineer as part of the acceptance test. The draft copy used during site testing shall be updated with any changes required prior to final delivery of the manuals. Each manual's contents shall be identified on the cover. The manual shall include names, addresses, and telephone numbers of each sub-contractor installing equipment or systems, as well as the nearest service representatives for each item of equipment for each system. The manuals shall include a table of contents and tab sheets. Tab sheets shall be placed at the beginning of each chapter or section and at the beginning of each appendix. The final copies delivered after completion of the endurance test shall include all modifications made during installation, checkout, and acceptance. Three (3) hard-copies and one (1) electronic copy on CD or flash drive of each item listed below shall be delivered as a part of final systems acceptance.

1. Functional Design Manual: The functional design manual shall identify the operational requirements for the entire system and explain the theory of operation, design philosophy, and specific functions. A description of hardware and software functions, interfaces, and requirements shall be included for all system operating modes. Manufacturer developed literature may be used; however, shall be produced to match the project requirements.

2. Equipment Manual: A manual describing all equipment furnished including:

a. General description and specifications; installation and checkout procedures; equipment electrical schematics and layout drawings; system schematics and layout drawings; alignment and calibration procedures; manufacturer's repair list indicating sources of supply; and interface definition.

3. Software Manual: The software manual shall describe the functions of all software and include all other information necessary to enable proper loading, testing, and operation. The manual shall include:

   a. Definition of terms and functions; use of system and applications software; procedures for system initialization, start-up, and shutdown; alarm reports; reports generation, database format and data entry requirements; directory of all disk files; and description of all communications protocols including data formats, command characters, and a sample of each type of data transfer.

4. Operator's Manual: The operator's manual shall fully explain all procedures and instructions for the operation of the system, including:

   a. Computers and peripherals; system start-up and shutdown procedures; use of system, command, and applications software; recovery and restart procedures; graphic alarm presentation; use of report generator and generation of reports; data entry; operator commands' alarm messages, and printing formats; and system access requirements.

5. Maintenance Manual: The maintenance manual shall include descriptions of maintenance for all equipment including inspection, recommend schedules, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

6. Spare Parts & Components Data: At the conclusion of the Contractor's work, the Contractor shall submit to the Architect/Engineer a complete list of the manufacturer's recommended spare parts and components required to satisfactorily maintain and service the systems, as well as unit pricing for those parts and components.

7. Project Redlines: During construction, the Contractor shall maintain an up-to-date set of construction redlines detailing current location and configuration of the project components. The redline documents shall be marked with the words 'Master Redlines' on the cover sheet and be maintained by the Contractor in the project office. The Contractor will provide access to redline documents anytime during the project for review and inspection by the Architect/Engineer or authorized owner representative. Master redlines shall be neatly maintained throughout the project and secured under lock and key in the contractor's onsite project office. Any project component or assembly that is not installed in strict accordance with the drawings shall be so noted on the drawings. Prior to producing Record Construction Documents, the contractor will submit the Master Redline document to the Architect/Engineer for review and approval of all changes or modifications to the documents. Field drawings shall be used for data gathering & field changes. These changes shall be made to the master redline documents daily. Field drawings shall not be considered "master redlines".

8. Record Specifications: The Contractor shall maintain one (1) copy of the Project Specifications, including addenda and modifications issued, for Project Record Documents. The Contractor shall mark the Specifications to indicate the actual installation where the installation varies substantially from that indicated in the Contract Specifications and modifications issued. (Note related Project Record Drawing information where applicable). The Contractor shall pay particular attention to substitutions, selection of product options, and information on concealed installations that would be difficult to identify or measure and record later. Upon completion of the mark ups, the Contractor shall submit record Specifications to the Architect/Engineer. As with master relines, Contractor shall maintain record specifications for Architect/Engineer review and inspection at anytime.

9. Record Product Data: The Contractor shall maintain one (1) copy of each Product Data submittal for Project Record Document purposes. The Data shall be marked to indicate the actual product installed where the installation varies substantially from that indicated in the Product Data submitted. Significant changes in the product delivered to the site and changes in manufacturer's instructions and recommendations for installation shall be included. Particular attention will be given to information on concealed products and installations that

cannot be readily identified or recorded later. Note related Change Orders and mark up of Record Construction Documents, where applicable. Upon completion of mark up, submit a complete set of Record Product Data to the Architect/Engineer.

10. Record Construction Documents (Record As-Built)

    a. Contractor shall submit all record documents to the Architect/Engineer at completion of the project.

1.07 APPLICABLE PUBLICATIONS

A. The publications listed below (including amendments, addenda, revisions, supplement, and errata) form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American National Standards Institute (ANSI)/ International Code Council (ICC):

A117.1 ..... Standard on Accessible and Usable Buildings and Facilities

C. American National Standards Institute (ANSI)/ Security Industry Association (SIA):

CP-01-00 ..... Control Panel Standard-Features for False Alarm Reduction

PIR-01-00 ..... Passive Infrared Motion Detector Standard - Features for Enhancing False Alarm Immunity

TVAC-01 ..... CCTV to Access Control Standard - Message Set for System Integration

D. American National Standards Institute (ANSI)/Electronic Industries Alliance (EIA):

330-09 ..... Electrical Performance Standards for CCTV Cameras

375A-76 ..... Electrical Performance Standards for CCTV Monitors

E. American National Standards Institute (ANSI):

ANSI S3.2-99 ..... Method for measuring the Intelligibility of Speech over Communications Systems

F. American Society for Testing and Materials (ASTM)

B1-07 ..... Standard Specification for Hard-Drawn Copper Wire

B3-07 ..... Standard Specification for Soft or Annealed Copper Wire

B8-04 ..... Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft

D2301-04 ..... Standard Specification for Vinyl Chloride Plastic Pressure Sensitive Electrical Insulating Tape

G. Department of Justice: American Disability Act (ADA)

H. Federal Communications Commission (FCC):

(47 CFR 15) Part 15 Limitations on the Use of Wireless Equipment/Systems

I. Institute of Electrical and Electronics Engineers (IEEE):

802.3af-08 ..... Power over Ethernet Standard

802.3at-09 ..... Power over Ethernet (PoE) Plus Standard

C2-07 ..... National Electrical Safety Code

C62.41-02 ..... IEEE Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits

C95.1-05 ..... Standards for Safety Levels with Respect to Human Exposure in Radio Frequency Electromagnetic Fields

J. National Electrical Manufactures Association (NEMA):

250-08 ..... Enclosures for Electrical Equipment (1000 Volts Maximum)

TC-3-04 ..... PVC Fittings for Use with Rigid PVC Conduit and Tubing

FB1-07 ..... Fittings, Cast Metal Boxes and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable

K. National Fire Protection Association (NFPA):

70-11 ..... National Electrical Code (NEC)

731-08 ..... Standards for the Installation of Electric Premises Security Systems

L. Underwriters Laboratories, Inc. (UL):

1-05 ..... Flexible Metal Conduit

5-04 ..... Surface Metal Raceway and Fittings

6-07 ..... Rigid Metal Conduit

50-07 ..... Enclosures for Electrical Equipment

83-08 ..... Thermoplastic-Insulated Wires and Cables

294-99 ..... The Standard of Safety for Access Control System Units

360-09 ..... Liquid-Tight Flexible Steel Conduit

444-08 ..... Safety Communications Cables

467-07 ..... Electrical Grounding and Bonding Equipment

486A-03 ..... Wire Connectors and Soldering Lugs for Use with Copper Conductors

486C-04 ..... Splicing Wire Connectors

486D-05 ..... Insulated Wire Connector Systems for Underground Use or in Damp or Wet Locations

514A-04 ..... Metallic Outlet Boxes

514B-04 ..... Fittings for Cable and Conduit

651-05 ..... Schedule 40 and 80 Rigid PVC Conduit

797-07 ..... Electrical Metallic Tubing

M. Uniform Federal Accessibility Standards (UFAS) 1984

1.08 COORDINATION

A. Coordinate arrangement, mounting, and support of electronic safety and security equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
3. To allow right of way for piping and conduit installed at required slope.
4. So connecting raceways, cables, wireways, etc. will be clear of obstructions and of the working and access space of other equipment.

B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

C. Coordinate location of access panels and doors for electronic safety and security items that are behind finished surfaces or otherwise concealed.

1.09 MAINTENANCE & SERVICE

A. General Requirements

1. The Contractor shall provide all services required and equipment necessary to maintain the entire integrated electronic surveillance system in an operational state as specified for a period of one (1) year after formal written acceptance of the system. The Contractor shall provide all necessary material required for performing scheduled adjustments or other non-scheduled work. Impacts on facility operations shall be minimized when performing scheduled adjustments or other non-scheduled work.

B. Description of Work

1. The adjustment and repair of the security system includes all software updates, panel firmware, and the following new items computers equipment, communications transmission equipment and data transmission media (DTM), local processors, security system sensors, physical access control equipment, facility interface, signal transmission equipment, and video equipment.

C. Personnel

1. Service personnel shall be certified in the maintenance and repair of the selected type of equipment and qualified to accomplish all work promptly and satisfactorily. The Architect/Engineer shall be advised in writing of the name of the designated service representative, and of any change in personnel. The Architect/Engineer shall be provided copies of system manufacturer certification for the designated service representative.

D. Schedule of Work

1. The work shall be performed during regular working hours, Monday through Friday, excluding federal holidays. After hours work may be required for outages or connections/coordination to existing systems. This work shall be scheduled and approved by the owner.

E. Emergency Service

1. The owner may initiate service calls whenever the system is not functioning properly. The Contractor shall provide the Owner with an emergency service center telephone number. The emergency service center shall be staffed 24 hours a day 365 days a year. The Owner shall have sole authority for determining catastrophic and non-catastrophic system failures within parameters stated in General Project Requirements.

a. For catastrophic system failures, the Contractor shall provide same day four (4) hour service response with a defect correction time not to exceed eight (8) hours from arrival on site. Catastrophic system failures are defined as any system failure that the Owner determines will place the facility(s) at increased risk.

b. For non-catastrophic failures, the Contractor within eight (8) hours with a defect correction time not to exceed 24 hours from notification.

F. Operation

1. Performance of scheduled adjustments and repair shall verify operation of the system as demonstrated by the applicable portions of the performance verification test.

G. Records & Logs

1. The Contractor shall maintain records and logs of each task and organize cumulative records for each component and for the complete system chronologically. A continuous log shall be submitted for all devices. The log shall contain all initial settings, calibration, repair, and programming data. Complete logs shall be maintained and available for inspection on site, demonstrating planned and systematic adjustments and repairs have been accomplished for the system.

H. Work Request

1. The Contractor shall separately record each service call request, as received. The record shall include the serial number identifying the component involved, its location, date and time

the call was received, specific nature of trouble, names of service personnel assigned to the task, instructions describing the action taken, the amount and nature of the materials used, and the date and time of commencement and completion. The Contractor shall deliver a record of the work performed within five (5) working days after the work was completed.

I. System Modifications

1. The Contractor shall make any recommendations for system modification in writing to the Owner. No system modifications, including operating parameters and control settings, shall be made without prior written approval from the Owner. Any modifications made to the system shall be incorporated into the operation and maintenance manuals and other documentation affected.

J. Software

1. The Contractor shall provide all software updates when approved by the Owner from the manufacturer during the installation and 12-month warranty period and verify operation of the system. These updates shall be accomplished in a timely manner, fully coordinated with the system operators, and incorporated into the operations and maintenance manuals and software documentation. There shall be at least one (1) scheduled update near the end of the first year's warranty period, at which time the Contractor shall install and/or validate the latest released version of the Manufacturer's software. All software changes shall be recorded in a log maintained in the unit control room. An electronic copy of the software update shall be maintained within the log. At a minimum, the contractor shall provide a description of the modification, when the modification occurred, and name and contact information of the individual performing the modification. The log shall be maintained in a white 3 ring binder and the cover marked "SOFTWARE CHANGE LOG".

1.10 MINIMUM REQUIREMENTS

A. References to industry and trade association standards and codes are minimum installation requirement standards.

B. Drawings and other specification sections shall govern in those instances where requirements are greater than those specified in the above standards.

1.11 DELIVERY, STORAGE, & HANDLING

A. Equipment and materials shall be protected during shipment and storage against physical damage, dirt, moisture, cold and rain:

1. During installation, enclosures, equipment, controls, controllers, circuit protective devices, and other like items, shall be protected against entry of foreign matter; and be vacuum cleaned both inside and outside before testing and operating and repainting if required.

2. Damaged equipment shall be, as determined by the Architect/Engineer, placed in first class operating condition or be returned to the source of supply for repair or replacement.

3. Painted surfaces shall be protected with factory installed removable heavy craft paper, sheet vinyl or equal.

4. Damaged paint on equipment and materials shall be refinished with the same quality of paint and workmanship as used by the manufacturer so repaired areas are not obvious.

B. All electronic equipment:

1. Store in temperature and humidity controlled environment in original manufacturer's sealed containers. Maintain ambient temperature between 10 to 30 deg C (50 to 85 deg F), and not more than 80 percent relative humidity, non-condensing.

2. Open each container; verify contents against packing list, and file copy of packing list, complete with container identification for inclusion in operation and maintenance data.

3. Mark packing list with designations which have been assigned to materials and equipment for recording in the system labeling schedules generated by cable and asset management system.

4. Save original manufacturer's containers and packing materials and deliver as directed under provisions covering extra materials.

1.12 PROJECT CONDITIONS

A. Environmental Conditions: System shall be capable of withstanding the following environmental conditions without mechanical or electrical damage or degradation of operating capability:

1. Interior, Controlled Environment: System components, except central-station control unit, installed in temperature-controlled interior environments shall be rated for continuous operation in ambient conditions of 2 to 50 deg C (36 to 122 deg F) dry bulb and 20 to 90 percent relative humidity, non-condensing. NEMA, Type 1 enclosure.

2. Interior, Uncontrolled Environment: System components installed in non-temperature-controlled interior environments shall be rated for continuous operation in ambient conditions of -18 to 50 deg C (0 to 122 deg F) dry bulb and 20 to 90 percent relative humidity, non-condensing. NEMA, Type 4X enclosures.

3. Exterior Environment: System components installed in locations exposed to weather shall be rated for continuous operation in ambient conditions of -34 to 50 deg C (-30 to 122 deg F) dry bulb and 20 to 90 percent relative humidity, condensing. Rate for continuous operation where exposed to rain as specified in NEMA 250, winds up to (85 mph) and snow cover up to (24 in) thick. NEMA, Type 4X enclosures.

B. Security Environment: Use vandal resistant enclosures in high-risk areas where equipment may be subject to damage.

C. Console: All console equipment shall, unless noted otherwise, be rated for continuous operation under ambient environmental conditions of 15.6 to 29.4 deg C (60 to 85 deg F) and a relative humidity of 20 to 80 percent.

1.13 EQUIPMENT AND MATERIALS

A. Materials and equipment furnished shall be of current production by manufacturers regularly engaged in the manufacture of such items, for which replacement parts shall be available.

B. When more than one unit of the same class of equipment is required, such units shall be the product of a single manufacturer.

C. Equipment Assemblies and Components:

1. Components of an assembled unit need not be products of the same manufacturer.

2. Manufacturers of equipment assemblies, which include components made by others, shall assume complete responsibility for the final assembled unit.

3. Components shall be compatible with each other and with the total assembly for the intended service.

4. Constituent parts which are similar shall be the product of a single manufacturer.

D. Factory wiring shall be identified on the equipment being furnished and on all wiring diagrams.

E. When Factory Testing Is Specified:

1. The owner/architect/engineer shall have the option of witnessing factory tests. The contractor shall notify the owner/architect/engineer a minimum of 15 working days prior to the manufacturers making the factory tests.

2. Four copies of certified test reports containing all test data shall be furnished to the Architect/Engineer prior to final inspection and not more than 90 days after completion of the tests.

3. When equipment fails to meet factory test and re-inspection is required, the contractor shall be liable for all additional expenses.

1.14 ELECTRICAL POWER

A. Electrical power of 120 Volts Alternating Current (VAC) shall be indicated on the Division 26 drawings. Additional locations requiring primary power required by the security system shall be shown as part of these contract documents. Primary power for the security system shall be configured to switch to emergency backup sources automatically if interrupted without degradation of any critical system function. Alarms shall not be generated as a result of power switching, however, an indication of power switching on (on-line source) shall be provided to the alarm monitor. The Contractor shall provide an interface (dry contact closure) between the power suppl(ies) and the Uninterruptible Power Supply (UPS).

B. Failure of any on-line battery shall be detected and reported as a fault condition. Battery backed-up power supplies shall be provided sized for [2] hours of operation at actual connected load.

1.15 TRANSIENT VOLTAGE SUPPRESSION, POWER SURGE SUPPLESION, & GROUNDING

A. Transient Voltage Surge Suppression: All cables and conductors extending beyond building façade, except fiber optic cables, which serve as communication, control, or signal lines shall be protected against Transient Voltage surges and have Transient Voltage Surge Suppression (TVSS) protection. The TVSS device shall be UL listed in accordance with Standard TIA 497B installed at each end. Lighting and surge suppression shall be a multi-strike variety and include a fault indicator. Protection shall be furnished at the equipment and additional triple solid state surge protectors rated for the application on each wire line circuit shall be installed within (6 ft) of the building cable entrance. Fuses shall not be used for surge protection. The inputs and outputs shall be tested in both normal mode and common mode to verify there is no interference.

1. A 10-microsecond rise time by 1000 microsecond pulse width waveform with a peak voltage of 1500 volts and a peak current of 60 amperes.

2. An 8-microsecond rise time by 20-microsecond pulse width waveform with a peak voltage of 1000 volts and a peak current of 500 amperes.

3. Maximum series current: 2 AMPS. Provide units manufactured by Advanced Protection Technologies, model # TE/FA 10B or TE/FA 20B.

4. Operating Temperature and Humidity: -40 to 85 deg C (-40 to 185 deg F), 0 to 95 percent relative humidity.

B. Grounding and Surge Suppression

1. The Contractor shall provide grounding and surge suppression to stabilize the voltage under normal operating conditions. To ensure the operation of over current devices, such as fuses, circuit breakers, and relays, under ground-fault conditions.

2. Contractor shall engineer/design and provide proper grounding and surge suppression as required by local jurisdiction and prevailing codes and standards referenced in this document.

1.16 COMPONENT ENCLOSURES

A. Construction of Enclosures

1. Consoles, power supply enclosures, detector control and terminal cabinets, control units, wiring gutters, and other component housings, collectively referred to as enclosures, shall be so formed and assembled as to be sturdy and rigid.

2. Thickness of metal in-cast and sheet metal enclosures of all types shall not be less than those in Tables I and II, UL 611. Sheet steel used in fabrication of enclosures shall be not less than 14 gauge. Consoles shall be 16-gauge.

3. Doors and covers shall be flanged. Enclosures shall not have pre-punched knockouts. Where doors are mounted on hinges with exposed pins, the hinges shall be of the tight pin type or the ends of hinge pins shall be tack welded to prevent removal. Doors having a latch edge length of less than 24 in shall be provided with a single construction core. Where the latch edge of a hinged door is more than 24 in or more in length, the door shall be provided with a three-point latching device with construction core; or alternatively with two, one located near each end.

4. Any ventilator openings in enclosures and cabinets shall conform to the requirements of UL 611. Unless otherwise indicated, sheet metal enclosures shall be designed for wall mounting with tip holes slotted. Mounting holes shall be in positions that remain accessible when all major operating components are in place and the door is open, but shall be in accessible when the door is closed.

5. Covers of pull and junction boxes provided to facilitate initial installation of the system shall be held in place by tamper proof Torx Center post security screws. Stenciled or painted labels shall be affixed to such boxes indicating they contain no connections. These labels shall not indicate the box is part of the Security System.

B. Consoles & Equipment Racks: Enclosed racks shall be installed as required to house all equipment.

1.17 ELECTRONIC COMPONENTS

A. All electronic components of the system shall be of the solid-state type, mounted on printed circuit boards conforming to UL 796. Boards shall be plug-in, quick-disconnect type. Circuitry shall not be so densely placed as to impede maintenance. All power-dissipating components shall incorporate safety margins of not less than 25 percent with respect to dissipation ratings, maximum voltages, and current-carrying capacity.

1.18 LIKE ITEMS

A. Where two or more items of equipment performing the same function are required, they shall be exact duplicates produced by one manufacturer. All equipment provided shall be complete, new, and free of any defects.

1.19 WARRANTY

A. The Contractor shall, as a condition precedent to the final payment, execute a written guarantee (warranty) to the Architect/Engineer certifying all contract requirements have been completed according to the final specifications. Contract drawings and the warranty of all materials and equipment furnished under this contract are to remain in satisfactory operating condition (ordinary wear and tear, abuse and causes beyond his control for this work accepted) for one (1) year from the date the Contactor received written notification of final acceptance from the Architect/Engineer. Demonstration and training shall be performed prior to system acceptance. All defects or damages due to faulty materials or workmanship shall be repaired or replaced without delay, to the Architect/Engineers' satisfaction, and at the Contractor's expense. In addition, the contractor shall provide written documentation of test results and stating what was done to correct any deficiencies. A last inspection shall occur 30 calendar days prior to the end of the warranty. The warranty period shall be extended until the last inspection and associated corrective actions are complete. When equipment and labor covered by the Contractor's warranty, or by a manufacturer's warranty, have been replaced or restored because of it's failure during the warranty period, the warranty period for the replaced or repaired equipment or restored work shall be reinstated for a period equal to the original warranty period, and commencing with the date of completion of the replacement or restoration work. In the event any manufacturer customarily provides a warranty period greater than one (1) year, the Contractor's warranty shall be for the same duration for that component.

PART 2 – PRODUCTS

2.01 EQUIPMENT AND MATERIALS

A. All equipment associated within the Surveillance systems shall be UL listed as applicable.

B. All rack equipment and POE switches, as applicable, shall operate at 120 volts (VAC); 60 Hz. All equipment shall have a back-up source of power that will provide a minimum of [2] hours of run time in the event of a loss of primary power to the facility.

C. The system shall be designed, installed, and programmed in a manner that will allow for ease of operation, programming, servicing, maintenance, testing, and upgrading of the system.

D. All equipment and materials for the system will be compatible to ensure correct operation.

2.02 TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS)

A. Transient Voltage Surge Suppression

1. All cables and conductors extending beyond building perimeter, except fiber optic cables, which serve as communication, control, or signal lines shall be protected against Transient Voltage surges and have Transient Voltage surge suppression protection (TVSS) UL listed in accordance with Standard 497B installed at each end. Lighting and surge suppression shall be a multi-strike variety and include a fault indicator. Protection shall be furnished at the equipment and additional triple solid state surge protectors rated for the application on each wire line circuit shall be installed within (36 in) of the building cable entrance. Fuses shall not be used for surge protection. The inputs and outputs shall be tested in both normal mode and common mode using the following waveforms:

   a. A 10-microsecond rise time by 1000 microsecond pulse width waveform with a peak voltage of 1500 volts and a peak current of 60 amperes.

   b. An 8-microsecond rise time by 20-microsecond pulse width waveform with a peak voltage of 1000 volts and a peak current of 500 amperes.

   c. Maximum series current: 2 AMPS. Provide units manufactured by Advanced Protection Technologies, model # TE/FA 10B or TE/FA 20B or approved equivalent.

   d. Operating Temperature and Humidity: -40 to + 85 deg C (-40 to 185 deg F), and 0 to 95 percent relative humidity, non-condensing.

B. Video Surveillance System

1. Protectors shall be installed on cable systems on points of entry and exit from separate buildings. Suppressors shall be installed at each exterior camera location and include protection for 12 and/or 24 volt power, data signal and motor controls (for Pan, Tilt and Zoom systems). SPDs shall protect all modes herein mentioned and contain all modes in a single unit system. Protection for all systems mentioned above shall be incorporated at the head end equipment.

C. Grounding and Surge Suppression

1. The Security Contractor shall provide grounding and surge suppression to stabilize the voltage under normal operating conditions. This is to ensure the operation of over current devices, such as fuses, circuit breakers, and relays, underground-fault conditions.

2. The Contractor shall engineer, provide, ad install proper grounding and surge suppression as required by local jurisdiction and prevailing codes and standards, referenced in this document.

3. Principal grounding components and features shall include: main grounding buses, grounding, and bonding connections to service equipment.

4. The Contractor shall provide detail drawings of interconnection with other grounding systems including lightning protection systems.

5. The Contractor shall provide details of locations and sizes of grounding conductors and grounding buses in electrical, data, and communication equipment rooms and closets.

6. AC power receptacles are not to be used as a ground reference point.

7. Any cable that is shielded shall require a ground in accordance with applicable codes, the best practices of the trade, and all manufactures' installation instructions.

D. 120 VAC Surge Suppression

1. Continuous Current: Unlimited (parallel connection)

2. Max Surge Current: 13,500 Amps

3. Protection Modes: L - N, L - G, N - G

4. Warranty: Ten Year Limited Warranty
5. Dimension: (2.90 x 1.62 x 2.05 in)
6. Weight: 2.88 g (0.18 lbs)
7. Housing: ABS

PART 3 – EXECUTION

3.01 COMMON REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electronic safety and security equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Equipment location shall be as close as practical to locations shown on the drawings.

F. Inaccessible Equipment:

1. Where the Architect/Engineer determines that the Contractor has installed equipment not conveniently accessible for operation and maintenance, the equipment shall be removed and reinstalled as directed at no additional cost to the owner.
2. "Conveniently accessible" is defined as being capable of being reached without the use of ladders, or without climbing or crawling under or over obstacles such as, but not limited to, motors, pumps, belt guards, transformers, piping, ductwork, conduit and raceways.

3.02 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electronic safety and security installations to restore original fire-resistance rating of assembly. Firestopping materials shall be UL listed and rated for application being utilized.

3.03 DEMONSTRATION, START UP, AND TRAINING

A. Training shall be provided in accordance with these specifications.

B. Training shall be provided for the particular equipment or system as required in each associated specification.

C. A training schedule shall be developed and submitted by the contractor and approved by the Architect/Engineer at least 30 days prior to the planned training.

D. Provide services of manufacturer’s technical representative for (4) hours minimum (unless agreed upon by the owner) to instruct VA personnel in operation and maintenance of units.

3.04 WORK PERFORMANCE

A. Job site safety and worker safety is the responsibility of the contractor.

B. For work in existing buildings, arrange, phase and perform work to coordinate with the owner’s schedule and to minimally interfere with daily school operations. Some areas may require work after hours or weekends, or during school holidays.

C. New work shall be installed and coordinated for connections neatly and carefully. Disturbed or damaged work shall be replaced or repaired to its prior conditions, at no additional cost to the owner.

D. Coordinate location of equipment and conduit with other trades to minimize interferences.

3.05 SYSTEM PROGRAMMING

A. General Programming Requirements

1. The contractor shall be responsible for providing all setup, configuration, and programming to include data entry for the Surveillance and Intercom systems, and subsystems (e.g., video matrix switches, intercoms, digital video recorders, camera call up, time synchronization). System programming for existing or new components should not be conducted at the project site, where possible.

2. The Contractor shall perform and complete system programming (including all data entry) at an offsite location using the Contractor's own copy of any relavant software. The Contractor's copy of the software shall be of the Owners current version. Once system programming has been completed, the Contractor shall deliver and install any necessary hardware and software.

3.06 TESTING AND ACCEPTANCE

A. Performance Requirements

1. General:

a. The Contractor shall perform contract field, performance verification, and endurance testing and make adjustments of the completed security system when permitted. The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform all testing. Written notification of planned testing shall be given to the Architect/Engineer at least 60 calendar days prior to the test.

b. The Architect/Engineer may witness all testing and system adjustments during testing.

2. Test Procedures and Reports: The test procedures, compliant with manufacturer's/vendor's standard test procedures, shall explain in detail, step-by-step actions and expected results demonstrating compliance with the requirements of the specification. The test reports shall be used to document results of the tests. The reports shall be delivered to the Architect/Engineer within seven (7) calendar days after completion of each test.

B. Pre-Delivery Testing

1. The purpose of the pre-delivery test is to establish that a system is suitable for installation. As such, pre-delivery test shall be a mock-up of the system as planned in the contract documents. The Contractor shall assemble the Test System at the Contractors local shop within 50-miles of the project site, and perform tests to demonstrate the performance of the system complies with the contract requirements in accordance with the approved pre-delivery test procedures. The tests shall take place during regular daytime working hours on weekdays. Model numbers of equipment tested shall be identical to those to be delivered to the site. Original copies of all data produced during pre-delivery testing, including results of each test procedure, shall be documented and delivered to the Architect/Engineer at the conclusion of pre-delivery testing.

C. Contractor's Field Testing (CFT)

1. The Contractor shall calibrate and test all equipment, verify operation, place the system in service, and test the system. The Contractor shall test all surveillance and intercom systems and equipment, and provide written proof of a 100% operational system before a date is established for the system acceptance test.

D. Performance Verification Test (PVT)

1. Test team:

a. After the systems have been pretested and the Contractor has submitted the pretest results and certification to the Architect/Engineer, then the Contractor shall schedule an acceptance test to date and give the Architect/Engineer written, notice as described herein, prior to the date the acceptance test is expected to begin. The systems shall be tested in the presence of an Architect/Engineer Representative and owner, an OEM certified representative, and representative of the Contractor. The test shall verify that

the total system meets all the requirements of this specification. The notification of the acceptance test shall include the expected length (in time) of the test.

2. Upon successful completion of all tests, the Contractor shall deliver test reports and other documentation, as specified, to the Architect/Engineer prior to commencing the endurance test.
3. Additional Components of the PVT shall include:
    a. System Inventory
        1) All Device equipment
        2) All Software
        3) All Logon and Passwords
        4) All Cabling System Matrices
        5) All Cable Testing Documents
        6) All System and Cabinet Keys
    b. Inspection
        1) Contractor shall record an inspection punch list noting all system deficiencies. The contractor shall prepare an inspection punch list format for Architect/Engineers approval.
        2) As a minimum the punch list shall include a listing of punch list items, punch list item location, description of item problem, date noted, date corrected, and details of how item was corrected.

E. Exclusions
1. The Contractor will not be held responsible for failures in system performance resulting from the following:
    a. An outage of the main power in excess of the capability of any backup power source provided the automatic initiation of all backup sources was accomplished and that automatic shutdown and restart of the systems performed as specified.
    b. Failure of an Owner furnished equipment or communications link, provided the failure was not due to Contractor furnished equipment, installation, or software.
    c. Failure of existing Owner owned equipment, provided the failure was not due to Contractor furnished equipment, installation, or software.

3.07 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.08 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 28 05 13

CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies the finishing, installation, connection, testing and certification the conductors and cables required for a fully functional for Surveillance system.

1.02 RELATED WORK

A. GENERAL REQUIREMENTS. For General Requirements.

B. FIRESTOPPING. Requirements for firestopping application and use.

C. COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY. Requirements for general requirements that are common to more than one section in Division 28.

D. GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY. Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

E. CONDUITS AND BOXES FOR ELECTRONIC SECURITY AND SAFETY. Requirements for infrastructure.

1.03 QUALITY ASSURANCE

A. See section 28 05 00.

1.04 SUBMITTALS

A. In accordance with all Sections of these specifications, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:

1. Manufacturer's Literature and Data: Showing each cable type and rating.

2. Certificates: certification that the material is in accordance with the drawings and specifications and diagrams for cable management system.

3. Shop Drawings: Scaled drawing showing layout of all systems, cabling, conduits, as they relate to systems being installed.

4. Wiring Diagrams. Show typical wiring schematics and overall wiring for all systems being installed.

5. Cable Administration/Identification Drawings and/or list for all cabling types.

6. Maintenance Data: For wire and cable to include in maintenance manuals.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Test cables upon receipt at Project site.

1. Test each pair of UTP cable for open and short circuits.

PART 2 - PRODUCTS

2.01 GENERAL

A. General: All cabling in locations with open structure ceilings shall be in conduit systems as outlined in Division 28 unless a waiver is granted in writing, or an exception is noted on the construction drawings.

B. Support of Open Cabling above lay-in/accessible ceilings: NRTL labeled for support of Category 6 cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.

1. Support brackets with cable tie slots for fastening cable ties to brackets.
2. Lacing bars and spools.
3. Straps and other devices.
4. J-hooks or D-rings.

C. Conduit and Boxes: Comply with requirements in Division 28

2.02 BACKBOARDS

A. Backboards: Existing to remain.

2.03 UTP CABLE

A. Description: 100-ohm, 4-pair UTP, formed into 25-pair binder groups covered with a blue thermoplastic jacket.

1. Comply with ICEA S-90-661 for mechanical properties.
2. Comply with TIA/EIA-568-B.1 for performance specifications.
3. Comply with TIA/EIA-568-B.2, Category 6.
4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:
    a. Communications, Plenum Rated: Type CMP, complying with NFPA 262.
5. Jacket color: Pink

2.04 LOW-VOLTAGE CONTROL CABLE (WHERE REQUIRED)

A. Paired Lock Cable: NFPA 70, Type CMP.

1. 1 pair, twisted, No. 16 AWG, stranded (19x29) tinned copper conductors.
2. Insulated.
3. Shielded.
4. Plenum rated jacket.
5. Flame Resistance: Comply with UL 1581.

2.05 OPTICAL FIBER CABLE

A. Manufacturers: Subject to compliance with requirements

1. Belden CDT Inc.; Electronics Division.
2. Berk-Tek; a Nexans company.
3. Genesis Cable Products; Honeywell International, Inc.
4. KRONE Incorporated.
5. Nordex/CDT; a subsidiary of Cable Design Technologies.
6. Tyco Electronics/AMP Netconnect; Tyco International Ltd.

B. Description: Single mode, 1-PAIR, or as required by vendor.

1. Comply with ICEA S-83-596 for mechanical properties.
2. Comply with TIA/EIA-568-B.3 for performance specifications.

3. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:

   a. General Purpose, Nonconductive: Type OFN.

   b. Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.

   c. Riser Rated, Nonconductive: Type OFNP, complying with UL 1666.

4. Maximum Attenuation: 3.50 dB/km at 850 nm; 1.5 dB/km at 1300 nm.

5. Minimum Modal Bandwidth: 160 MHz-km at 850 nm; 500 MHz-km at 1300 nm.

C. Jacket:

1. Jacket Color: Black

2. Cable cordage jacket, fiber, unit, and group color shall be according to TIA/EIA-598-B.

3. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches.

2.06 OPTICAL FIBER CABLE HARDWARE

A. Manufacturers: Subject to compliance with requirements

1. ADC.

2. American Technology Systems Industries, Inc.

3. Berk-Tek; a Nexans company.

4. Corning Cable Systems.

5. Dynacom Corporation.

6. Hubbell Premise Wiring.

7. Molex Premise Networks; a division of Molex, Inc.

8. Nordex/CDT; a subsidiary of Cable Design Technologies.

9. Optical Connectivity Solutions Division; Emerson Network Power.

10. Siemon Co.

B. Cross-Connects and Patch Panels: Modular panels housing multiple-numbered, duplex cable connectors.

1. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to suit specified expansion criteria.

C. Patch Cords: Factory-made, dual-fiber cables in 36-inch lengths.

D. Cable Connecting Hardware:

1. Comply with Optical Fiber Connector Intermateability Standards (FOCIS) specifications of TIA/EIA-604-2, TIA/EIA-604-3-A, and TIA/EIA-604-12. Comply with TIA/EIA-568-B.3.

2. Quick-connect, simplex and duplex, Type SC connectors. Insertion loss not more than 0.75 dB.

2.07 IDENTIFICATION PRODUCTS

A. Comply with UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

2.08 SOURCE QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to evaluate cables.

B. Factory test UTP cables according to TIA/EIA-568-B.2.

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

D. Prepare test and inspection reports.

2.09 WIRE LUBRICATING COMPOUND

A. Suitable for the wire insulation and conduit it is used with, and shall not harden or become adhesive.

B. Shall not be used on wire for isolated type electrical power systems.

2.10 FIREPROOFING TAPE

A. The tape shall consist of a flexible, conformable fabric of organic composition coated one side with flame-retardant elastomer.

B. The tape shall be self-extinguishing and shall not support combustion. It shall be arc-proof and fireproof.

C. The tape shall not deteriorate when subjected to water, gases, salt water, sewage, or fungus and be resistant to sunlight and ultraviolet light.

D. The finished application shall withstand a 200-ampere arc for not less than 30 seconds.

E. Securing tape: Glass cloth electrical tape not less than (7 mils) thick, and (3/4 inch) wide.

PART 3 - EXECUTION

3.01 INSTALLATION OF CONDUCTORS AND CABLES

A. Comply with NECA 1.

B. General Requirements for Cabling:

1. Comply with TIA/EIA-568-B.1.

2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."

3. Terminate all conductors; no cable shall contain un-terminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.

4. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals.

5. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.

6. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.

7. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.

8. Pulling Cable:

a. Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.

b. Provide installation equipment that will prevent the cutting or abrasion of insulation during pulling of cables.

c. Use ropes made of nonmetallic material for pulling feeders.

d. Attach pulling lines for feeders by means of either woven basket grips or pulling eyes attached directly to the conductors, as approved by the Architect/Engineer.

e. Pull in multiple cables together in a single conduit.

C. Unless otherwise specified in other sections install wiring and connect to equipment/devices to perform the required functions as shown and specified.

D. Except where otherwise required, install a separate power supply circuit for each system so that malfunctions in any system will not affect other systems.

E. Where separate power supply circuits are not shown, connect the systems to the nearest panel boards of suitable voltages, which are intended to supply such systems and have suitable spare circuit breakers or space for installation.

F. System voltages shall be 120 volts or lower where shown on the drawings or as required by the NEC.

G. UTP Cable Installation:

1. Comply with TIA/EIA-568-B.2.

2. Do not untwist UTP cables more than 1/2 inch from the point of termination to maintain cable geometry.

H. Open-Cable Installation:

1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.

2. Suspend copper cable not in a wireway or pathway a minimum of 8 inches above ceilings by cable supports not more than 60 inches apart.

3. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.

I. Separation from EMI Sources:

1. Comply with BICSI TDMM and TIA/EIA-569-A recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.

2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:

a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches

b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches

c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches

3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:

a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches

b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches

c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches

4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:

a. Electrical Equipment Rating Less Than 2 kVA: No requirement.

b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches

c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches

5. Separation between Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches

6. Separation between Cables and Fluorescent Fixtures: A minimum of 5 inches

3.02 FIRESTOPPING

A. Comply with requirements in all Sections of these specifications.

B. Comply with TIA/EIA-569-A, "Firestopping" Annex A.

C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.03 GROUNDING

A. For communications wiring, comply with ANSI-J-STD-607-A and with BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.

B. For low-voltage wiring and cabling, comply with requirements in Division 28 Section "GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY."

3.04 IDENTIFICATION

A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A.

B. Install a permanent wire marker on each wire at each termination.

C. Identifying numbers and letters on the wire markers shall correspond to those on the wiring diagrams used for installing the systems.

D. Wire markers shall retain their markings after cleaning.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Visually inspect UTP and cable jacket materials for UL or third-party certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA/EIA-568-B.1.

2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.

3. Test UTP cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross connection.

a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.

D. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.

E. End-to-end cabling will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

3.06 EXISITNG WIRING

A. Unless specifically indicated on the plans, existing wiring shall not be reused for the new installation. Only wiring that conforms to the specifications and applicable codes may be reused. If existing wiring does not meet these requirements, existing wiring may not be reused and new wires shall be installed.

3.07 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.08 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 28 05 26

GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies the finishing, installation, connection, testing and certification of the grounding and bonding required for a fully functional Surveillance and Intercom system.

B. The terms “connect” and “bond” are used interchangeably in this specification and have the same meaning

1.02 RELATED WORK

A. GENERAL REQUIREMENTS. For General Requirements.

B. REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATIONS. For general electrical requirements, quality assurance, coordination, and project conditions that are common to more than one section in Division 28.

C. CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY. Requirements for low voltage power wiring.

1.03 SUBMITTALS

A. Submit in accordance with Section 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY.

B. Shop Drawings:

1. Clearly present enough information to determine compliance with drawings and specifications.

2. Include the location of system grounding connections and the routing of grounding electrode conductors.

C. Test Reports: Provide certified test reports of ground resistance.

PART 2 - PRODUCTS

2.01 GROUNDING AND BONDING CONDUCTORS

A. Equipment grounding conductors shall be UL 83 insulated stranded copper, except that sizes (10 AWG) and smaller shall be solid copper. Insulation color shall be continuous green for all equipment grounding conductors, except that wire sizes (4 AWG) and larger shall be permitted to be identified per NEC.

B. Bonding conductors shall be ASTM B8 bare stranded copper, except that sizes (10 AWG) and smaller shall be ASTM B1 solid bare copper wire.

2.02 SPLICES AND TERMINATION COMPONENTS

A. Components shall meet or exceed UL 467 and be clearly marked with the manufacturer, catalog number, and permitted conductor size(s)ground connections

B. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

C. Above Grade:

1. Bonding Jumpers: Compression-type connectors, using zinc-plated fasteners and external tooth lockwashers.

2. Connection to Building Steel: Exothermic-welded type connectors.

3. Ground Busbars: Two-hole compression type lugs, using tin-plated copper or copper alloy bolts and nuts.

4. Rack and Cabinet Ground Bars: One-hole compression-type lugs, using zinc-plated or copper alloy fasteners.

2.03 EQUIPMENT RACK AND CABINET GROUND BARS

A. Provide solid copper ground bars designed for mounting on the framework of open or cabinet-enclosed equipment racks with minimum dimensions of (3/8 inch x ¾ inch).

2.04 GROUND TERMINAL BLOCKS

A. At any equipment mounting location (e.g., backboards and hinged cover enclosures) where rack-type ground bars cannot be mounted, provide screw lug-type terminal blocks.

PART 3 - EXECUTION

3.01 GENERAL

A. Ground in accordance with the NEC, as shown on drawings, and as specified herein.

B. System Grounding:

1. Secondary service neutrals: Ground at the supply side of the secondary disconnecting means and at the related transformers.

2. Separately derived systems (transformers downstream from the service entrance): Ground the secondary neutral.

C. Equipment Grounding: Metallic structures, including ductwork and building steel, enclosures, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits, shall be bonded and grounded.

3.02 GROUND RESISTANCE

A. Grounding system resistance to ground shall not exceed 5 ohms. Make any modifications or additions to the grounding electrode system necessary for compliance without additional cost to the owner. Final tests shall ensure that this requirement is met.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.04 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 28 05 28

CONDUITS AND BACKBOXES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies the finishing, installation, connection, testing certification of the conduit, fittings, and boxes to form a complete, coordinated, raceway system(s). Raceways are required for all Surveillance and Intercom cabling where installed in open ceilings, unless shown or specified otherwise.

B. Definitions: The term conduit, as used in this specification, shall mean any or all of the raceway types specified.

1.02 RELATED WORK

A. GENERAL REQUIREMENTS. For General Requirements.

B. FIRESTOPPING. Requirements for sealing around penetrations to maintain the integrity of fire rated construction.

C. JOINT SEALANTS. Requirements for sealing around conduit penetrations through the building envelope to prevent moisture migration into the building.

D. PAINTING. Requirements for identification and painting of conduit and other devices.

E. COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY. For general electrical requirements, general arrangement of the contract documents, coordination, quality assurance, project conditions, equipment and materials, and items that is common to more than one section of Division 28.

F. GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY. Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

1.03 SUBMITTALS

A. Submit in accordance with Section 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY. Furnish the following:

B. Shop Drawings:

1. Size and location of conduit installations

2. Size and location of panels and/or pull boxes

3. Layout of required conduit penetrations through structural elements.

4. The specific item proposed and its area of application shall be identified on the catalog cuts.

C. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

PART 2 - PRODUCTS

2.01 GENERAL

A. Conduit Size: In accordance with the NEC, but not less than (3/4 inch) unless otherwise shown.

2.02 CONDUIT

A. Electrical metallic tubing (EMT): Shall Conform to UL 797, ANSI C80.3. Maximum size not to exceed (4 inches) and shall be permitted only with cable rated 600 volts or less.

B. Flexible galvanized steel conduit: Shall Conform to UL 1.

C. Liquid-tight flexible metal conduit: Shall Conform to UL 360.

D. Direct burial plastic conduit: Shall conform to UL 651 and UL 651A, heavy wall PVC or high density polyethylene (PE).

2.03 CONDUIT FITTINGS

A. Electrical metallic tubing fittings:

1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.

2. Only steel or malleable iron materials are acceptable.

3. Couplings and connectors: Steel compression type couplings and connectors for conduit sizes (2 inches) and smaller. Use steel, set screw type couplings with four set screws each for conduit sizes over (2 inches).

4. Indent type connectors or couplings are prohibited.

5. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.

B. Flexible steel conduit fittings:

1. Conform to UL 514B. Only steel or malleable iron materials are acceptable.

2. Clamp type, with insulated throat.

C. Liquid-tight flexible metal conduit fittings:

1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.

2. Only steel or malleable iron materials are acceptable.

3. Fittings must incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.

D. Direct burial plastic conduit fittings:

1. Fittings shall meet the requirements of UL 514C and NEMA TC3.

2. As recommended by the conduit manufacturer.

E. Surface metal raceway fittings: As recommended by the raceway manufacturer.

2.04 CONDUIT SUPPORTS

A. Parts and hardware: Zinc-coat or provide equivalent corrosion protection.

B. Individual Conduit Hangers: Designed for the purpose, having a pre-assembled closure bolt and nut, and provisions for receiving a hanger rod.

C. Multiple conduit (trapeze) hangers: Not less than (1-1/2 by 1-1/2 inch), 12 gage steel, cold formed, lipped channels; with not less than (3/8 inch) diameter steel hanger rods.

D. Solid Masonry and Concrete Anchors: Self-drilling expansion shields, or machine bolt expansion.

2.05 OUTLET, JUNCTION, AND PULL BOXES

A. UL-50 and UL-514A.

B. Cast metal where required by the NEC or shown, and equipped with rustproof boxes.

C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

D. Sheet metal boxes: Galvanized steel, except where otherwise shown.

E. Flush mounted wall or ceiling boxes shall be installed with raised covers so that front face of raised cover is flush with the wall. Surface mounted wall or ceiling boxes shall be installed with surface style flat or raised covers.

2.06 CABINETS

A. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.

B. Hinged door in front cover with flush latch and concealed hinge.

C. Key latch to match panelboards.

D. Metal barriers to separate wiring of different systems and voltage.

E. Accessory feet where required for freestanding equipment.

F. Specialty boxes at poles, refer to drawings for details.

2.08 WIREWAYS

A. Equip with screw covers. NEMA 3R at all exterior locations or where subject to moisture.

2.09 WARNING TAPE

A. Standard, 4-Mil polyethylene (3 inches) wide tape detectable type, red with black letters, and imprinted with “CAUTION BURIED ELECTRONIC SAFETY AND SECURITY CABLE BELOW”.

2.10 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.

1. Polymer concrete boxes are to be made from aggregates in combination with polymer resin, combined and processed by mixing, molding, and curing, and reinforced with fiberglass.

2. Boxes are to be high strength, impact resistant, corrosion resistant, nonflammable, and noncorrosive.

3. Enclosures, boxes and covers are required to conform to all test provisions of the most current ANSI/SCTE 77 “Specification For Underground Enclosure Integrity”

4. All components in an assembly (box & cover) are manufactured using matched surface tooling.

5. Covers shall be marked as electrical, power, communications, fiber, signal, etc. as required.

6. Bottom of box shall be filled with 6" of pea gravel.

2.11 SLEEVES FOR RACEWAYS

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.

D. Coordinate sleeve selection and application with selection and application of firestopping.

PART 3 - EXECUTION

3.01 PENETRATIONS

A. Cutting or Holes:

1. Locate holes in advance where they are proposed in the structural sections such as ribs or beams. Obtain the approval of the Architect/Engineer to drilling through structural sections.

2. Cut holes through concrete and masonry in new and existing structures with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed, except where permitted by the Architect/Engineer as required by limited working space.

B. Fire Stop: Where conduits, wireways, and other electronic safety and security raceways pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases, with rock wool fiber or silicone foam sealant only. Completely fill and seal clearances between raceways and openings with the fire stop material.

C. Waterproofing: At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight.

3.02 INSTALLATION, GENERAL

A. Install conduit as follows:

1. In complete runs before pulling in cables or wires.

2. Flattened, dented, or deformed conduit is not permitted. Remove and replace the damaged conduits with new undamaged material.

3. Assure conduit installation does not encroach into the ceiling height head room, walkways, or doorways.

4. Cut square with a hacksaw, ream, remove burrs, and draw up tight.

5. Mechanically continuous.

6. Independently support conduit at (8 foot) on center, (1) support per 10’ run of conduit unless terminating at box or cabinet. Do not use other supports i.e., (suspended ceilings, suspended ceiling supporting members, lighting fixtures, conduits, mechanical piping, or mechanical ducts).

7. Support within (12 inches) of changes of direction, and within (12 inches) of each enclosure or junction box to which connected.

8. Close ends of empty conduit with plugs or caps at the rough-in stage to prevent entry of debris, until wires are pulled in.

9. Secure conduits to cabinets, junction boxes, pull boxes and outlet boxes with bonding type locknuts. Do not make conduit connections to junction box covers.

10. Flashing any penetrations of the roof membrane to seal water-tight. Pitch pockets as required.

11. Unless otherwise indicated on the drawings or specified herein, all conduits shall be installed concealed within finished walls, floors and ceilings where accessible. Install conduits for wall wiring installations in open ceiling spaces.

B. Conduit Bends:

1. Make bends with standard conduit bending machines.

2. Conduit hickey may be used for slight offsets, and for straightening stubbed out conduits.

3. Bending of conduits with a pipe tee or vise is prohibited.

C. Layout and Homeruns:

1. Install conduit with wiring, including homeruns, as required.

2. Deviations: Make only where necessary to avoid interferences.

3.03 CONCEALED WORK INSTALLATION

A. Furred or Suspended Ceilings and in Walls:

1. Conduit for conductors 600 volts and below:

a. EMT shall be used at all interior locations. Rigid steel or IMC at exterior locations.

3.04 EXPOSED WORK INSTALLATION

A. Unless otherwise indicated on the drawings, exposed conduit is only permitted in areas of open ceilings, mechanical, and electrical rooms. Install exposed conduits to follow structural steel or building components, inconspicuous as possible.

B. Conduit for Conductors 600 volts and below:

1. Rigid steel or IMC for exterior. EMT for interior. Different type of conduits mixed indiscriminately in the system is prohibited.

C. Align and run conduit parallel or perpendicular to the building lines.

D. Install horizontal runs close to the ceiling or beams and secure with conduit straps.

E. Support horizontal or vertical runs at not over (8 foot) intervals.

F. Surface metal raceways: Use only where existing wall will not allow concealed installations.

G. Painting:

1. Paint exposed conduit to match adjacent finishes.

3.05 CONDUIT SUPPORTS, INSTALLATION

A. Safe working load shall not exceed 1/4 of proof test load of fastening devices.

B. Use pipe straps or individual conduit hangers for supporting individual conduits. Maximum distance between supports is (8 foot) on center.

C. Support multiple conduit runs with trapeze hangers. Use trapeze hangers that are designed to support a load equal to or greater than the sum of the weights of the conduits, wires, hanger itself, and (200 pounds). Attach each conduit with U-bolts or other approved fasteners.

D. Support conduit independently of junction boxes, pull boxes, fixtures, suspended ceiling T-bars, angle supports, and similar items.

E. Fasteners and Supports in Solid Masonry and Concrete:

1. New Construction: Use steel or malleable iron concrete inserts set in place prior to placing the concrete.

2. Existing Construction:

a. Steel expansion anchors not less than (1/4 inch) bolt size and not less than (1-1/8 inch) embedment.

b. Power set fasteners not less than (1/4 inch) diameter with depth of penetration not less than (3 inches).

c. Use vibration and shock resistant anchors and fasteners for attaching to concrete ceilings.

F. Hollow Masonry: Toggle bolts are permitted.

G. Bolts supported only by plaster or gypsum wallboard are not acceptable.

H. Metal Structures: Use machine screw fasteners or other devices specifically designed and approved for the application.

I. Attachment by wood plugs, plastic, lead or soft metal anchors, or wood blocking and bolts supported only by plaster is prohibited.

J. Chain, wire, or perforated strap shall not be used to support or fasten conduit.

K. Spring steel type supports or fasteners are prohibited for all uses except: Horizontal and vertical supports/fasteners within walls.

L. Vertical Supports: Vertical conduit runs shall have riser clamps and supports in accordance with the NEC and as shown. Provide supports for cable and wire with fittings that include internal wedges and retaining collars.

3.06 BOX INSTALLATION

A. Boxes for Concealed Conduits:

1. Flush mounted.

2. Provide raised covers for boxes to suit the wall or ceiling, construction and finish.

B. In addition to boxes shown, install additional boxes where needed to prevent damage to cables and wires during pulling in operations.

C. Remove only knockouts as required and plug unused openings. Use threaded plugs for cast metal boxes and snap-in metal covers for sheet metal boxes.

D. Outlet boxes in the same wall mounted back-to-back are prohibited. A minimum (24 inch), center-to-center lateral spacing shall be maintained between boxes). Where (24 inch) separation is not achievable, separate as far as possible.

E. Minimum size of outlet boxes for receptacles is (4 inches) square by (2-1/8 inches) deep, with device covers for the wall material and thickness involved.

F. Where concealed above ceilings, on all Branch Circuit junction box covers, identify the circuits with black marker. For low voltage wiring, identify the low voltage cable # or name with black marker.

G. Install flush in pole bases where detailed on drawings.

3.07 ELECTRONIC SAFETY AND SECURITY CONDUIT

A. Install the electronic safety and security raceway system as shown on drawings.

B. Minimum conduit size of (3/4 inch), but not less than the size shown on the drawings.

C. All conduit ends shall be equipped with insulated bushings.

D. All (four inch) conduits within buildings shall include pull boxes after every two 90 degree bends. Size boxes per the NEC.

E. Vertical conduits/sleeves through closets floors shall terminate not less than (3 inches) below the floor and not less than (3 inches) below the ceiling of the floor below.

F. Terminate conduit runs to/from a backboard in a closet or interstitial space at the top or bottom of the backboard. Conduits shall enter communication closets next to the wall and be flush with the backboard.

G. Where drilling is necessary for vertical conduits, locate holes so as not to affect structural sections such as ribs or beams.

H. All empty conduits located in communications closets or on backboards shall be sealed with a standard non-hardening duct seal compound to prevent the entrance of moisture and gases and to meet fire resistance requirements.

I. Conduit runs shall contain no more than four quarter turns (90 degree bends) between pull boxes/backboards. Long radius for communication conduit bends.

J. Furnish and install (3/4 inch) thick fire retardant plywood specified on the wall of communication closets where shown on drawings . Mount the plywood with the bottom edge (6 inches) above the finished floor.

K. Furnish and pull wire in all empty conduits. (Sleeves through floor are exceptions).

3.08 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.09 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 28 23 00

VIDEO SURVEILLANCE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Design, Provide, and Install a complete Video Surveillance System.

B. This Section includes video surveillance system consisting of cameras, data transmission wiring, and a control station with its associated equipment.

1.02 RELATED WORK

A. GENERAL REQUIREMENTS. For General Requirements.

B. FIRESTOPPING. Requirements for firestopping application and use.

C. COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY. Requirements for general requirements that are common to more than one section in Division 28.

D. CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY. Requirements for conductors and cables.

E. GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY. Requirements for grounding of equipment.

F. CONDUITS AND BACKBOXES FOR ELECTRONIC SAFETY AND SECURITY. Requirements for infrastructure.

1.03 QUALITY ASSURANCE

A. The Contractor shall be responsible for designing specific components of the system, providing equipment and all related materials and apparatus associated with the systems, installing, and the operation of the Surveillance System as shown. The Contractor shall also provide certification as required.

B. The security system shall be installed and tested to ensure all components are fully compatible as a system and can be integrated with all associated security subsystems, whether the security system is stand-alone or a part of a complete Information Technology (IT) computer network.

C. The Contractor or security sub-contractor shall be a licensed security Contractor as required within the state or jurisdiction of where the installation work is being conducted.

D. Manufacturers Qualifications: The manufacturer shall regularly and presently produce, as one of the manufacturer's principal products, the equipment and material specified for this project, and shall have manufactured the item for at least three years.

E. Product Qualification:

1. Manufacturer's product shall have been in satisfactory operation, on three installations of similar size and type as this project, for approximately three years.

2. The Architect/Engineer reserves the right to require the Contractor to submit a list of installations where the products have been in operation before approval.

F. Contractor Qualification:

1. The Contractor or security sub-contractor shall be a licensed security Contractor with a minimum of five (5) years experience installing and servicing systems of similar scope and complexity. The Contractor shall be an authorized regional representative of the Video Assessment and Surveillance System’s manufacturer. The Contractor shall provide three (3) current references from

clients with systems of similar scope and complexity which became operational in the past five (5) years. At least two (2) of the references shall be utilizing the same system components, in a similar configuration as the proposed system. The references must include a current point of contact, company or agency name, address, telephone number, complete system description, date of completion, and approximate cost of the project. The owner reserves the option to visit the reference sites, with the site owner's permission and representative, to verify the quality of installation and the references' level of satisfaction with the system. The Contractor shall provide copies of system manufacturer certification for all technicians. The Contractor shall only utilize factory-trained technicians to install, program, and service the Surveillance system. The Contractor shall only utilize factory-trained technicians to install, terminate and service cameras, control, and recording equipment. The technicians shall have a minimum of five (5) continuous years of technical experience in electronic security systems. The Contractor shall have a local service facility. The facility shall be located within 100 miles of the project site. The local facility shall include sufficient spare parts inventory to support the service requirements associated with this contract. The facility shall also include appropriate diagnostic equipment to perform diagnostic procedures. The Architect/Engineer/Owner reserves the option of surveying the company's facility to verify the service inventory and presence of a local service organization.

2. The Contractor shall provide proof project superintendent with BICSI Certified Commercial Installer Level 1, Level 2, or Technician to provide oversight of the project.

G. Service Qualifications: There shall be a permanent service organization maintained or trained by the manufacturer which will render satisfactory service to this installation within eight (8) hours of receipt of notification that service is needed. Submit name and address of service organizations.

1.04 SUBMITTALS

A. Submit below items: Shop Drawings, Product Data, and Samples where noted.

B. Provide certificates of compliance with Quality Assurance.

C. Provide a pre-installation and as-built design package in both electronic format and on paper, minimum size (22 x 34 inches); drawing submittals shall be per the established project schedule.

D. Pre-installation design and as-built packages shall include, but not be limited to:

1. Index Sheet that shall:

a. Define each page of the design package to include facility name, building name, floor, and sheet number.

b. Provide a list of all security abbreviations and symbols.

c. Reference all general notes that are utilized within the design package.

d. Specification and scope of work pages for all security systems that are applicable to the design package that will:

1) Outline all general and job specific work required within the design package.

2) Provide a device identification table outlining device Identification (ID) and use for all security systems equipment utilized in the design package.

2. Floor plans, site plans, and enlarged plans shall:

a. Include a title block as defined above.

b. Define the drawings scale in standard measurements.

c. Provide device identification and location.

d. Address all signal and power conduit runs and sizes that are associated with the design of the electronic security system and other security elements (e.g., barriers, etc.).

e. Identify all pull boxes (8” or larger) and conduit locations, sizes, and fill capacities.

f. Address all general and drawing specific notes for a particular drawing sheet.

3. A riser drawing for each applicable security subsystem shall:

a. Indicate the sequence of operation.

b. Relationship of integrated components on one diagram.

c. Include the number, size, identification, and maximum lengths of interconnecting wires.

d. Wire/cable types shall be defined by a wire and cable schedule. The schedule shall utilize a lettering system that will correspond to the wire/cable it represents (example: A = 18 AWG/1 Pair Twisted, Unshielded). This schedule shall also provide the manufacturer’s name and part number for the wire/cable being installed.

4. A system drawing for each applicable system shall:

a. Identify how all equipment within the system, from main panel to device, shall be laid out and connected.

b. Provide full detail of all system components wiring from point-to-point.

c. Identify wire types utilized for connection, interconnection with associate security subsystems.

d. Show device locations that correspond to the floor plans.

e. All general and drawing specific notes shall be included with the system drawings.

5. A schedule for all of the applicable subsystems shall be included. All schedules shall provide the following information:

a. Device ID.

b. Device Location (e.g. site, building, floor, room number, location, and description).

c. Mounting type (e.g. flush, wall, surface, etc.).

d. Power supply or circuit breaker and power panel number (where applicable).

e. In addition, for the Surveillance Systems, provide the camera ID, camera type (e.g. fixed or pan/tilt/zoom (P/T/Z), lens type (e.g. for fixed cameras only) and housing model number.

6. Detail and elevation drawings for all devices that define how they were installed and mounted.

E. Provide manufacturer security system product cut-sheets. Submit for approval at least 30 days prior to commencement of formal testing, a Security System Operational Test Plan. Include procedures for operational testing of each component and security subsystem, to include performance of an integrated system test.

F. Submit manufacturer's certification of Underwriters Laboratories, Inc. (UL) listing as specified. Provide all maintenance and operating manuals per General Requirements.

1.05 COORDINATION

A. Coordinate arrangement, mounting, and support of video surveillance equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.

2. To provide for ease of disconnecting the equipment with minimum interference to other installations.

3. To allow right of way for piping and conduit installed at required slope.

4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

C. Coordinate location of access panels and doors for video surveillance items that are behind finished surfaces or otherwise concealed.

1.06 WARRANTY OF CONSTRUCTION

A. Warrant Surveillance System work subject to Section 28 05 00.

B. Demonstration and training shall be performed prior to system acceptance.

PART 2 – PRODUCTS

2.01 GENERAL

A. Video signal format shall comply with the NTSC standard composite video, interlaced. Composite video signal termination shall be 75 ohms.

B. Surge Protection: Protect components from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include surge protection for external wiring of each conductor entry connection to components.

C. Power Connections: Comply with requirements in Section 28 05 00 COMMON WORK REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY, Part 2, as recommended by manufacturer for type of line being protected.

2.02 CAMERAS

A. All Cameras will be EIA 330 and UL 1. Minimum Protection for Power Connections 120 V and more: Auxiliary panel suppressors shall comply with requirements in Section 28 05 00 COMMON WORK REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY, Part 2.

B. All cameras shall be furnished with all mounting brackets, hardware, etc. for complete an operable installation in the locations shown on the drawings. They shall meet the following minimum requirements and specifications:

1. Camera housing and mounted systems shall be painted per manufacturer's instructions to match the mounted surface or pole.

2. Cameras shall be IP66 and NEMA 4X rated. They shall be PoE IEEE 802.3af/802.3at Type 1, class 3.

3. Lenses shall be varifocal with remote focus and zoom with P-iris control, IR corrected.

4. Day and Night: Automatically removable infrared-cut filter.

5. IR Illumination: Optimized IR, highly efficient LEDs with adjustable intensity and angle of illumination.

6. Network Security: Password Protection, IP Address Filetering, HTTPS encryption, IEEE 802.1X3 network access control, Digest Authentication, User access log, brute force delay protection, CIFS/SMB, SMTP, Bonjour, UpnP, SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTSP, RTP, SRTP, SFTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS, SSH LLDP.

7. Operating Conditions: Temp -40 deg C to 55 deg C, Humidity 10-100% RH (condensing)

C. Type A Camera Assemblies:

1. Quad Configuration: QUAD cameras shall meet the following as a minimum:

a. Image Sensor: 4x8 MP progressive scan RGB CMOS 1/2.8

b. Lens: Autofocus lenses, fixed iris, F2.0, Focal Length: 2.8 mm Horizontal field of view: 360 degrees, vertical field of view: 84 degrees.

c. Minimum Illumination Color: 0.4 lux at 50 IRE, F2.0 B/W: 0.03 lux at 50 IRE, F2.0.

d. Pan/Tilt/Zoom: One-click PTZ control

e. Connectors: RJ45 10 BASE-T/100 BASE-T PoE RJ45 10 BASE-T/100 BASE-TX/1000 BASE-T PTZ port

f. Full Integration with attaches PTZ camera, with the ability to direct PTZ for analytic events (motion, cross-line, and object detection).

g. Includes PoE injector with SFP port.

h. The basis of design for the QUAD cameras is AXIS Q6010-E. This camera is required as listed as it is an integrated unit that commands control of the PTZ. No substitutions permitted.

2.03 ELECTRONICS AND CAMERA WIRING

A. Camera circuitry shall be provided by the contractor and coordinated with the Mississippi Department of Information Technology Services (MDITS). Camera wiring shall be installed on contractor provided and installed conduits as detailed on the drawings.

B. The network switches for the cameras shall be provided and installed by MDITS.

C. The network rack shall be provided and installed by the contractor. The rack, rack components, cable management, and all components shall be coordinated with MDITS.

D. The network storage server shall be provided and installed by the State of Mississippi.

E. Configuration of the cameras on the Owner’s system shall be performed by the State of Mississippi.

2.04 WIRES AND CABLES

A. Refer to Section 28 05 13 for additional information.

B. Shall meet or exceed the manufacturers recommendation for power and signal.

C. Will be carried in an enclosed conduit system, utilizing electromagnetic tubing (EMT) to include the equivalent in flexible metal, rigid galvanized steel (RGS) to include the equivalent of liquid tight, polyvinylchloride (PVC) schedule 40 or 80.

D. All conduits will be sized and installed per the NEC, (3/4” minimum). All security system signal and power cables that traverse or originate in an open ceiling area will contained in either EMT or RGS conduit.

E. All conduit, pull boxes, and junction boxes shall be clearly marked with colored permanent tape or paint that will allow it to be distinguished from all other conduit and infrastructure.

F. Conduit fills shall not exceed 50 percent unless otherwise documented.

G. A pull string shall be pulled along and provided with signal and power cables to assist in future installations.

H. At all locations where there is a wall penetration or core drilling is conducted to allow for conduit to be installed, fire stopping materials shall be applied to that area

I. High voltage and signal cables shall not share the same conduit and shall be kept separate up to the point of connection. High voltage for the security system shall be defined as any cable or sets of cables carrying 30 VDC/VAC or higher.

J. Signal Cables:

1. Signal wiring for PoE cameras depends on the distance the camera is being installed from either a hub or the server.

2. Cabling from the building service location shall be fiber optic, installed per manufacturer's recommendation.

3. Camera wiring at the pole and/or housing location, shall be category 6 (CAT-6) cable a with standard RJ-45 connector at each end. The cable with comply with the Power over Ethernet, IEEE802.3af, Standard.

4. Camera wiring for cameras at the building shall be category 6 (CAT-6).

5. Power Cables will be sized accordingly and shall comply with the NEC. Power cables will be a minimum of three conductors, 10 AWG, stranded, THHN/THWN. Unless noted otherwise on drawings.

PART 3 - EXECUTION

3.01 GENERAL

A. Installation: The Contractor shall install all system components including Owner furnished equipment, and appurtenances in accordance with the manufacturer's instructions, ANSI C2 and as shown, and shall furnish all necessary connectors, terminators, interconnections, services, and adjustments required for a complete and operable data transmission system.

B. Identification and Labeling: The Contractor shall supply permanent identification labels for each cable at each end that will appear on the as-built drawings. The labeling format shall be identified and a complete record shall be provided to the Owner with the final documentation. Each cable shall be identified by type or signal being carried and termination points. The labels shall be printed on letter size label sheets that are self laminated vinyl that can be printed from a computer data base or spread sheet. The labels shall be E-Z code WES12112 or equivalent.

1. The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform all testing.

C. Transient Voltage Surge Suppressors (TVSS): The Contractor shall mount TVSS within (6 feet) of equipment to be protected inside terminal cabinets or suitable NEMA 1 enclosures. Terminate off-premise conductors on input side of device. Connect the output side of the device to the equipment to be protected. Connect ground lug to a low impedance earth ground (less than 10 ohms) via Number 12 AWG insulated, stranded copper conductor.

D. Contractor's Field Test: The Contractor shall verify the complete operation of the data transmission system and all components during the Contractor's Field Testing. The Contractor shall submit a report containing results of the field test.

E. Acceptance Test and Endurance Test: The wire line data transmission system shall be tested as a part of the completed IDS and EECS during the Acceptance test and Endurance Test as specified.

F. Identification and Labeling: The Contractor shall supply identification tags or labels for each cable. Cable shall be labeled at both end points and at intermediate hand holes, pull boxes, and junction boxes. The labeling format shall be identified and a complete record shall be provided to the Owner with the final documentation. Each cable shall be identified with type of signal being carried and termination points.

3.02 INSTALLATION

A. System installation shall be in accordance with NECA 303, manufacturer and related documents and references, for each type of security subsystem designed, engineered and installed.

B. Components shall be configured with appropriate "service points" to pinpoint system trouble in less than 30 minutes.

C. The Contractor shall install all system components and appurtenances in accordance with the manufacturer's instructions, documentation listed in all Sections of this document, and shall furnish all necessary connectors, terminators, interconnections, services, and adjustments required for a complete and operable system.

D. The Surveillance System will be designed, engineered, installed, and tested to ensure all components are fully compatible as a system and can be integrated with all associated security subsystems, whether the system is a stand alone or a complete network.

E. For programming purposes refer to the manufacturers' requirements for correct system operations. Ensure computers being utilized for system integration meet or exceed the minimum system requirements outlined on the systems software packages.

F. A complete Surveillance System shall be comprised of, but not limited to, the following components:
   1. Cameras
   2. Lenses
   3. Video Display Equipment
   4. Camera Housings and Mounts
   5. Controlling Equipment
   6. Recording Devices
   7. Wiring and Cables

G. The Contractor shall visit the site and verify that site conditions are in agreement and/or compliance with the design package. The Contractor shall report all changes to the site or conditions that will affect performance of the system to the Engineer in the form of a report. The Contractor shall not take any corrective action without written permission received from the Architect/Engineer.

H. Existing Equipment

   1. The Contractor shall connect to and utilize owner's existing head end network system. However, the infrastructure of the new security camera/surveillance system shall have its own wiring, equipment, and components.

   2. The Contractor shall perform a field survey of all existing equipment at each location.

   3. The Contractor shall make written notes of any deficiencies found during the initial survey. All existing network equipment and components are operational and will be considered operational unless specifically noted by the contractor and

owner. All existing work will be protected during new construction. If any equipment, cabling, or components are damaged due to contractor negligence, the Contractor that has commenced work in the area, on any specific device, signal or control line, the Contractor shall diagnose the failure and perform any necessary corrections to the equipment at not cost to the Architect, Engineer, or owner. If such damage occurs, the Contractor shall immediately notify the Architect, Engineer, and owner.

4. The Contractor shall be held responsible for repair costs due to Contractor negligence, abuse, or incorrect installation of equipment.

I. Interconnection of Console Video Equipment: The Contractor shall connect signal paths between video equipment as specified by the OEM. Cables shall be as short as practicable for each signal path without causing strain at the connectors. Rack mounted equipment on slide mounts shall have cables of sufficient length to allow full extension of the slide rails from the rack.

J. Cameras:

1. Install the cameras with the focal length lens as best required for each zone.
2. Connect power and signal lines to the camera.
3. Aim camera to give field of view as needed to cover the alarm zone.
4. Aim fixed mounted cameras installed outdoors facing the rising or setting sun sufficiently below the horizon to preclude the camera looking directly at the sun.
5. Focus the lens to give a sharp picture (to include checking for day and night focus and image quality) over the entire field of view
6. Synchronize all cameras so the picture does not roll on the monitor when cameras are selected.
7. PTZ cameras shall have all preset positions and privacy areas defined and programmed.

K. Equipment:

1. Install all ancillary equipment as required for operational system and as required by the manufacturer.
2. Connect all subassemblies as specified by the manufacturer and as shown.
3. Connect video signal inputs and outputs as shown and specified; terminate video inputs as required.
4. Connect the assemblies and subassemblies to AC power as required.
5. Load all software as specified and required for an operational Surveillance System configured for the site and building requirements, including data bases, operational parameters, and system, command, and application programs.
6. Provide the original and 2 backup copies for all accepted software upon successful completion of testing.
7. Program the video annotation for each camera.

L. Camera Housings and Mounts:

1. Install the camera housings and mounts as specified by the manufacturer and as shown, provide mounting hardware sized appropriately to secure each camera, housing and mount with maximum wind and ice loading encountered at the site.
2. Connect signal lines and AC power to the housing interfaces.
3. Connect wiring to camera.

3.03 SYSTEM START-UP

A. The Contractor shall not apply power to the Surveillance System until the following items have been completed:

1. Surveillance System equipment items and have been set up in accordance with manufacturer's instructions.

2. A visual inspection of the Surveillance System has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.

3. System wiring has been tested and verified as correctly connected as indicated.

4. All system grounding and transient protection systems have been verified as installed and connected as indicated.

5. Power supplies to be connected to the Surveillance System have been verified as the correct voltage, phasing, and frequency as indicated.

B. The State of Mississippi and Architect/Engineer will observe startup and contractor testing of selected equipment. Coordinate the startup and contractor testing schedules with the Architect/Engineer and Owner. Provide a minimum of 7 days prior notice.

C. Satisfaction of the above requirements shall not relieve the Contractor of responsibility for incorrect installation, defective equipment items, or collateral damage as a result of Contractor work efforts.

3.04 SUPLEMENTAL CONTRACTOR QUALITY CONTROL

A. The Contractor shall provide the services of technical representatives who are familiar with all components and installation procedures of the installed Surveillance System and are approved by the Architect/Engineer.

B. The Contractor will be present on the job site during the preparatory and initial phases of quality control to provide technical assistance.

C. The Contractor shall also be available on an as needed basis to provide assistance with follow-up phases of quality control.

D. The Contractor shall participate in the testing and validation of the system and shall provide certification that the system installed is fully operational as all construction document requirements have been fulfilled.

3.05 DEMONSTRATION AND TRAINING

A. All testing and training shall be compliant with the General Requirements of Specification Section 28 05 00.

B. Provide services of manufacturer’s technical representative for a minimum of (4) hours to instruct owner’s personnel in operation and maintenance of units. Video record all training sessions and turn over with closeout documents.

3.06 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.07 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION