

REQUEST FOR INVITATION TO BID NO. 07ITB 54805K-DJ

**THE INSTALLATION OF EMERGENCY/STANDBY
ENGINE GENERATORS AT FOUR FULTON COUNTY
SENIOR MULTIPURPOSE COMPLEXES**

Volume 1 of 2

For

General Services Department

BID DUE TIME AND DATE: Monday, July 9, 2007, 11:00 A.M.

BID ISSUANCE DATE: May 25, 2007

PURCHASING CONTACT: Donna Jenkins at (404)-730-4213

E-MAIL: Donna.Jenkins@fultoncountyga.gov

**LOCATION: Fulton County Department of Purchasing and Contract Compliance
130 PEACHTREE STREET, S.W., SUITE 1168
ATLANTA, GA 30303**

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INVITATION TO BID
07ITB54805K-DJ
INSTALLATION OF EMERGENCY/STANDBY ENGINE GENERATORS AT
FOUR FULTON COUNTY SENIOR MULTIPURPOSE COMPLEXES

Sealed Bids for furnishing all materials, labor, tools, equipment and appurtenances necessary for the **Installation of Emergency/ Standby Engine Generators at Four Fulton County Senior Multipurpose Complexes** will be received by the Fulton County Department of Purchasing and Contract Compliance at 130 Peachtree Street, S.W. Suite 1168 Atlanta, GA 30303, until 11:00a.m., local time, on Monday, [Insert Bid Date, Month and Year], and then at said office publicly opened and read aloud.

Description of Project:

This Invitation to Bid (ITB) scope includes Electrical and general requirements for the installation of emergency/standby engine generators at four Fulton County Senior Multipurpose Complexes. The installation will include site/civil work (for basic land clearing, repair of landscaping damaged by construction, and installation of concrete pad for the generator) and electrical work (installation of conduit and conductors from generator to transfer equipment in electrical rooms, and connection of transfer equipment to existing electrical service).

Bid Documents:

The Instructions to Bidders, Bid and Contract Requirements (Bid Form, Bid Bond, Performance Bond, Payment Bond, Contract Agreement), and other Documents (Drawings and/or Specifications) may be examined at the following locations:

McGraw Hill Construction Dodge
3200 Riverside Dr
STE 310
Macon, Georgia 31210

Fulton County
Public Works Department
STE 6001
141 Pryor ST, S.W., 6th Floor
Atlanta, Georgia 30303

AGC Builders Exchange
1940 The Exchange
STE 300
Atlanta, Georgia 30339

CMD / Construction Market Data
30 Technology Blvd
STE 100
Norcross Georgia 30092

FW Dodge Corporation
4170 Ashford-Dunwoody Rd
STE 200
Atlanta, Georgia 30319

Minority Business Development Agency
401 West Peachtree St
Summit Bldg STE 1715
Atlanta Georgia 30308

This document and supporting documents can be downloaded at the Fulton County Website, <http://www.fultoncountyga.gov> under "Bid Opportunities".

Bid documents, drawings and technical specifications, may be purchased directly from:

Imaging Technologies
640 10th Street NW
Atlanta, GA 30318
404.873.5911 voice
404.870.6611 fax

The approximate cost for a set of drawings is \$ 9.00, and \$40.00 for the specifications. Drawings and specifications may be viewed and/or purchased online from Imaging Technologies at:

<http://www.itrepro.com/reprographics/online/planroom.asp>

Applications for documents, along with a non-refundable \$50.00 payment must be made to Department of General Services, 141 Pryor Street, S.W., Suite G-119, Atlanta, Georgia 30303. Payment must be in the form of a company or personal check . Checks returned for any reason will result in the bid being deemed non-responsive. This amount includes all fees for printing and distribution and will be used to defray a portion of the printing cost that may have been incurred for the tendering of the Project. Partial sets of the bid document will not be issued.

For payment information, contact Jim Winslett, Department of General Services at (404) 505-5797. All other questions should be addressed by the procedures outlined in this ITB to Donna Jenkins Fulton County Department of Purchasing and Contract Compliance at (404) 730-4213, Donna.Jenkins@fultoncountyga.gov.

Term of Contract:

The term of this contract is 365 calendar days including the post completion inspection period.

No Contact Provision

It is the policy of Fulton County that the evaluation and award process for County contracts shall be free from both actual and perceived impropriety, and that contacts between potential vendors and County officials, elected officials and staff regarding pending awards of County contracts shall be prohibited.

- A. No person, firm, or business entity, however situated or composed, obtaining a copy of or responding to this solicitation, shall initiate or continue any verbal or written communication regarding this solicitation with any County officer, elected official, employee, or designated County representative, between the date of the issuance of this solicitation and the date of the County Manager's recommendation to the Board of Commissioners for award of the subject contract, except as may otherwise be specifically authorized and permitted by the terms and conditions of this solicitation.
- B. All verbal and written communications initiated by such person, firm, or entity regarding this solicitation, if same are authorized and permitted by the terms and conditions of this solicitation, shall be directed to the Purchasing Agent.
- C. Any violation of this prohibition of the initiation or continuation of verbal or written communications with County officers, elected officials, employees, or designated County representatives shall result in a written finding by the Purchasing Agent that the submitted Bid or proposal of the person, firm, or entity in violation is "non-responsive", and same shall not be considered for award.

Bid Contact

Information regarding the bid or bid requirements, either procedural or technical, may be obtained by submitting questions in writing to:

Fulton County Department of Purchasing and Contract Compliance
Attn: Donna Jenkins, Assistant Purchasing Agent
Fulton County Public Safety Building
130 Peachtree Street, S.W. Suite 1168
Atlanta, GA 30303
Phone: (404) 730-4213
Fax: (404) 335-5807
Reference Bid # 07ITB54805K-DJ

Or donna.jenkins@fultoncountyga.gov

Basis of Award

The Contract, if awarded, will be awarded to the lowest responsive and responsible bidder. No bid may be withdrawn for a period of sixty (60) days after the date of bid opening except as permitted by O.C.G.A., §36-91-41 et seq., as amended. Each Bid must be accompanied by a Bid Bond in accordance with the Bid Bond Requirements provided in the Contract Documents, on a Surety Company's Standard Bid Bond Form acceptable to the County in an amount no less than 5% of the amount bid. The successful bidder will be required to furnish a Performance Bond and Payment Bond, **on or before** the issuance of Notice to Proceed, each in the amount of 100% of the Contract Amount. All other required Contract Documents must be fully completed and executed by the Contractor and his/her Surety, and submitted to the Owner **on or before** the issuance of the Notice to Proceed.

Pre-Bid Conference

Date: **Wednesday, June 6, 2007**
Time: **2:00pm**
Location: Fulton County Department of Purchasing and Contract Compliance,
Public Safety Building
130 Peachtree Street, S.W. Suite 1168
Atlanta, GA 30303

A optional pre-bid conference will be held in the Fulton County Department of Purchasing and Contract Compliance Conference Room, located at 130 Peachtree Street, S.W. Suite 1168, Atlanta, Georgia 30303. ***Inquiries regarding the solicitation either technical or otherwise may be submitted in writing prior to the pre-bid conference and will be addressed at the pre-bid conference.*** Any additional questions asked at the pre-bid conference must be submitted in written form at the pre-bid conference and will be responded to in the form of an addendum with the County's official responses.

The Pre-bid conference will be conducted for the purpose of explaining the County's bid process, the specifications/technical documents, and to provide non-binding verbal responses to questions concerning these bid specifications and to discuss issues from the bidders perspective. However, no verbal response provided at the pre-bid conference binds the County. Only those responses to written questions that are responded to by the County in written communications will be official.

Facility Site Visits

Site visits to the Senior Centers will be conducted over 2 days as follows:

Date: Thursday, June 7, 2007
Time: 10:00 a.m.
Locations: Helene S. Mills Senior Multipurpose Facility *meet at this location*
515 John Wesley Dobbs Ave
Atlanta GA 30312

Dorothy C. Benson Senior Multipurpose Center
6500 Vernon Woods Drive
Atlanta, GA 30328

Immediately after the site visit at Helene Mills facility, the group will depart and re-convene at the Dorothy Benson facility.

Date: Friday, June 8, 2007
Time: 10:00 a.m.
Locations: H.J.C. Bowden Senior Multipurpose Facility *meet at this location*
2885 Church Street
East Point, GA 30344

Harriet G. Darnell Senior Multipurpose Facility
6500 Vernon Woods Drive
Atlanta, GA 30328

Immediately after the site visit at the HJC Bowden facility, the group will depart and reconvene at the Harriet Darnell facility.

The facility site visits are not mandatory but all bidders are strongly encouraged to attend.

END OF SECTION

INSTRUCTIONS TO BIDDERS

A. Contract Documents

The Contract Documents include the Contract Agreement, Contractor's Bid (including all documentation accompanying the Bid and any post-Bid documentation required by the County prior to the Notice of Award), Bonds, all Special Conditions, General Conditions, Supplementary Conditions, Specifications, Drawings and addenda, together with written amendments, change orders, field orders and the Construction Manager's written interpretations and clarifications issued in accordance with the General Conditions on or after the date of the Contract Agreement.

Shop drawing submittals reviewed in accordance with the General Conditions, geotechnical investigations and soils report and drawings of physical conditions in or relating to existing surface structures at or contiguous to the site are not Contract Documents.

The Contract Documents shall define and describe the complete work to which they relate.

B. Bid Preparation and Execution

All Bids must be made on the Bid forms contained herein. The original signed Bid with three (3) copies shall be submitted in a sealed envelope, addressed to the Department of Purchasing and Contract Compliance, Fulton County Public Safety Building, 130 Peachtree Street, S.W., Suite 1168 Atlanta, Georgia 30303, and labeled "Bid for ITB-07ITB54805K-DJ, Installation of Emergency/Standby Engine Generators at Four Fulton County Senior Multipurpose Complexes."

REQUIRED SUBMITTALS: The bidder **must complete and execute** the following:

1. Bid Form
2. Acknowledgement of each Addendum
3. Bid Bond
4. Purchasing Forms (See Submittal Check List at end of this Section), fully executed
5. Contract Compliance Forms (See Submittal Check List at end of this Section), fully executed
6. Risk Management Insurance Provisions Form

Any bids received after the stated time and date will not be considered. It shall be the sole responsibility of the bidder to have his/her bid delivered to the Fulton County Department of Purchasing and Contract Compliance for receipt on or before the stated time and date (see Section 00020). If a bid is sent by U.S. Mail, the bidder shall be responsible for its timely delivery to the Purchasing Department. Bids delayed by mail will not be considered, shall not be opened, and arrangements shall be made for their return at the bidder's request and expense.

Bid shall be publicly opened, with only the names and total bid price of the bidders disclosed at the opening.

C. Addenda and Interpretations

No interpretations of the meaning of the Drawings, Specifications or other pre-bid documents will be made to any Bidder orally.

Bidders requiring clarification or interpretation of the Contract Documents shall make a request in writing, either by mail, hand delivery, e-mail or fax, to the Purchasing Agent at the address below. To be given consideration, requests must be received no later than Monday, July 2, 2007 at 5:00pm. Telephone inquiries will not be accepted.

Fulton County Department of Purchasing and Contract Compliance
Attn: Donna Jenkins, Assistant Purchasing Agent
Fulton County Public Safety Building
130 Peachtree Street, S.W., 1168
Atlanta, GA 30303
(404) 730-4213
Fax: (404) 335-5807
Donna.Jenkins@fultoncountyga.gov
Reference Bid # 07ITB54805K-DJ

Only communications from firms that are in writing and signed will be recognized by the County as duly authorized expressions on behalf of proposers/bidders. Any and all such interpretations and any supplemental instructions will be in the form of written Addenda to the Contract Documents which, if issued, will be mailed, shipped or faxed to all prospective Bidders (at the respective addresses furnished) prior to the date fixed for the opening of Bids.

Failure of Bidders to receive or acknowledge any Addendum shall not relieve them of any obligation under the Bid. All Addenda shall become part of the Contract Documents.

D. Site Examination

There will be a site visit for this project. It will be held on June 7 and 8, 2007 at 10:00am. Bidders **are not** required to attend.

E. Bidder's Modification and Withdrawal of Bids

A Bidder may modify or withdraw its bid by written request, provided that the request is received by the County prior to the bid due date and time at the address to which bids are to be submitted. Provided further, that in case of an electronic request (i.e. facsimile, e-mail, etc.) a written confirmation thereof over the authorized signature of the Bidder must be received by the County at the address to which original Bids are to be submitted within three (3) calendar days after issue of the electronic message. Following withdrawal of its bid, the Bidder may submit a new bid, providing delivery is affected prior to the established bid opening date and time. **No bid may be withdrawn after bid due date for sixty (60) calendar days.**

F. Bid and Contract Security

A Bid Bond for an amount equal to five percent (5%) of the bid amount must accompany each Proposal. The bid bond shall be submitted in a separate, sealed envelope marked "Bid Bond".

Bids must be accompanied by a bid bond or certified check in an amount of five percent (5%) of the TOTAL AMOUNT of the base bid. The bid bond or certified check shall apply **ONLY TO THIS BID**. The bid name and contract number must appear on the security instrument. The bond must remain in full force and effect until the Bidder executes the final Contract. Bids not satisfying the bonding requirements of this project will be declared non-responsive.

Any bid bond, performance bond, payment bond, or security deposit required for public works construction contract shall be approved and filed with purchasing agent. At the option of the County, if the surety named in the bond is other than a surety company authorized by law to do business in this state pursuant to a current certificate of authority to transact surety business by the Commissioner of Insurance, such bond shall not be approved and filed unless such surety is on the United States Department of Treasury's list of approved bond sureties.

A Purchasing Agent shall approve as to form and as to the solvency of the surety any bid bond, performance bond, or payment bond required by this. In the case of a bid bond, such approval shall be obtained prior to acceptance of the bid or proposal. In the case of payment bonds and performance bonds, such approval shall be obtained prior to the execution of the contract.

Whenever, in the judgment of the County:

- (1) Any surety on a bid, performance, or payment bond has become insolvent;
- (2) Any corporation surety is not longer certified or approved by the Commissioner of Insurance to do business in the state; or
- (3) For any cause there are no longer proper or sufficient sureties on any or all the bonds

The County may require the contractor to strengthen any or all of the bonds or to furnish a new or additional bond or bonds within ten days. Thereupon, if so ordered by the County, all work on the contract shall cease unless such new or additional bond or bonds are furnished. If such bond or bonds are not furnished within such time, the County may terminate the contract and complete the same as the agent of and at the expense of the contractor and his or her sureties.

As a condition of responsiveness the bidder must contain a Bid Bond for an amount equal to 5% of the bid amount. The Bid Bond shall be included in a separate envelope marked on the outside "Bid Bond". Checks or letters of credit of any type will not be accepted. A certified cashier's check will be acceptable. Provide a completed and fully executed Bid Bond. When the bidder's package is opened, a purchasing agent will verify the presence of the Bid Bond and remove it from the Proposal Package.

If the bidder withdraws its bid from the competition after the selection of its bid for a reason not authorized by Georgia law, the County will proceed on the Bid Bond, along with any other available remedies.

The Surety of the Bid Bond shall be from a surety company authorized to do business in the State of Georgia, shall be listed in the Department of Treasury Circular 570, and shall have an underwriting limitation in excess of 100% of the bid amount. The Bonds and Surety shall be subject to approval by the County Attorney.

Attorneys-in-fact for bidders who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

G. Right to Reject Bids

The County reserves the right to reject any or all bids and to waive informalities. No bids will be received after the time set for opening bids. Any unauthorized conditions, limitations or provisions attached to the Bid, except as provided herein, will render it informal and may cause its rejection. Unbalanced bids will be subject to rejection. Any bidder may withdraw his/her bid, either personally or by telegraphic or written request, at any time prior to the scheduled closing time for receipt of bids. Telegraphic or written requests for withdrawal must be in the possession of the County prior to the closing time for receipt of bids.

H. Applicable Laws

All applicable laws and regulations of the State of Georgia and ordinances and regulations of Fulton County shall apply. Protestors shall seek resolution of their complaints in the manner provided in the Fulton County Code of Laws §2-324, which is incorporated by reference herein.

I. Examination of Contract Documents

Prospective bidders shall examine the contract documents and before submitting a bid, shall make a written request to the County for an interpretation or correction of any ambiguity, in consistency or error therein which could be discovered by a bidder. At the bid opening each bidder shall be presumed to have read and be familiar with the contract documents.

J. Termination

The County may terminate the contract resulting from this solicitation at any time the vendor fails to carry out the contract provisions, if in the opinion of the County, the performance of the contract is

unreasonably delayed, or the vendor is in direct violation of the contract conditions. The County shall provide the vendor with notice of any conditions which violate or endanger the performance of the contract and, if after such notice the contractor fails to remedy such conditions within thirty (30) days, to the satisfaction of the County, the County may exercise their option in writing to terminate the Contract without further notice to the Contractor and order the Contractor to stop work immediately and vacate the premises. Vendor agrees by its bid submission that the County's decision is final and valid.

K. Indemnification and Hold Harmless Agreement

See Section 00490, Insurance and Risk Management Provisions page 3, Indemnification and Hold Harmless Agreement

L. Bid Opening

Bids will be opened in public and read aloud. All bidders are requested to be present at the opening.

M. Determination of Successful Bidder

Fulton County desires to complete this work in a timely manner. The Contract will be awarded to the lowest responsive, responsible bidder(s), if awarded.

1. **Responsibility:** The determination of the bidder's responsibility will be made by the County based on whether the bidder meets the following minimum requirements:
 - a. The County reserves the right to reject any bid if the evidence submitted by, or investigation of, the bidder fails to satisfy the County that he/she is properly qualified to carry out the obligations of the Contract.
 - b. Is properly licensed to perform this type of work in Fulton County. Bidders must have a utility contractors license to perform this work. O.C.G.A. §43-14-8.3 (h)
 - c. Maintains a permanent place of business individually or in conjunction with the prime contractor.
 - d. Has the appropriate and adequate technical experience. Designated Project Manager must be proficient in all aspects of contracted work.
 - e. Has adequate personnel and equipment to do the work expeditiously.
 - f. Has suitable financial means to meet obligations incidental to the work.

2. **Responsiveness:** The determination of responsiveness will be made by the County based on a consideration of whether the bidder has submitted a complete Bid form without irregularities, excisions, special conditions, or alternative bids for any item unless specifically requested in the Bid form.

N. Wage Clause

Pursuant to 102-391, Each Contractor shall agree that in the performance of the Contract he will comply with all lawful agreements, if any, which the Contractor had made with any association, union, or other entity, with respect to wages, salaries, and working conditions, so as not to cause inconvenience, picketing, or work stoppage.

O. Notice of Award of Contract

As soon as possible, and within sixty (60) days after receipt of bids, the County shall notify the successful Bidder of the Award of Contract.

The award shall be made by the Board of Commissioners of Fulton County to the lowest responsive, responsible bidder(s) as soon as possible after receipt of bids, taking into consideration price and the responsiveness to the requirements set forth in the Invitation for Bid. In such case, no claim shall be made by the selected Contractor(s) for loss of profit if the contract is not awarded or awarded for less

work than is indicated and for less than the amount of his bid. The total of the awarded contract shall not exceed the available funds allocated for this project.

Should the County require additional time to award the contract, the time may be extended by mutual agreement between the County and the successful bidder. If an Award of Contract has not been made within sixty (60) days from the bid date or within the extension mutually agreed upon, the Bidder may withdraw the Bid without further liability on the part of either party.

Any award made by the Board of Commissioners as a result of this bid will begin from the date of the notice to proceed. The Bidder agrees hereby to commence work under this Contract, with adequate personnel and equipment, on a date to be specified in a written order from the user department. The contract shall become effective on the Contract Date and shall continue in effect until the end of the term of the contract or until the project has been closed-out unless earlier terminated pursuant to the termination provisions of the contract.

P. Execution of Contract Documents

Upon notification of Award of Contract, the County shall furnish the Contractor the conformed copies of Contract Documents for execution by the Contractor and Contractor's surety.

Within ten (10) days after receipt the Contractor shall return all the documents properly executed by the Contractor and the Contractor's surety. Attached to each document shall be an original power-of-attorney for the person executing the bonds for the surety and certificates of insurance for the required insurance coverage.

After receipt of the documents executed by the Contractor and his surety with the power-of-attorney and certificates of insurance, the County shall complete the execution of the documents. Distribution of the completed documents will be made upon completion.

Should the contractor and/or surety fail to execute the documents within the time specified, the County shall have the right to proceed on the Bid Bond accompanying the bid.

If the County fails to execute the documents within the time limit specified, the Contractor shall have the right to withdraw the Contractor's bid without penalty.

Should an extension of any of the time limits stated above be required, this shall be done only by mutual agreement between both parties.

Any agreement or contract resulting from the acceptance of a bid shall be on a County approved document form. The County reserves the right to reject any agreement that does not conform to the Invitation for Bid and any County requirements for agreements and contracts. The County reserves the right to modify the agreement resulting from this bid upon the recommendation of the County Attorney.

Q. Joint Venture

Any Bidder intending to respond to this solicitation as a joint venture must submit an executed joint venture agreement with its offer. The agreement must designate those persons or entities authorized to execute documents or otherwise bind the joint venture in all transactions with Fulton County, or be accompanied by a document, binding upon the joint venture and its constituent members, making such designation. Offers from joint ventures that do not include these documents will be rejected as being non-responsive.

R. Contractors Compliance With All Assurances And/Or Promises Made In Response To Procurement

Should any Bidder submit a response to the County promising to provide a certain level of service for either the scope of work, MFBE participation, or any other matter, including where such promise or

assurance is greater than what is required by the procurement documents, and should this response containing the promise or assurance be accepted by the County and made a part of the Contract Documents, then this degree or level of service promised by the bidder relating to the scope of work, MFBE participation, or other matter shall be considered to be a material part of the Agreement between the bidder and the County, such that the bidder's failure to provide the agreed upon degree or level of service or participation shall be a material breach of the Agreement giving the County just cause to terminate the Agreement for cause, pursuant to the General Conditions of the Agreement.

S. Bid General Requirements

The following information pertains to the submission of a Bid to Fulton County, and contains instructions on how Bids must be presented in order to be considered. Listed below are the requirements for all Bidders interested in doing business with Fulton County.

1. The Bid sheets included in this Invitation to Bid ("Bid") must be fully completed and returned with the Bid unless otherwise specified in writing by the Purchasing Department. Type or neatly print the date, company name, and the full legal name and title of the person(s) signing the Bid in the place provided at the bottom of each Bid sheet. Any additional sheets submitted must contain the same signature and Bidder information.
2. All signatures must be executed by person(s) having contracting authority for the Bidder.
3. Absolutely no fax Bids or reproduction Bids will be accepted, except that photocopies may be submitted in addition to the original when multiple copies of the Bid are specifically requested in the solicitation.
4. The envelope in which the Bid response is submitted must be sealed and clearly labeled with the Bid number, project title, due date and time, and the name of the company or individual submitting the proposal. Bids must be received by the opening date and time shown on this Bid in order to be considered. The Purchasing Agent has no obligation to consider Bids which are not in properly marked envelopes. Contract Compliance submittals shall be submitted in a separate sealed envelope or package.
5. The original and the required number of copies of the Bid must be returned to:

Fulton County Purchasing Agent
Fulton County Department of Purchasing and Contract Compliance
130 Peachtree Street, S.W., Suite 1168
Atlanta, Georgia 30303

- Any inquiries, questions, clarifications or suggestions regarding this solicitation should be submitted in writing to the Purchasing Contact Person. Contact with any other County personnel in regard to a current solicitation is strictly prohibited in accordance with Fulton County "No Contact Provision" policy outlined in S35 and in Section 00020, Invitation to Bid.
6. Show information and prices in the format requested. Prices are to be quoted F.O.B. Destination, and must include all costs chargeable to the Contractor executing the Contract, including taxes. Unless otherwise provided in the Contract, Fulton County shall have no liability for any cost not included in the price. The Contractor shall provide Fulton County the benefit through a reduction in price of any decrease in the Contractor's costs by reason of any tax exemption based upon Fulton County's status as a tax-exempt entity.
 7. All prices Bid must be audited by the Bidder to ensure correctness before the Bid is submitted. The Bidder is solely responsible for the accuracy of information placed on a Bid sheet, including prices. Clerical or mathematical error is insufficient to void a successful Bid but a Bidder may withdraw a sealed Bid prior to opening without a penalty.

8. All prices must be submitted in the format requested and less all trade discounts. When multiple items are being Bid, Bidder must show both the unit price and the total extended price for each item. When applicable, the Bidder must include an additional lump sum Bid for groups or items. In the event a Bidder is offering an additional discount on groups of items, Bidder must indicate the total lump sum Bid for the particular group of items before any extra discount, the amount of extra discount, and the net total for the particular group. In the event of an extension error, unit pricing shall prevail.
9. By submitting a signed Bid, Bidder agrees to accept an award made as a result of that Bid under the terms and conditions spelled out in the Bid documents. In the event of a conflict between the different Bid documents, the County's cover Contract (if used) shall have precedence, followed in order by the Invitation to Bid, Purchase Order, Bid, Contractor's Warranty Agreement, Maintenance Agreement, and/or other Contractor provided agreements.
10. A Bidder may submit only one (1) Bid response for each specific Bid solicitation unless otherwise authorized in the specifications.
11. All prices submitted by the Bidder to Fulton County must be guaranteed by the authorized person(s) against any price increase for the time period designated in the Bid specifications, and Fulton County must be given the benefit of any price decrease occurring during such designated time period.
12. All items Bid must be new. Used, rebuilt and refurbished items will not be considered unless specifically authorized by Fulton County in the written specifications.
13. All Bidders must specify in the Bid response the earliest actual delivery date for each item unless otherwise specified in writing by Fulton County. The delivery date may be a factor in deciding the Bidder's capability to perform.
14. A successful Bidder's delivery ticket(s) and invoice(s) must list each item separately and must show Fulton County's purchase order number as well as the proper department and address to which delivery was made, as listed on the purchase order or in the Bidder's contract with Fulton County.
15. Unless clearly shown as "no substitute" or words to that effect, any items in this invitation to Bid which have been identified, described or referenced by a brand name or trade name are for reference only. Such identification is intended to be descriptive but not restrictive, and is to indicate the general quality and characteristics of products that may be offered. Each item Bid must be individually identified as to whether it is a specified item or an equivalent item by typing or printing after the item(s): The brand name; model or manufacturer's number, or identification regularly used in the trade. Deviations from the specifications must be clearly and fully listed on the Bid sheet, including photographs or cuts, specifications, and dimensions of the proposed "alternate". Fulton County is the sole judge of "exact equivalent", or "alternate". The factors to be considered are: function, design, materials, construction, workmanship, finishes, operating features, overall quality, local service facilities, warranty terms and service, and other relevant features of item(s) Bid.
16. For all Bids, Fulton County reserves the right to request representative samples. If requested, samples must be delivered at the Bidder's cost within three (3) business days. Samples are submitted at the risk of the Bidder and may be subjected to destructive tests by Fulton County. Samples must be plainly tagged with Fulton County's Bid number, item name, manufacturer, and the name of the Bidder.
17. Item(s) Bid must be complete and ready to operate. No obvious omissions of components or necessary parts shall be made even though the specifications may not detail or mention them.

- Unit(s) must be furnished with factory installed equipment and must be comparable with the basic form, fit, and functional requirements which are all to be included in the base price as well as any other equipment included as standard by the manufacturer or generally provided to the buying public.
18. All successful Bidders must assume full responsibility for all item(s) damaged prior to F.O.B. Destination delivery and agree to hold harmless Fulton County of all responsibility for prosecuting damage claims.
 19. All successful Bidders must assume full responsibility for replacement of all defective or damaged goods within thirty (30) days of notice by Fulton County of such defect or damage.
 20. All successful Bidders must assume full responsibility for providing or ensuring warranty service on any and all items including goods, materials, or equipment provided to the County with warranty coverage. If a successful Bidder is not the manufacturer, all manufacturers' warranties must be passed through to Fulton County. The Bidder and not Fulton County is responsible for contacting the manufacturer of the warranty service provided during the warranty period and supervising the completion of the warranty service to the satisfaction of Fulton County.
 21. As a successful Bidder providing any equipment which requires fitting and assembly, the Bidder shall be solely responsible for such installation being performed by a manufacturer's authorized or approved servicer or an experienced worker, utilizing workmanship of the highest caliber. The Bidder must verify all dimensions at the site, shall be responsible for their correctness, and shall be responsible for the availability of replacement parts when specified in writing by Fulton County in the specifications, purchase order, or other contract.
 22. A successful Bidder is solely responsible for disposing of all wrappings, crating, and other disposable material upon deliver of item(s).
 23. All Bidders are required to be authorized distributors or regularly engaged in the sale or distribution of the type of goods, materials, equipment or services for which the Bidder is submitting a Bid response in addition, all Bidders are required to provide Fulton County with three (3) written references documenting the successful completion of Bids or contracts for the types of items including goods, materials, equipment, or services for which the Bidder is submitting a Bid response. In instances where a Bidder has never supplied such goods, material, equipment, or services before, the Bidder must submit with the Bid response a statement and supporting documentation demonstrating such expertise, knowledge, or experience to establish the Bidder as a responsible Bidder, capable of meeting the Bid requirements should an award be made. No exceptions to this provision will be made unless authorized in the Bid specifications.
 24. Bidders may be required to furnish evidence that they maintain permanent places of business of a type and nature compatible with their Bid proposal, and are in all respects competent and eligible vendors to fulfill the terms of the specifications. Fulton County may make such investigations as it deems necessary to determine the ability of the Bidder to perform such work, and reserves the right to reject any Bidder if evidence fails to indicate that the Bidder is qualified to carry out the obligation of the Contract and to complete the work satisfactorily.
 25. All Bidders must comply with all Fulton County Purchasing laws, policies, and procedures, non-discrimination in contracting and procurement ordinances, and relevant state and federal laws including but not limited to compliance with EEOC hiring guidelines and requirements under the Americans with Disabilities Act. Successful Bidder must obtain all permits, licenses, and inspections as required and furnish all labor, materials, insurance, equipment, tools, supervision, and incidentals necessary to accomplish the work in these specifications.

26. If a successful Bidder is unable or unwilling to enter into a Contract with Fulton County subsequent to being granted an award, or who fails to perform in accordance with the Bid specifications the Bidder will be subject to damages and all other relief allowed by law.
27. Successful Bidders contract directly with Fulton County and are the party or parties obligated to perform. Contracts may not be assigned and any failure to perform the Contract in accordance with the specifications will constitute a breach of Contract and may result in a Bidder being found to be “non-responsive” in the future.
28. In case of default by the successful Bidder, Fulton County may procure the articles for services from another source and hold the successful Bidder responsible for any resulting excess cost.
29. The County may award any Bid in whole or in part to one or more vendors or reject all Bids and/or waive any technicalities if it is in the best interests of the County to do so. In the event that all Bids are not rejected, Bids for items including goods, materials, equipment, and services will be awarded to the lowest “responsible” Bidder(s) as determined by Fulton County. Submitting the lowest Bid, as published at the Bid opening, does not constitute an award or the mutual expectation of an award of a Contract and purchase order. For purposes of this notice and the attached Bid sheets, a purchase order is a Contract to provide items including goods, materials, equipment, and services and is intended to have the full force and effect of a Contract. A breach of the terms and conditions of a purchase order constitutes a breach of Contract.
30. Bids for projects that are solicited pursuant to the Georgia Local Government Public Works Construction Law (O.C.G.A. § 36-91-1 et seq.) may withdrawn as follows:

Competitive sealed Bids (“Bid”) may not be revoked or withdrawn until 60 days after the time set by the governmental entity for opening of Bids. At the end of this time period, the Bid will cease to be valid, unless the Bidder provides written notice to the County prior to the scheduled expiration date that the Bid will be extended for a time period specified by the County.
31. In the evaluation of the Bids, any award will be subject to the Bid being:
 - a. Compliant to the specification – meets form, fit, and function requirements stated or implied in the specification.
 - b. Lowest cost to the County over projected useful life.
 - c. Administratively Compliant – Including all required bonds, insurance, established quality of work and general reputation, financial responsibility, relevant experience, and related criteria.
32. All proposals and Bids submitted to Fulton County are subject to the Georgia “Open Records Act”, Official Code of Georgia, Annotated (O.C.G.A.) §50-18-70 et seq.
33. All proposals and Bids submitted to Fulton County involving Utility Contracting are subject to the Georgia law governing licensing of Utility Contractors, O.C.G.A. §43-14-8.2(h). The Utility Contractor License number of the person who will perform the utility work shall be written on the face of the Bid envelope.
34. The apparent silence of this specification, and any supplement thereto, as to details, of the omission from it of a detailed description concerning any point, will be regarded as meaning only the best commercial practices are to prevail. Only materials of the highest quality, correct type, size, and design are to be used. All interpretations of this specification will be made upon the basis of this statement, with Fulton County interpretation to prevail.
35. It is the policy of Fulton County that the evaluation and award process for County contracts shall be free from both actual and perceived impropriety, and that contacts between potential

- vendors and County officials, elected officials and staff regarding pending awards of County contracts shall be prohibited.
- a. No person, firm, or business entity, however situated or composed, obtaining a copy of or responding to this solicitation, shall initiate or continue any verbal or written communication regarding this solicitation with any County officer, elected official, employee, or designated County representative, between the date of the issuance of this solicitation and the date of the County Manager's recommendation to the Board of Commissioners for award of the subject contract, except as may otherwise be specifically authorized and permitted by the terms and conditions of this solicitation.
 - b. All verbal and written communications initiated by such person, firm, or entity regarding this solicitation, if same are authorized and permitted by the terms and conditions of this solicitation, shall be directed to the Purchasing Agent.
 - c. Any violation of this prohibition of the initiation or continuation of verbal or written communications with County officers, elected officials, employees, or designated County representatives shall result in a written finding by the Purchasing Agent that the submitted Bid or proposal of the person, firm, or entity in violation is "non-responsive", and same shall not be considered for award.
36. Any Bidder intending to respond to this solicitation as a Joint Venture must submit an executed Joint Venture Agreement with this Bid. This agreement must designate those persons or entities authorized to execute documents or otherwise bind the Joint Venture in all transactions with Fulton County, or are accompanied by a document, binding upon the Joint Venture and its constituent members, making such designation. Bids from Joint Ventures that do not include these documents will be rejected as being "non-responsive".
37. Any Bidder intending to respond to this solicitation must complete all of the Procurement Affidavit Forms provided in this solicitation. Bids that do not include these completed documents will be rejected as being "non-responsive".

Required Bid Submittal Check List for Invitation To Bid (ITB)

The following submittals shall be completed and submitted with each bid (see table below "Required Bid Submittal Check List."). Please check to make sure that the required submittals are in the envelope before it is sealed. Failure to submit all required submittals may deem your proposal non-responsive.

Submit one (1) Original bid, signed and dated and five (5) **complete** copies of the Original Bid including all required documents.

Item #	Required Bid Submittal Check List	Check (√)
1	Bid Form (Section 00300) – All dollar amounts must be both in writing AND figures and represent prices for the published scope of work without exceptions.	
2	Acknowledgement of each Addendum (acknowledged both on the Bid Form, Section 00300, and on the form included with each addendum).	
3	Bid Bond (Section 00410) (separate envelope if Public Works Construction project)	
4	Purchasing Forms (Section 00420) Form A - Non-Collusion Affidavit of Prime Bidder/Offeror Form B - Certificate of Acceptance of Request for Bid/Proposal Requirements Form C - Contractor's Georgia Utility License Certification Form D - Certificate Regarding Debarment Form E - Disclosure Form & Questionnaire	
5	Office of Contract Compliance Requirements (Section 00430) Exhibit A - Promise of Non-Discrimination (for Prime and each Sub) Exhibit B - Employment Record (for Prime and each Sub) Exhibit C - Schedule of Intended Subcontractor Utilization Exhibit D - Letter of Intent to Perform as Subcontractor Exhibit E - Declaration Regarding Subcontractor Practices Exhibit F - Joint Venture Disclosure Affidavit Exhibit G - Prime Contractor/Subcontractor Utilization Report Equal Business Opportunity Plan (EBO Plan)	
6	Risk Management Insurance Provisions Form (Section 00490) and proof of insurance, either letter from insurer or Certificate of Insurance.	

END OF SECTION

BID FORM

Submitted To: Fulton County Government

Submitted By: _____

For: 07ITB54805K-DJ

Installation of Emergency/Standby Engine Generators at Four Fulton County Senior Multipurpose Complexes)

Submitted on _____, 20__.

The undersigned, as Bidder, hereby declares that the only person or persons interested in the Bid as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Bid or in the Contract to be entered into; that this Bid is made without connection with any other person, company or parties making a Bid; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the Drawings and Specifications for the work and contractual documents relative thereto, and has read all instructions to Bidders and General Conditions furnished prior to the openings of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees, if this Bid is accepted, to contract with the Board of Commissioners of Fulton County, Atlanta, Georgia, in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary, and to complete the construction of the work in full and complete accordance with the shown, noted, and reasonably intended requirements of the Specifications and Contract Documents to the full and entire satisfaction of the Board of Commissioners of Fulton County, Atlanta, Georgia, with a definite understanding that no money will be allowed for extra work except as set forth in the attached General Conditions and Contract Documents for the following prices.

THE BASE BID TOTAL IS THE AMOUNT UPON WHICH THE BIDDER WILL BE FORMALLY EVALUATED AND WHICH WILL BE USED TO DETERMINE THE LOWEST RESPONSIBLE BIDDER. Please make sure that all line items below are accurately calculated and total up to this inclusive amount.

The bid may not be withdrawn or modified for a period of sixty (60) days following the receipt of bids.

BASE BID TOTAL, ITEMS 1 THROUGH _____(BELOW), INCLUSIVE, THE AMOUNT OF:

\$ _____
(Dollar Amount In Numbers)

(Dollar Amount In Words)

BID BREAKDOWN FORM - SUMMARY

**Bid Breakdown Forms must be completed and submitted with the Bid Form.
 One summary form and four (4) bid breakdown forms, one for each facility, is required.**

Make sure that all line items below are accurately calculated and total up to the inclusive BASE BID TOTAL amount entered on Page 1.

Method of Bidding

The unit or lump sum price for each of the several items in the Bid of each Bidder shall include its pro rata share of overhead and profit so that the sum of the products, obtained by multiplying the quantity shown for each item by the unit price, represents the total Bid. Any Bid not conforming to this requirement may be rejected. Additionally, Unbalanced Bids or conditional Bids will be subject to rejection. The special attention of all Bidders is called to this provision, for should conditions make it necessary to revise the quantities, no limit will be fixed for such increased or decreased quantities nor extra compensation allowed.

ITEM1 – Furnishing all products, materials and equipment and performing all labor necessary to complete and put into operation the Installation of Emergency/Standby Engine Generators at Four Fulton County Senior Multipurpose Complexes, including all work shown on the Drawings and/or Specified, and not included in Items 2 through 6 below, the amount

of: _____
 _____ DOLLARS (\$) _____).

Summary

01. Division 01 GENERAL REQUIREMENTS		
01.3 Owner's Allowance (aggregate for all 4 facilities)	\$	50,000.00
02.Dorothy C. Benson Senior Multipurpose Complex (Line 19)	\$	_____
03.H.J.C. Bowden Senior Multipurpose Facility (Line 19)	\$	_____
04.Harriet G. Darnell Senior Multipurpose Facility (Line 19)	\$	_____
05.Helene S. Mills Senior Multipurpose Facility (Line 19)	\$	_____
06.Total (4 Senior Centers plus Owner's Allowance)	\$	_____

The total of line 06 above, for all four Senior Centers plus the Owner's Allowance, must equal the BASE BID AMOUNT shown on the BID FORM.

BID BREAKDOWN FORM – PER FACILITY

**Bid Breakdown Form must be completed and submitted with the Bid Form.
 One (1) bid breakdown form is required for each multipurpose senior center.**

A breakdown of the Base Bid amount shall be provided below. Bidders are required to **submit the completed form with the Bid Form**. This breakdown will be used for the evaluation of bids, along with access to back-up supporting documentation, if requested. A more detailed Schedule of Values will be required of the successful Bidder subsequent to contract award.

Senior Center: Dorothy C. Benson Senior Multipurpose Complex

01. Division 01 GENERAL CONDITIONS & REQUIREMENTS		
01.1 Bond Cost Amount	\$	_____
01.2 Owner's Allowance	\$	inc. on summary
01.3 All other Division 01 Work not listed above	\$	_____
Subtotal All Division 01 Work		\$
02. Division 02 SITEWORK		\$
03. Division 03 CONCRETE		\$
16. Division 16 ELECTRICAL		\$
17. Subtotal Division 01 to Division 16:		\$
18. Contractor's Overhead and Profit (not included in above)		
Line 17 + Line 18 =		\$
19. TOTAL BASE BID AMOUNT		
Line 17 + Line 18 =		\$

Senior Center: H.J.C. Bowden Senior Multipurpose Facility

01. Division 01 GENERAL CONDITIONS & REQUIREMENTS		
01.1 Bond Cost Amount	\$	_____
01.2 Owner's Allowance	\$	inc. on summary
01.3 All other Division 01 Work not listed above	\$	_____
Subtotal All Division 01 Work		\$ _____
02. Division 02 SITEWORK		\$ _____
03. Division 03 CONCRETE		\$ _____
16. Division 16 ELECTRICAL		\$ _____
17. Subtotal Division 01 to Division 16:		\$ _____
18. Contractor's Overhead and Profit (not included in above)		\$ _____
	Line 17 + Line 18 =	\$ _____
19. TOTAL BASE BID AMOUNT		\$ _____
	Line 17 + Line 18 =	\$ _____

Senior Center: Harriet G. Darnell Senior Multipurpose Facility

01. Division 01 GENERAL CONDITIONS & REQUIREMENTS		
01.1 Bond Cost Amount	\$	_____
01.2 Owner's Allowance	\$	inc. on summary
01.3 All other Division 01 Work not listed above	\$	_____
Subtotal All Division 01 Work		\$ _____
02. Division 02 SITEWORK		\$ _____
03. Division 03 CONCRETE		\$ _____
16. Division 16 ELECTRICAL		\$ _____
17. Subtotal Division 01 to Division 16:		\$ _____
18. Contractor's Overhead and Profit (not included in above)		\$ _____
	Line 17 + Line 18 =	\$ _____
19. TOTAL BASE BID AMOUNT		\$ _____
	Line 17 + Line 18 =	\$ _____

Senior Center: Helene S. Mills Senior Multipurpose Facility

01. Division 01 GENERAL CONDITIONS & REQUIREMENTS		
01.1 Bond Cost Amount	\$	_____
01.2 Owner's Allowance	\$	<u>inc. on summary</u>
01.3 All other Division 01 Work not listed above	\$	_____
Subtotal All Division 01 Work		\$ _____
02. Division 02 SITEWORK		\$ _____
03. Division 03 CONCRETE		\$ _____
16. Division 16 ELECTRICAL		\$ _____
17. Subtotal Division 01 to Division 16:		\$ _____
18. Contractor's Overhead and Profit (not included in above)		
	Line 17 + Line 18 =	\$ _____
19. TOTAL BASE BID AMOUNT		
	Line 17 + Line 18 =	\$ _____

The Bidder agrees hereby to commence work under this Contract, with adequate personnel and equipment, on a date to be specified in a written order of the Contracting Officer and to fully complete all work under this Contract within 365 consecutive calendar days.

The Bidder declares that he understands that the quantities shown for the unit prices items are subject to either increase or decrease, and that should the quantities of any of the items of work be increased, the Bidder proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, the Bidder also understands that payment will be made on the basis of actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in quantities; and that actual quantities will be determined upon completion of work, at which time adjustments will be made to the contract amount by direct increase or decrease.

In case of discrepancies between the figures shown in the unit prices and the totals, the unit prices shall apply and the totals shall be corrected to agree with the unit prices. In case of discrepancies between written amounts and figures, written amounts shall take precedence over figures and the sum of all Bid extensions (of unit prices) plus lump sum items shall take precedence over BID TOTAL.

The Bidder furthermore agrees that, in the case of a failure on his part to execute the Contract Agreement and Bonds within ten (10) days after receipt of conformed contract documents for execution, the Bid Bond accompanying his bid and the monies payable thereon shall be paid into the funds of the Owner as liquidated damages for such failure.

Enclosed is a Bid Bond in the approved form, in the sum of: _____
_____ Dollars (\$ _____)

according to the conditions of "Instructions to Bidders" and provisions thereof.

The undersigned acknowledges receipt of the following addenda (list by the number and date appearing on each addendum) and thereby affirms that its Bid considers and incorporates any modifications to the originally issued Bidding Documents included therein.

ADDENDUM # _____ DATED _____

BID BOND

No bid for a contract in Fulton County for work to be done shall be valid for any purpose unless the Contractor shall give a Bid Bond with good and sufficient surety payable to, in favor of, and for the protection of Fulton County. The Bid Bond shall not be less than 5% of the total amount payable by the terms of the Contract. No bid shall be read aloud or considered if a proper bid bond has not been submitted.

Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Georgia.

Attestation for the corporation must be by the corporate officer; for a partnership by another partner; for an individual by a notary with the corporate seal.

BID BOND
[INSERT PROJECT # AND TITLE]
FULTON COUNTY GOVERNMENT

KNOW ALL MEN BY THESE PRESENTS, THAT WE _____

hereinafter called the PRINCIPAL, and _____

hereinafter call the SURETY, a corporation chartered and existing under the laws of the State of _____ and duly authorized to transact Surety business in the State of Georgia, are held and firmly bound unto the Fulton County Government (COUNTY), in the penal sum of _____ Dollars and Cents (\$ _____) good and lawful money of the United States of America, to be paid upon demand of the COUNTY, to which payment well and truly to be made we bind ourselves, our heirs, executors, and administrators and assigns, jointly and severally and firmly by these presents.

WHEREAS the PRINCIPAL has submitted to the COUNTY, for **[INSERT PROJECT # AND PROJECT TITLE]**, a Bid;

WHEREAS the PRINCIPAL desires to file this Bond in accordance with law:

NOW THEREFORE: The conditions of this obligation are such that if the Bid be accepted, the PRINCIPAL shall within ten (10) calendar days after receipt of written notification from the COUNTY of the award of the Contract execute the Contract in accordance with the Bid and upon the terms, conditions and prices set forth therein, in the form and manner required by the COUNTY, and execute sufficient and satisfactory Performance and Payments Bonds payable to the COUNTY, each in the amount of one hundred percent (100%) of the total contract price, in form and with security satisfactory to said COUNTY, then this obligation to be void; otherwise, to be and remain in full force and virtue in law; and the SURETY shall upon failure of the PRINCIPAL to comply with any or all of the foregoing requirements within the time specified above immediately pay to the COUNTY, upon demand the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

In the event suit is brought upon this Bond by the COUNTY and judgment is recovered, the SURETY shall pay all costs incurred by the COUNTY in such suit, including attorney's fees to be fixed by the Court.

Enclosed is a Bid Bond in the approved form, in the amount of _____ Dollars

(\$_____) being in the amount of five percent (5%) of the Contract Sum. The money payable on this bond shall be paid to the COUNTY, for the failure of the Bidder to execute a Contract within ten (10) days after receipt of the Contract and at the same time furnish a Payment Bond and Performance Bond.

(SIGNATURES ON NEXT PAGE)

IN TESTIMONY THEREOF, the PRINCIPAL and SURETY have caused these presents to be duly signed and sealed this _____ day of _____, 200_.

ATTEST:

PRINCIPAL

BY _____

(SEAL)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the Secretary of the Corporation named as principal in the within bond; that _____, who signed the said bond of said corporation; that I know this signature, and his/her signature thereto is genuine; and that said bond was duly signed, sealed and attested for in behalf of said Corporation by authority of its governing body.

SECRETARY

(CORPORATE SEAL)

SURETY

BY _____

(SEAL)

END OF SECTION

PURCHASING FORMS & INSTRUCTIONS

This section contains the procurement forms that are required to be executed and submitted with the bid package. This section does not contain all forms required to be included with the bid package submittal.

To be deemed responsive to this RFP, Bidders must provide the information requested and complete in detail all Purchasing Forms. The appropriate individual(s) authorized to commit the Bidder to the Project must sign the Purchasing Forms. Bidders should reproduce each Purchasing Form, as required, and complete the appropriate portions of the forms provided in this section.

- Form A: Non-Collusion Affidavit of Prime Bidder/Offeror
- Form B: Certificate of Acceptance of Request for Bid/Proposal Requirements
- Form C: Certification Regarding Debarment
- Form D: Disclosure Form and Questionnaire

FORM A: NON-COLLUSION AFFIDAVIT OF BIDDER/OFFEROR

STATE OF GEORGIA

COUNTY OF FULTON

I, _____ certify that pursuant to Fulton County Code Section 2-320 (11), this bid or proposal is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same work, labor or service to be done or the supplies, materials or equipment to be furnished and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of state and federal law and can result in fines, prison sentences and civil damages awards. I agree to abide by all conditions of this bid or proposal and certify that I am authorized to sign this bid or proposal for the bidder.

Affiant further states that pursuant to O.C.G.A. Section 36-91-21 (d) and (e), _____ has not, by itself or with others, directly or indirectly, prevented or attempted to prevent competition in such bidding or proposals by any means whatsoever. Affiant further states that (s)he has not prevented or endeavored to prevent anyone from making a bid or offer on the project by any means whatever, nor has Affiant caused or induced another to withdraw a bid or offer for the work.

Affiant further states that the said offer of _____ is bona fide, and that no one has gone to any supplier and attempted to get such person or company to furnish the materials to the bidder only, or if furnished to any other bidder, that the material shall be at a higher price.

(COMPANY NAME)

(PRESIDENT/VICE PRESIDENT)

Sworn to and subscribed before me this _____ day of _____, 200__.

(SECRETARY/ASSISTANT SECRETARY)

(Affix corporate seal here, if a corporation)

Notary Public: _____

County: _____

Commission Expires: _____

NOTE:

IF THE OFFEROR IS A PARTNERSHIP, ALL OF THE PARTNERS AND ANY OFFICER, AGENT, OR OTHER PERSON WHO MAY HAVE REPRESENTED OR ACTED FOR THEM IN BIDDING FOR OR PROCURING THE CONTRACT SHALL ALSO MAKE THIS OATH.

IF THE OFFEROR IS A CORPORATION, ALL OFFICERS, AGENTS, OR OTHER PERSONS WHO MAY HAVE ACTED FOR OR REPRESENTED THE CORPORATION IN BIDDING FOR OR PROCURING THE CONTRACT SHALL MAKE THE OATH.

**FORM B: FULTON COUNTY CERTIFICATE OF ACCEPTANCE OF BID/PROPOSAL
REQUIREMENTS**

This Is To Certify That On This Day Bidder/Proposer Acknowledges That He/She Has Read This Bid Document, Pages _____ To _____ Inclusive, Including Addendum(s) ____ To ____, And/Or Appendices To ____, In Its Entirety, And Agrees That No Pages Or Parts Of The Document Have Been Omitted, That He/She Understands, Accepts And Agrees To Fully Comply With The Requirements Therein, And That The Undersigned Is Authorized By The Bidding/Proposing Company To Submit The Bid/Proposal Herein And To Legally Obligate The Bidder/Proposer Thereto.

Company: _____

Signature: _____

Name: _____

Title: _____

Date: _____

(Corporate Seal)

FORM C: CERTIFICATION REGARDING DEBARMENT

- (1) The Offeror certifies that neither it or its subcontractors is presently debarred, suspended, proposed for debarment, declared ineligible, or otherwise excluded from doing business with any government agency. Any such exclusion may cause prohibition of your firm from participating in any procurement by the Fulton County Government.
- (2) If the Offeror is unable to certify to any of the statements in this certification, such Offeror or subcontractor shall attach an explanation to this bid or proposal.

INSTRUCTIONS FOR CERTIFICATION

By signing and submitting this certification, the Offeror is providing the certification set out below:

- (1) The certification in this clause is a material representation of fact upon which reliance will be placed. If it is later determined that the prospective vendor knowingly rendered a false certification, the Purchasing Agent may pursue all available remedies, including suspension and/or debarment, for withdrawal of award or termination of a contract.
- (2) The prospective Offeror shall provide immediate written notice to the Purchasing Agent if at anytime the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- (3) Offeror shall be under a continuing duty to immediately inform the Purchasing Agent in writing of any changes, if as a result of such changes, the Offeror certification regarding debarment is affected.

DEBARMENT ORDINANCE

The following Section 2-322 of Fulton County Code of Laws establishes the procedure for the debarment of contractors.

Authority to suspend.

After reasonable notice to the entity involved and reasonable opportunity for that entity to be heard, the Purchasing Agent, after consultation with user department, the County Manager and the County Attorney shall have the authority to suspend an entity for cause from consideration for award of county contracts. As used in this section, the term entity means any business entity, individual, firm, contractor, subcontractor or business corporation, partnership, limited liability corporation, firm, contractor, subcontractor or business structured; provided, further, that any such entity shall also be subject to suspension under this section if any of its constituents, members, subcontractors at any tier of such entity's and the entity, or any constituent or member, knew or should have known of the commission of the act. The suspension shall be for a period not to exceed three (3) years unless cause is based on a felony conviction for an offense related or associated with fraudulent contracting or misappropriation of funds wherein the suspension shall not exceed seven (7) years.

Causes for Suspension. The causes for suspension include:

- (1) Conviction for commission of a criminal offense as an incident to obtain or attempting to obtain a public or private contract or subcontract, or in performance of such contract or subcontract;
- (2) Conviction of state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property or other offense indicating a lack of business

integrity or business honesty which currently, seriously and directly affects responsibility as a county contractor.

- (3) Conviction of state or federal anti-trust statutes arising out of the solicitation and submission of bids and proposals;
- (4) Violation of contract provisions, as set forth below, of a character which is regarded by the Purchasing Agent to be so serious as to justify suspension action:
 - a. Failure to perform in accordance with the specifications within a time limit provided in a county contract;
 - b. A recent record of failure to perform or unsatisfactory performance in accordance with the terms of one or more contracts; provided, that failure to perform or unsatisfactory performance caused by acts beyond the control of the contractor shall not be considered to be a basis for suspension;
 - c. Material representation of the composition of the ownership or workforce or business entity certified to the county as a minority business enterprise; or
 - d. Falsification of any documents.
- (5) For violation of the ethical standards set forth in Fulton County Code Chapter 9, Code of Ethics.
- (6) Knowing misrepresentation to the county, of the use which a majority owned contractor intends to make a minority business enterprise (a business entity at least 51 percent of which is owned and controlled by minority persons, as defined in Fulton County Code Chapter 6, Article B, Minority Business Enterprise Affirmative Action Program and certified as such by the County) as a subcontractor or a joint venture partner, in performing work under contract with the County.

Failure to fully and truthfully provide the information required, may result in the disqualification of your bid/proposal from consideration or termination of the Contract, once awarded. This document must be completed and included as a part of the bid/proposal package along with other required documents.

[SIGNATURES ON NEXT PAGE]

Under penalty of perjury, I declare that I have examined this certification and all attachments hereto, if applicable, to the best of my knowledge and belief, and all statements contained hereto are true, correct, and complete.

On this _____ day of _____, 200__

(Legal Name of Offeror) (Date)

(Signature of Authorized Representative) (Date)

(Title)

FORM D: DISCLOSURE FORM AND QUESTIONNAIRE

1. Please provide the names and business addresses of each of the Offeror's firm's officers and directors.

For the purposes of this form, the term "Offeror" means an entity that responds to a solicitation for a County contract by either submitting a proposal in response to a Request for Proposal or a Request for Qualification or a Bid in response to an Invitation to Bid.

Describe accurately, fully and completely, their respective relationships with said Offeror, including their ownership interests and their anticipated role in the management and operations of said Offeror.

2. Please describe the general development of said Offeror's business during the past five (5) years, or such shorter period of time that said Offeror has been in business.
3. Please state whether any employee, agent or representative of said Offeror who is or will be directly involved in the subject project has or had within the last five (5) years: (i) directly or indirectly had a business relationship with Fulton County; (ii) directly or indirectly received revenues from Fulton County; or (iii) directly or indirectly receives revenues from the result of conducting business on Fulton County property or pursuant to any contract with Fulton County. Please describe in detail any such relationship.

LITIGATION DISCLOSURE:

Failure to fully and truthfully disclose the information required, may result in the disqualification of your bid or proposal from consideration or termination of the Contract, once awarded.

1. Please state whether any of the following events have occurred in the last five (5) years with respect to said Offeror. If any answer is yes, explain fully the following:
- (a) whether a petition under the federal bankruptcy laws or state insolvency laws was filed by or against said Offeror, or a receiver fiscal agent or similar officer was appointed by a court for the business or property of said Offeror;
 - (b) whether Offeror was subject of any order, judgment, or decree not subsequently reversed, suspended or vacated by any court of competent jurisdiction, permanently enjoining said Offeror from engaging in any type of business practice, or otherwise eliminating any type of business practice; and
 - (c) whether said Offeror's business was the subject of any civil or criminal proceeding in which there was a final adjudication adverse to said Offeror, which directly arose from activities conducted by the business unit or corporate division of said Offeror which submitted a bid or proposal for the subject project. If so please explain.
2. Have you or any member of your firm or team to be assigned to this engagement been indicted or convicted of a criminal offense within the last five (5) years?

Circle One: YES NO

Under penalty of perjury, I declare that I have examined this questionnaire and all attachments hereto, if applicable, to the best of my knowledge and belief, and all statements contained hereto are true, correct, and complete.

On this _____ day of _____, 200__

(Legal Name of Proponent) (Date)

(Signature of Authorized Representative) (Date)

(Title)

Sworn to and subscribed before me,

this _____ day of _____, 200__

(Notary Public) (Seal)

Commission Expires _____
(Date)

END OF SECTION

CONTRACT COMPLIANCE REQUIREMENTS

NON-DISCRIMINATION IN CONTRACTING AND PROCUREMENT

Policy Statement: It is the policy of Fulton County Government that discrimination against businesses by reason of the race, color, gender or national origin of the ownership of any such business is prohibited. Furthermore, it is the policy of the Board of Commissioners ("Board") that Fulton County and all vendors and contractors doing business with Fulton County shall provide to all businesses the opportunity to participate in contracting and procurement paid, in whole or in part, with monetary appropriations of the Board. Similarly, it is the policy of the Board that the contracting and procurement practices of Fulton County should not implicate Fulton County as either an active or passive participant in the discriminatory practices engaged in by private contractors seeking to obtain contracts with Fulton County.

Equal Business Opportunity Plan (EBO Plan): In addition to the proposal submission requirements, each vendor **must** submit an Equal Business Opportunity Plan (EBO Plan) with their bid/proposal. The EBO Plan is designed to enhance the utilization of a particular racial, gender or ethnic group by a bidder/proposer, contractor, or vendor or by Fulton County. The respondent **must** outline a plan of action to encourage and achieve diversity and equality in the available procurement and contracting opportunities with *this solicitation*.

The EBO Plan **must** identify and include:

1. Potential opportunities within the scope of work of *this solicitation* that will allow for participation of racial, gender or ethnic groups.
2. Efforts that will be made by the bidder/proposer to encourage and solicit minority and female business utilization in this solicitation.

Fulton County encourages joint ventures, teaming, partnering and mentor-protégé relationships with minority and female businesses in an effort to achieve contracting and procurement diversity.

Prompt Payment: The prime contractor must certify in writing and must document on the Exhibit G Form (Prime Contractor/Subcontractor Utilization Report) that all subcontractors, sub-consultants and suppliers have been promptly paid for work and materials, (less any retainage by the prime contractor prior to receipt of any further progress payments). In the event the prime contractor is unable to pay subcontractors, sub-consultants or suppliers until it has received a progress payment from Fulton County, the prime contractor shall pay all subcontractors, sub-consultants or suppliers funds due from said progress payments within forty-eight (48) hours of receipt of payment from Fulton County. In no event shall a subcontractor, sub-consultant or supplier be paid later than fifteen (15) days as provided for by state law.

REQUIRED FORMS AND EBO PLAN:

In order to be compliant with the intent and provisions of the Fulton County Non-Discrimination in Purchasing and Contracting Ordinance (99-0960), bidders/proposers must submit the following completed documents. Failure to provide this information shall result in the bid/proposal being deemed non-responsive:

- **Exhibit A** - Promise of Non-Discrimination (for Prime and each Sub-contractor)
- **Exhibit B** - Employment Report (for Prime and each Sub-contractor)
- **Exhibit C** - Schedule of Intended Subcontractor Utilization
- **Exhibit D** - Letter of Intent to Perform As a Subcontractor or Provide Materials or Services
- **Exhibit E** - Declaration Regarding Subcontractor Practices
- **Exhibit F** - Joint Venture Disclosure Affidavit
- **Equal Business Opportunity Plan (EBO Plan)** – This document is not a form. It is a statement created by the bidder/proposer on its company letter head addressing the EBO Plan requirements.

All Contract Compliance documents (Exhibits A – F and EBO Plan) are to be placed in a **separate sealed envelope** clearly marked "Contract Compliance". The EBO Plan must be submitted on company letterhead. These documents are considered part of and should be submitted with the Technical Proposal.

The following document must be completed as instructed if awarded the bid:

- **Exhibit G** - Prime Contractor's Subcontractor Utilization Report

EXHIBIT A – PROMISE OF NON-DISCRIMINATION

“Know all persons by these presents, that I/WE (_____),
Name

Title Firm Name

Hereinafter “Company”), in consideration of the privilege to bid on or obtain contracts funded, in whole or in part, by Fulton County, hereby consent, covenant and agree as follows:

- (1) No person shall be excluded from participation in, denied the benefit of, or otherwise discriminated against on the basis of race, color, national origin or gender in connection with any bid submitted to Fulton County for the performance of any resulting there from,
- (2) That it is and shall be the policy of this Company to provide equal opportunity to all businesses seeking to contract or otherwise interested in contracting with this Company without regard to the race, color, gender or national origin of the ownership of this business,
- (3) That the promises of non-discrimination as made and set forth herein shall be continuing in nature and shall remain in full force and effect without interruption,
- (4) That the promise of non-discrimination as made and set forth herein shall be made a part of, and incorporated by reference into, any contract or portion thereof which this Company may hereafter obtain,
- (5) That the failure of this Company to satisfactorily discharge any of the promises of non-discrimination as made and set forth herein shall constitute a material breach of contract entitling the Board to declare the contract in default and to exercise any and all applicable rights and remedies, including but not limited to cancellation of the contract, termination of the contract, suspension and debarment from future contracting opportunities, and withholding and/or forfeiture of compensation due and owing on a contract; and
- (6) That the bidder shall provide such information as may be required by the Director of Contract Compliance pursuant to Section 4.4 of the Fulton County Non-Discrimination in Purchasing and Contracting Ordinance.

SIGNATURE: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

EXHIBIT B – EMPLOYMENT REPORT

The demographic employment make-up for the bidder **must** be identified and submitted with this bid/proposal. In addition, if subcontractors will be utilized by the bidder/proposer to complete this project, then the demographic employment make-up of the subcontractor(s) must be identified and submitted with this bid.

EMPLOYEES

CATEGORY	NATIVE INDIAN		AFRICAN AMERICAN		ASIAN AMERICAN		HISPANIC AMERICAN		CACUSIAN AMERICAN		OTHER	
	M	F	M	F	M	F	M	F	M	F	M	F
Mgmt/Official												
Professional (Arch., P.E., etc.)												
Supervisors												
Office/ Clerical												
Craftsmen												
Laborers												
Others (Specify)												
TOTALS												

FIRM'S NAME: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

This completed form is for (Check one) _____ Bidder/Proposer _____ Subcontractor

Submitted by: _____ Date Completed: _____

EXHIBIT C – SCHEDULE OF INTENDED SUBCONTRACTOR UTILIZATION

If the bidder/proposer intends to subcontract any portion of this scope of work/service(s), this form **must be** completed and **submitted with the bid/proposal**. All prime bidders/proposers **must** include Letter(s) of Intent (Exhibit D) in the bid document for all subcontractors who will be utilized under the scope of work/services.

Prime Bidder/Proposer: _____

ITB/RFP NUMBER: _____

Project Name or Description of Work/Service(s): _____

1. My firm, as Prime Bidder/Proposer on this scope of work/service(s) is _____ is not _____ a minority or female owned and controlled business. (Please indicate below the portion of work, including, percentage of bid amount that your firm will carry out directly):

If the Prime Bidder/Proposer is a Joint Venture, please complete Exhibit F: Joint Venture Disclosure Affidavit and attach a copy of the executed Joint Venture Agreement.

2. Sub-Contractors (Including suppliers) to be utilized in the performance of this scope of work/service(s), if awarded, are:

SUBCONTRACTOR NAME: _____

ADDRESS: _____

PHONE: _____

CONTACT PERSON: _____

ETHNIC GROUP*: _____ COUNTY CERTIFIED** _____

WORK TO BE PERFORMED: _____

DOLLAR VALUE OF WORK: \$ _____ PERCENTAGE VALUE: _____ %

***Ethnic Groups: African American (AABE); Asian American (ABE); Hispanic American (HBE); Native American (NABE); White Female American (WFBE);**
****If yes, attach copy of recent certification letter.**

EXHIBIT C – SCHEDULE OF INTENDED SUBCONTRACTOR UTILIZATION

SUBCONTRACTOR NAME: _____
ADDRESS: _____

PHONE: _____
CONTACT PERSON: _____
ETHNIC GROUP*: _____ COUNTY CERTIFIED** _____
WORK TO BE PERFORMED: _____
DOLLAR VALUE OF WORK: \$ _____ PERCENTAGE VALUE: _____ %

SUBCONTRACTOR NAME: _____
ADDRESS: _____

PHONE: _____
CONTACT PERSON: _____
ETHNIC GROUP*: _____ COUNTY CERTIFIED** _____
WORK TO BE PERFORMED: _____
DOLLAR VALUE OF WORK: \$ _____ PERCENTAGE VALUE: _____ %

SUBCONTRACTOR NAME: _____
ADDRESS: _____

PHONE: _____
CONTACT PERSON: _____
ETHNIC GROUP*: _____ COUNTY CERTIFIED** _____
WORK TO BE PERFORMED: _____
DOLLAR VALUE OF WORK: \$ _____ PERCENTAGE VALUE: _____ %

SUBCONTRACTOR NAME: _____
ADDRESS: _____

PHONE: _____
CONTACT PERSON: _____
ETHNIC GROUP*: _____ COUNTY CERTIFIED** _____
WORK TO BE PERFORMED: _____
DOLLAR VALUE OF WORK: \$ _____ PERCENTAGE VALUE: _____ %

***Ethnic Groups: African American (AABE); Asian American (ABE); Hispanic American (HBE); Native American (NABE); White Female American (WFBE); **If yes, attach copy of recent certification letter.**

EXHIBIT C – SCHEDULE OF INTENDED SUBCONTRACTOR UTILIZATION

Total Dollar Value of Subcontractor Agreements: (\$)

Total Percentage Value: (%)

CERTIFICATION: The undersigned certifies that he/she has read, understands and agrees to be bound by the Bid provisions, including the accompanying Exhibits and other terms and conditions regarding sub-contractor utilization. The undersigned further certifies that he/she is legally authorized by the Bidder to make the statement and representation in this Exhibit and that said statements and representations are true and correct to the best of his/her knowledge and belief. The undersigned understands and agrees that if any of the statements and representations are made by the Bidder knowing them to be false, or if there is a failure of the intentions, objectives and commitments set forth herein without prior approval of the County, then in any such event the Contractor's acts or failure to act, as the case may be, shall constitute a material breach of the contract, entitling the County to terminate the Contract for default. The right to so terminate shall be in addition to, and in lieu of, any other rights and remedies the County may have for other defaults under the contract.

Signature/Title: _____

Firm or Corporate Name: _____

Address: _____

Telephone: () _____

Fax Number: () _____

Email Address: _____

EXHIBIT D

**LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR
OR
PROVIDE MATERIALS OR SERVICES**

This form must be completed by ALL known subcontractors/suppliers and submitted with the bid. The Prime Contractor must submit Letters of Intent for ALL known subcontractors/suppliers at time of bid submission.

To: _____
(Name of Prime Contractor Firm)

From: _____
(Name of Subcontractor Firm)

ITB/RFP Number: _____

Project Name: _____

The undersigned is prepared to perform the following described work or provide materials or services in connection with the above project (specify in detail particular work items, materials, or services to be performed or provided):

Description of Work	Project Commence Date	Project Completion Date	Estimated Dollar Amount

(Prime Bidder)

(Subcontractor)

Signature _____

Signature _____

Title _____

Title _____

Date _____

Date _____

EXHIBIT E – DECLARATION REGARDING SUBCONTRACTING PRACTICES

If the bidder/proposer **does not intend to subcontract** any portion of the scope of work services(s), this form **must be** completed and submitted with the bid.

_____ Hereby declares that it is my/our intent to
(Bidder)
Perform 100% of the work required for _____
(IFB/RFP Number)

(Description of Work)

In making this declaration, the bidder/proposer states the following:

1. That the bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform **all elements** of the work on this project with his/her own current work forces;
2. If it should become necessary to subcontract some portion of the work at a later date, the bidder will comply with all requirements of the County's Non-Discrimination Ordinance in providing equal opportunities to all firms to subcontract the work. The determination to subcontract some portion of the work at a later date shall be made in good faith and the County reserves the right to require additional information to substantiate a bidder's decision to subcontract work following the award of the contract. Nothing contained in this provision shall be employed to circumvent the spirit and intent of the County's Non-Discrimination Ordinances;
3. The bidder will provide, upon request, information sufficient for the County to verify Item Number one.

AUTHORIZED COMPANY REPRESENTATIVE

Name: _____ Title: _____ Date: _____

Signature: _____

Firm: _____

Address: _____

Phone Number: _____

Fax Number: _____

Email Address: _____

EXHIBIT F – JOINT VENTURE DISCLOSURE AFFIDAVIT

IFB No. _____

Project Name _____

This form must be completed and submitted with the bid if a Joint Venture approach is to be undertaken.

The firms listed below do hereby declare that they have entered into a joint venture agreement pursuant to the above mentioned project. The information requested below is to clearly identify and explain the extent of participation of each firm in the proposed joint venture. All items must be properly addressed before the business entity can be evaluated.

1. Firms:

1) Name of Business: _____
Street Address: _____
City/State/Zip: _____
County: _____
Nature of Business: _____

2) Name of Business: _____
Street Address: _____
City/State/Zip: _____
County: _____
Nature of Business: _____

3) Name of Business: _____
Street Address: _____
City/State/Zip: _____
County: _____
Nature of Business: _____

NAME OF JOINT VENTURE (If applicable): _____

OFFICE ADDRESS: _____

PRINCIPAL OFFICE: _____

OFFICE PHONE: _____

EXHIBIT F – JOINT VENTURE DISCLOSURE AFFIDAVIT CONTINUED

Note: Attach additional sheets as required

2. Describe the capital contributions by each joint venturer and accounting thereof. Indicate the percentage make-up for each joint venture partner.

3. Describe the financial controls of the joint venture, e.g., will a separate cost center be established? Which venturer will be responsible for keeping the books? How will the expense therefore be reimbursed? What is the authority of each joint venture to commit or obligate the order?

4. Describe any Ownership, options for Ownership, or loans between the joint ventures. Identify terms thereof.

5. Describe the estimate contract cash flow for each joint venturer.

6. To what extent and by whom will the on-site work be supervised?

7. To what extent and by whom will the administrative office be supervised?

8. Which joint venturer will be responsible for material purchases including the estimated cost thereof? How will the purchase be financed?

9. Which joint venturer will provide equipment? What is the estimated cost thereof? How will the equipment be financed?

10. Describe the experience and business qualifications of each joint venturer.

11. Submit a copy of all joint venture agreements and evidence of authority to do business in the State of Georgia as well as locally, to include all necessary business licenses.

12. Percent of ownership by each joint venture in terms of profit and loss sharing: _____

13. The authority of each joint venturer to commit or obligate the other: _____

14. Number of personnel to be involved in project, their crafts and positions and whether they are employees of the small business enterprise, the majority firm or the joint venture: _____

EXHIBIT F – JOINT VENTURE DISCLOSURE AFFIDAVIT CONTINUED

15. Identification of control and participation in venture; list those individuals who are responsible for day-to-day management and policy decision-maker, including, but not limited to, those with prime responsibility for areas designated below; (use additional sheets if necessary)

<u>Name</u>	<u>Race</u>	<u>Sex</u>	<u>Financial Decisions</u>	<u>Supervision Field Operation</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

In connection with any work that these firms, as a joint venture, might be authorized to perform in connection with above captioned contract, we each do hereby authorize representatives of the Fulton County Department of Purchasing and Contract Compliance and Departments of Finance, under the direction of the County Manger's Office, to examine, from time to time, the books, records and files to the extent that such relate to this County project.

WE DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THE FOREGOING DOCUMENT ARE TRUE AND CORRECT, AND THAT WE ARE AUTHORIZED, ON BEHALF OF THE ABOVE FIRMS, TO MAKE THIS AFFIDAVIT AND GRANT THE ABOVE PRIVILEGE.

FOR: _____
 (Company)

Date: _____

 (Signature of Affiant)

 (Printed Name)

 (Company)

Date: _____

 (Signature of Affiant)

 (Printed Name)

State of _____:

County of _____:

On this _____ day of _____, 20_____, before me, appeared

_____, the undersigned known to me to be the person described in the foregoing Affidavit and acknowledge that he (she) executed the same in the capacity therein stated and for the purpose therein contained.

EXHIBIT G – PRIME CONTRACTOR/SUBCONTRACTOR UTILIZATION REPORT

This report is required to be submitted by the tenth day of each month, with a copy of your payment invoice (schedule of values/payment application) to Contract Compliance. Failure to comply may result in the County commencing proceedings to impose sanctions on the successful bidder, in addition to purchasing any other available legal remedy. Sanctions may include the suspending of any payment or part thereof, termination or cancellation of the contract, and the denial to participate in any future contracts awarded by Fulton County.

REPORTING PERIOD		PROJECT NAME:	
FROM:		PROJECT NUMBER:	
TO:		PROJECT LOCATION:	

PRIME CONTRACTOR		Contract Award Date	Contract Award Amount	Change Order Amount	Contract Period	% Complete to Date
Name:						
Address:						
Telephone #:						

AMOUNT OF REQUISITION THIS PERIOD:\$ _____
 TOTAL AMOUNT REQUISITION TO DATE:\$ _____

SUBCONTRACTOR UTILIZATION (add additional rows as necessary)

Name of Sub-contractor	Description of Work	Contract Amount	Amount Paid To Date	Amount Requisition This Period	Contract Period	
					Starting Date	Ending Date
TOTALS						

Executed By: _____
 (Signature) (Printed Name)

END OF SECTION

INSURANCE AND RISK MANAGEMENT PROVISIONS

It is Fulton County Government’s practice to obtain Certificates of Insurance from our Contractors and Vendors. Insurance must be written by a licensed agent in a company licensed to write insurance in the State of Georgia, with an A.M. Best rating of at least A- VI, subject to final approval by Fulton County. Respondents shall submit with the bid/proposal evidence of insurability satisfactory to Fulton County Government as to form and content. Either of the following forms of evidence is acceptable:

- A letter from an insurance carrier stating that upon your firm/company being the successful Bidder/Respondent that a Certificate of Insurance shall be issued in compliance with the Insurance and Risk Management Provisions outlined below.
- A Certificate of Insurance complying with the Insurance and Risk Management Provisions outlined below (Request for Bid/Proposal number and Project Description must appear on the Certificate of Insurance).

Upon award, the Contractor/Vendor must maintain at their expense, insurance with policy limits equal to or greater than the limits described below. Any and all Insurance Coverage(s) and Bonds required under the terms and conditions of the contract shall be maintained during the entire length of the contract, including any extensions or renewals thereto, and until all work has been completed to the satisfaction of Fulton County Government.

Accordingly the Respondent shall provide a certificate evidencing the following:

1. WORKERS COMPENSATION/EMPLOYER’S LIABILITY INSURANCE – STATUTORY (In compliance with the Georgia Workers Compensation Acts and any other State or Federal Acts or Provisions in which jurisdiction may be granted)

Employer’s Liability Insurance	BY ACCIDENT	EACH ACCIDENT	\$1,000,000
Employer’s Liability Insurance	BY DISEASE	POLICY LIMIT	\$1,000,000
(Aggregate)	BY DISEASE	EACH EMPLOYEE	\$1,000,000

2. COMMERCIAL GENERAL LIABILITY INSURANCE (Including contractual Liability Insurance)

Bodily Injury and Property Damage Liability	Each Occurrence	\$1,000,000
(Other than Products/Completed Operations)	General Aggregate	\$2,000,000
Products\Completed Operation	Aggregate Limit	\$2,000,000
Personal and Advertising Injury	Limits	\$1,000,000
Fire Damage	Limits	\$100,000

3. BUSINESS AUTOMOBILE LIABILITY INSURANCE

Combined Single Limits	Each Occurrence	\$1,000,000
(Including operation of non-owned, owned, and hired automobiles).		

4. ELECTRONIC DATA PROCESSING LIABILITY

(Required if computer contractor)	Limits	\$1,000,000
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5. UMBRELLA LIABILITY

(In excess of above noted coverages)	Each Occurrence	\$10,000,000
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6. PROFESSIONAL LIABILITY

	Each Occurrence	\$5,000,000
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(To be provided when the Contract includes specified Professional Services, and will be written with all Environmental/Pollution exclusions deleted).

7. ENVIRONMENTAL/POLLUTION LIABILITY

Each Occurrence \$2,000,000

8. FIDELITY BOND

(Employee Dishonesty)

Each Occurrence \$100,000

9. BUILDERS RISK: "All-risk" form of builder's risk insurance providing coverage against loss or damage by fire or other peril on an "all-risk" form, including demolition and increased cost of construction, debris removal and the full replacement cost of the Project foundations and containing an agreed amount endorsement, and, until Final Completion and Acceptance of the Project. Such policy of insurance shall contain at least the following sub-limits of insurance and deductibles:

Sub-limits:

Property in Transit	\$1,000,000
Property in Offsite Storage	\$1,000,000
Plans & Blueprints	\$25,000
Debris Removal	25% of Insured Physical Loss
Delay in Completion / Soft Cost	TBD

Deductibles:

Flood and Earthquake	\$25,000
Water Damage other than Flood	\$100,000
All other Perils	\$10,000

Owner and Contractor waive all rights against each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section, or other property insurance applicable to the Work, accept such rights as they have to the proceeds of such insurance.

The policy will name Fulton County, The Contractor and Subcontractors of all tiers as Insureds under the policy.

Certificates of Insurance

Certificates shall state that the policy or policies shall not expire, be cancelled or altered without at least forty-five (45) days prior written notice to Fulton County Government. Policies and Certificates of Insurance are to list Fulton County Government as an Additional Insured (except for Workers' Compensation) and shall conform to all terms and conditions (including coverage of the indemnification and hold harmless agreement) contained in the Insurance and Risk Management Provisions. The General Liability Additional Insured language should apply to on-going and completed-operations, using ISO form CG 2010 (11/85 version) or equivalent.

If Fulton County Government shall so request, the Respondent, Contractor or Vendor will furnish the County for its inspection and approval such policies of insurance with all endorsements, or confirmed specimens thereof certified by the insurance company to be true and correct copies.

Such certificates and notices shall be sent to:

Fulton County Department of Purchasing and Contract Compliance
130 Peachtree Street, S.W.
Suite 1168
Atlanta, Georgia 30303-3459

It is understood that **Insurance in no way Limits the Liability of the Contractor/Vendor.**

USE OF PREMISES

Contractor shall confine its apparatus, the storage of materials and the operations of its workers to limits/requirements indicated by law, ordinance, permits and any restrictions of Fulton County Government and shall not unreasonably encumber the premises with its materials.

PROTECTION OF PROPERTY

Contractor will adequately protect its own work from damage, will protect Fulton County Government's property from damage or loss and will take all necessary precautions during the progress of the work to protect all persons and the property of others from damage or loss.

Contractor shall take all necessary precautions for the safety of employees of the work and shall comply with all applicable provisions of the Federal, State and local safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where work is being performed.

Contractor shall erect and properly maintain at all times as required by the conditions and progress of the work, all necessary safeguards for the protection of its employees, Fulton County Government employees and the public and shall post all applicable signage and other warning devices to protect against potential hazards for the work being performed.

INDEMNIFICATION AND HOLD HARMLESS AGREEMENT

Contractor/Vendor hereby agrees to release, indemnify, defend and hold harmless Fulton County, its Commissioners, officers, employees, subcontractors, successors, assigns and agents, from and against any and all losses (including death), claims, damages, liabilities, costs and expenses (including but not limited to all actions, proceedings, or investigations in respect thereof and any costs of judgments, settlements, court costs, attorney's fees or expenses, regardless of the outcome of any such action, proceeding, or investigation), caused by, relating to, based upon or arising out of any act or omission by Contractor/Vendor, its directors, officers, employees, subcontractors, successors, assigns or agents, or otherwise in connection (directly or indirectly) with its acceptance, or the performance, or nonperformance, of its obligations under these agreements. Such obligations shall not be construed to negate, abridge or otherwise reduce any other rights or obligations of indemnity which would otherwise exist as to any party or person as set forth in this paragraph.

Contractor/Vendor's obligation to protect, defend, indemnify and hold harmless, as set forth hereinabove, shall also include, but is not limited to, any matter arising out of any actual or alleged infringement of any patent, trademark, copyright, or service mark, or other actual or alleged unfair competition disparagement of product or service, or other tort or any type whatsoever, or any actual or alleged violation of trade regulations.

Contractor/Vendor further agrees to protect, defend, indemnify and hold harmless Fulton County, its Commissioners, officers, employees, subcontractors, successors, assigns and agents from and against any and all claims or liability for compensation under the Worker's Compensation Act, Disability Benefits Act, or any other employee benefits act arising out of injuries sustained by any employees of Contractor/Vendor. These indemnities shall not be limited by reason of the listing of any insurance coverage.

If the bid/quotation involves construction services, the Contractor/Vendor will be responsible fully for any and all damage to the work during the course of construction, until the point of Final acceptance by Fulton County.

FULTON COUNTY ACKNOWLEDGES THAT ALL PROVISIONS OF THIS INDEMNITY AGREEMENT MAY NOT BE APPLICABLE TO THE CONTRACTOR/VENDOR'S BUSINESS. TO THE EXTENT THAT CONTRACTOR/VENDOR MAY DEMONSTRATE SUCH NONAPPLICABILITY, FULTON COUNTY MAY NEGOTIATE AMENDMENTS TO THIS AGREEMENT AS THE CIRCUMSTANCES DICTATE.

CONTRACTOR/VENDOR ACKNOWLEDGES HAVING READ, UNDERSTANDING, AND AGREEING TO COMPLY WITH THIS INDEMNIFICATION AND HOLD HARMLESS AGREEMENT, AND THE REPRESENTATIVE OF THE CONTRACTOR/VENDOR IDENTIFIED BELOW IS AUTHORIZED TO SIGN CONTRACTS ON BEHALF OF THE RESPONDING CONTRACTOR/VENDOR.

COMPANY: _____ SIGNATURE: _____

NAME: _____ TITLE: _____

DATE: _____

SECTION 7

SECTION 00 500 OWNER – SAMPLE CONTRACTOR AGREEMENT

AGREEMENT:

Made as on the _____ day of _____, in the year of Two Thousand and Six.

Between the Owner (County):

FULTON COUNTY BOARD OF COMMISSIONERS
Fulton County Government Center
141 Pryor Street, S.W.
Atlanta, Georgia 30303

And the Contractor:

The Project:

Installation of Engine Generators for Fulton County Senior Multipurpose Complexes

The Work:

ITB Number: 06ITB XXXXXX-XX

Contract Name: Installation of Engine Generators for Fulton County Senior Multipurpose Complexes

Contract Sum: Refer to Article 9, Payments & Completion

The Construction Manager:
Jim Winslett
General Services Department
Facility Engineering
3977 Aviation Circle
Atlanta, Georgia 30336

The Engineer:
Jerry Sumrell, P.E.
Hartrampf, Inc.
7000 Central Parkway, Suite 1475
Atlanta, Georgia 30328

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The Owner and the Contractor agree as set forth below:

ARTICLE 1

CONTRACT DOCUMENTS

1.1 DEFINITIONS - The following is a partial list of terms and their meanings as used in the administration of the project and in the Contract Documents:

1.1.1 Documents:

- A. "Bidding Documents" include (1) the Invitation for Bids, which is comprised of the Bid Manual (including Instructions to Bidders, the Bid Form, and other bidding information), the Project Manual (including the Owner-Contractor Agreement and other Contract forms, the General Requirements, the Specifications, schedules and other project information) and the Drawings which are bound separately and listed in a List of Drawings included in the Project Manual; and (2) any Addenda to the Invitation for Bids issued prior to receipt of bids.
- B. "Contract Documents" for the Work consist of the Bidding Documents and all modifications issued after award of the Contract. A modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a written interpretation issued by the Construction Manager pursuant to Subparagraph 2.3.8 of this Agreement, or (4) a written order for a minor change in the Work issued by the Construction Manager pursuant to Article 12 of this Agreement.

The Contract Documents represent the entire and integrated agreement between the parties hereto and supersede all prior negotiations, representations or agreements, either written or oral. The Contract Documents may be amended or modified only by a modification as defined in above in this Subparagraph. The Contract Documents shall not be construed to create any contractual relationship of any kind between any persons or entities other than the County, including the Construction Manager, and the Contractor. Nothing contained in the Contract Documents shall create any contractual relationship between the County, Construction Manager, or any other consultant employed by the County, and any of the Contractor's subcontractors or sub-subcontractors.

1.1.2 The Work:

The Work comprises the completed construction required of the Contractor as described in the Contract Documents, and includes all labor, materials, equipment, and services necessary to produce the constructed facility in a complete, finished and operating manner.

1.1.3 The Project:

The Project is the total construction of which the Work performed under this Contract, as described in the Contract Documents or as required by any law, ordinance, code or standard, may be a part.

1.1.4 Approve:

Where used in conjunction with the County's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of the term "approved" shall be held to limitations of the County's responsibilities and duties as described herein. In no case shall "approval" be interpreted as a release of Contractor from responsibilities to fulfill the requirements of the Contract Documents.

1.1.5 Bidder:

Any individual, company, corporation, partnership, or joint venture who submits a bid for the Work required as distinct from a sub-bidder who submits a bid to a prime bidder.

1.1.6 Directed, Required, Acceptable:

When these words refer to work or its performance, "directed", "required", "requested", "authorized", "selected", "permitted", "ordered", "designated", "prescribed", and words of like implication, mean "by direction of", the

County. Likewise, "acceptable", "satisfactory", "in the judgment of", and words of like import, mean "recommended by", "acceptable to", "satisfactory to", or "in the judgment of" the County.

1.1.7 As Shown, As Indicated, As Detailed:

These words, and words of like implication, refer to information contained by drawings and/or specifications describing the Work, unless explicitly stated otherwise in other Contract Documents.

1.1.8 Manufacturer:

An individual, company, or corporation who manufactures, fabricates or assembles a standard product. A standard product is one that is not made to special design, and is furnished either directly to the Contractor or through a material supplier or vendor to the Contractor.

1.1.9 Material Supplier or Vendor:

An individual, company, or corporation who supplies, but who is not responsible for the installation of, materials, products and equipment for this particular contract.

1.1.10 Notice of Award:

This notice is provided by the County to the apparent successful Bidder, and indicates that it is the County's intent to award the Contract to that Bidder, contingent upon the Bidder's execution of the Owner-Contractor Agreement and submission of other necessary documents as specified in the Bidding Documents, and contingent upon the County's subsequent acceptance of same and formal approval of the Contract by the Fulton County Board of Commissioners.

1.1.11 Notice to Proceed:

This notice is provided by the County to the successful Bidder after the County has accepted and approved the Bidder's executed Owner-Contractor Agreement and other documents as required by and specified in the Bidding Documents. The actual date for commencement of the Work shall be extracted from the Notice to Proceed and inserted into the Agreement in the appropriate location, when the County executes the Agreement.

1.1.12 Plans or Drawings:

All drawings, sketches or reproduction of drawings pertaining to required Work.

1.1.13 Product:

The term "product" includes materials, systems and equipment.

1.1.14 Project Manual:

The Project Manual includes the Owner-Contractor Agreement and other Contract forms, the General Requirements, the Specifications, schedules and other project information, all contained in one or more volumes.

1.1.15 Bid:

A complete and properly signed document whereby a Bidder proposes to perform the Work or designated portion thereof for the sums stipulated therein, supported by all data called for by the bidding requirements and documents.

1.1.16 Provide:

As a directive to the Contractor, "provide" means "furnish and install completely."

1.1.17 Specifications:

Descriptions, provisions and requirements, pertaining to method and manner of performing work, or the quantities and qualities of materials to be furnished under the terms of the Contract.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 Execution of this Owner-Contractor Agreement is a representation that the Contractor has visited the site, has become familiar with the local conditions under which the Work is to be performed, and has correlated personal observations with the requirements of the Contract Documents.

1.2.2 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. Work not covered in the Contract Documents shall not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

1.2.3 The organization of the Bid Manual and Project Manual and the Specifications provided to the Contractor into divisions, sections and articles, and the arrangement of the Drawings provided to the Contractor, shall not control the Contractor in dividing the Work among subcontractors and trades, or in establishing the extent of work to be performed by any such entity; nor shall any responsibility be assumed by the County, or Construction Manager for the manner in which the Contractor utilizes such documentation provided to divide the Work among such entities.

1.2.4 If any portion of the Contract Documents shall be in conflict with any other portion, the various documents comprising the Contract Documents shall govern in the following order of precedence: the Owner-Contractor Agreement; the General Requirements; the Technical Specifications; the Drawings. As between figures given on Drawings and the scaled measurements, the figures shall govern; as between large-scale Drawings and small-scale Drawings, the larger scale shall govern. All such discrepancies and/or conflicts shall be submitted in writing to the Construction Manager for clarification before the Contractor's Bid is submitted, so that an addendum may be issued if necessary.

1.3 OWNERSHIP AND USE OF DOCUMENTS

1.3.1 All Drawings and Specifications furnished by the Architect are and shall remain the property of the County. They are to be used by the Contractor only with respect to this Project and are not to be used on any other project. Submission or distribution of same to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the rights of the County or other reserved rights.

1.4 ASSEMBLY OF CONSTRUCTION DRAWINGS AND SPECIFICATIONS PRIOR TO NOTICE TO PROCEED

1.4.1 It is the intent of the Architect and the Construction Manager to assemble a set of Contract Documents to be used for construction which, to the greatest extent possible, incorporates all changes which may have been issued by addendum for this Contract. Every effort will be made by the Architect and the Construction Manager to have this set of Contract Documents available for the Contractor at the time the Notice to Proceed is issued. If for any reason these documents are not available at the time of issuance of the Notice to Proceed, the County may direct the Work, or certain portions thereof, to commence using the documents in their state at the time of bid. No changes will be incorporated into this reissued set of Contract Documents that were not previously issued by addendum; however, it is the responsibility of the Contractor to review this reissued set of Contract Documents and to verify that the incorporation of addendum changes has been executed properly.

ARTICLE 2

ADMINISTRATION

2.1 CONSTRUCTION MANAGER

2.1.1 MANAGEMENT APPROACH

2.1.1.1 The County has established a process for the design and construction of infrastructure and facilities projects in its Capital Improvements Program which utilizes a team concept involving the use of a Construction Manager. The Construction Manager, in connection with a wide range of services that they provide, assist and support the County in the comprehensive program planning, organization, coordination, control, budgeting, and implementation of the design and construction of each project in the program. It is the County's intent that the Construction Manager, Architect, Engineers and Contractor work as a unified team with the County in the delivery of this project.

2.1.2 THE CONSTRUCTION MANAGER

2.1.2.1 The Construction Manager is the person or entity identified as such herein. The term "Construction Manager" means the Construction Manager or the Construction Manager's authorized representative.

2.1.2.2 The County has designated a Construction Manager to be responsible for the implementation and delivery of projects within the County Capital Improvements Program. The Construction Manager's services include project-specific planning and management of design, construction, and support services required to complete projects in accordance with performance goals. The Construction Manager also is responsible for all status reporting of implementation activities, and provides technical and planning support. Specific areas of Construction Manager responsibility include 1) program and strategic planning, 2) projects definition, 3) funding coordination, 4) program priority management, 5) master scheduling, 6) project scope and performance parameters, 7) program status reporting, and 8) project monitoring and quality assurance, 9) project implementation planning, 10) procurement of design and construction contracts, 11) design services management, 12) equipment and materials procurement, 13) permitting and regulatory compliance, 14) field construction management and safety, 15) construction contract administration, 16) design and construction status reporting, 17) project records management, and 18) management information systems (MIS) for the program.

2.2 THE ARCHITECT

2.2.1 The Architect is the person or entity identified as such herein. The term "Architect" means the Architect/Engineer or the Architect's/Engineer's authorized representative.

2.2.2 In the event that design and engineering services are provided for the Work of this contract by more than one prime entity under contract with the County, the term "Architect" as used in this Agreement shall apply to the entity as regards that portion of the Work for which such entity provided services to the County. Nothing in this Agreement shall be construed to create any contractual or other obligation of any separate prime design and/or engineering firm to another.

2.3 ADMINISTRATION OF THE CONTRACT

2.3.1 The Construction Manager and the Architect shall provide administration services as hereinafter described.

2.3.2 For the administration and management of this Contract, the Construction Manager shall serve as the County's agent and representative. The Construction Manager shall advise and consult with the County and the Architect. The Construction Manager shall exercise full authority on behalf of the County for all matters pertinent to enforcement of the Contract, unless otherwise specifically excepted in this Agreement. The primary point of contact for the Contractor shall be the Construction Manager. All correspondence from the Contractor to the County related to contract administration and performance of the Work shall be forwarded through the Construction Manager, unless directed otherwise by the Construction Manager. Likewise, all correspondence and instructions to the Contractor on behalf of the County shall be forwarded through the Construction Manager.

- 2.3.3 The Construction Manager, with the assistance of the Architect, will determine in general that the construction is being performed in accordance with design and engineering requirements, and will endeavor to guard the County against defects and deficiencies in the Work.
- 2.3.4 The Architect will visit the site at intervals appropriate to the state of construction to become generally familiar with the progress and quality of the Work, and to determine in general if the Work is proceeding in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of on-site observations as the Architect, the Architect will keep the County informed of the progress of the Work, and will endeavor to guard the County against defects and deficiencies in the Work.
- 2.3.5 The Construction Manager and the Architect will not be responsible for or have control or charge of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, nor will they be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Construction Manager and the Architect will not be responsible for or have control or charge over the acts or omissions of the Contractor, its subcontractors, or any of their agents or employees, or any other persons performing the Work.
- 2.3.6 The County, the Construction Manager, the Architect and any other consultants employed by the County shall at all times have access to the Work. The Contractor shall provide safe facilities for such access so that they may perform their functions.
- 2.3.7 Based on the Construction Manager's observations and the Architect's recommendations regarding the Contractor's Applications for Payment, the Construction Manager shall determine the amounts owing to the Contractor, in accordance with the payment terms of the Contract, and shall issue Certificates for Payment in such amount to the County.
- 2.3.8 The Architect shall render interpretations of the Contract Drawings and Specifications necessary for the proper execution or progress of the Work. Either party to the Contract may make written requests through the Construction Manager to the Architect for such interpretations.
- 2.3.9 All interpretations of the Architect shall be consistent with the intent of and reasonably inferable from the Contract Documents and shall be in writing or in graphic form.
- 2.3.10 In matters relating to artistic effect, the interpretation of the Architect shall be final, if the County determines that it is consistent with the intent of the Contract Documents.
- 2.3.11 Except as otherwise provided in this Agreement, the resolution of any dispute or disagreement concerning a question of fact arising under this Agreement shall be decided by the Construction Manager. The Construction Manager shall reduce its decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Construction Manager shall be final and conclusive unless, within thirty (30) calendar days from the Contractor's receipt of such decision, the Construction Manager receives in its office a written appeal from the Contractor. The Construction Manager shall render a decision, which shall be final and conclusive. No decision of the Construction Manager shall be pleaded in any suit involving a question of fact arising under this Agreement, provided such decision is supported by substantial evidence and is not fraudulent, capricious, arbitrary, or so grossly erroneous as necessarily implying bad faith. In connection with any appeal proceeding under this Subparagraph, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending any final decision of a dispute or disagreement hereunder, the Contractor shall proceed diligently with the Work.
- 2.3.12 The Architect shall have authority to reject Work which does not conform to the Contract Documents, and to require special inspection and testing, but will take such action only after consultation with the Construction Manager. Subject to review by the Architect, the Construction Manager will have the authority to reject Work which does not conform to the Contract Documents. Whenever, in the Construction Manager's opinion, it is considered necessary or advisable for the implementation of the intent of the Contract Documents, the Construction Manager shall have authority to require special inspection or testing of the Work in accordance with Subparagraph 7.7.3, whether or not such Work be then fabricated, installed or completed. Neither the Architect's nor the Construction Manager's authority to act under this Subparagraph, nor any decision made by them in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility

of the Architect or the Construction Manager to the Contractor, any subcontractor, any of their agents or employees, or any other person performing any of the Work.

- 2.3.13 The Construction Manager will receive from the Contractor all shop drawings, product data, and samples and transmit same to the Architect for review.
- 2.3.14 The Architect will review for contract compliance or take other appropriate action upon the Contractor's submittals such as shop drawings, product data and samples, but only for conformance with the design concept of the Work and the information given in the Contract Documents. Such action shall be taken with reasonable promptness. The Architect's review of a specific item shall not indicate approval of an assembly of which the item is a component.
- 2.3.15 The Construction Manager and the Architect shall take appropriate action on Change Orders in accordance with Article 12 of this Agreement, and shall have authority to order minor changes in the Work as provided in Subparagraph 12.4.1 of this Agreement.
- 2.3.16 The Construction Manager, jointly with the Architect, shall conduct inspections to determine the dates of Substantial Completion and Final Completion, and shall receive and forward to the County for review written warranties and related documents required by the Contract Documents and assembled by the Contractor. The Construction Manager shall approve and issue Certificates for Payment upon compliance with Substantial and Final Completion requirements indicated in Article 9 of this Agreement.

ARTICLE 3

COUNTY

3.1 DEFINITION

3.1.1 The County (Owner) is the person or entity identified as such herein. The term "County" means the County or the County's authorized representative. The term "County" also means any agent of the County. The terms "County" and "Owner" may be used interchangeably in the Contract Documents.

3.2 INFORMATION AND SERVICES REQUIRED OF THE COUNTY

3.2.1 The County shall furnish all reasonably available site information describing the physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.

3.2.2 Except as indicated otherwise, the County shall secure and pay for necessary easements required for the construction of permanent structures.

3.2.3 Information or services under the County's control shall be furnished by the County with reasonable promptness.

3.2.4 The County shall forward all instructions to the Contractor through the Construction Manager.

3.2.5 Upon Notice to Proceed, the County will furnish to the Contractor, free of charge, three (3) copies of the Contract Documents, including modifications thereto, and will be furnished, at actual cost of reproduction and delivery, as many additional copies as may be required. Subcontractors and vendors must obtain their copies of the Contract Documents from the Contractor from its allotment.

3.3 COUNTY'S RIGHT TO STOP THE WORK

3.3.1 If the Contractor fails to correct defective Work as required by Paragraph 13.2, or persistently fails to carry out the Work in accordance with the Contract Documents, the County, by a written order signed personally or by an agent specifically so empowered by the County in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the County to stop the Work shall not give rise to any duty on the part of the County to exercise this right for the benefit of the Contractor or any other person or entity. The Contractor shall bear all direct and indirect costs attributable to a work stoppage by the County in accordance with this Subparagraph 3.3.1.

3.4 COUNTY'S RIGHT TO CARRY OUT THE WORK

3.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails within seven (7) days after receipt of written notice from the County to commence and continue correction of such default or neglect with diligence and promptness, the County may, after four (4) days following receipt by Contractor of an additional written notice and without prejudice to any other remedy the County may have, make good such deficiencies. In such case an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor for the cost of correcting such deficiencies, including compensation for the County's Agents or Professional Consultants for additional services made necessary by such default, neglect or failure. If the payments then or thereafter due the County are not sufficient to cover such amount, the Contractor shall pay the difference to the County.

ARTICLE 4

CONTRACTOR

4.1 DEFINITION

4.1.1 The Contractor is the person or entity identified as such herein. The term "Contractor" means the Contractor or the Contractor's designated representative.

4.1.2 The Contractor is the prime entity that provides construction services including labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, furnishings, equipment and other facilities and services for execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated into the Work. The term "Contractor" shall be taken to include the Contractor's subcontractors, sub-subcontractors, and other entities providing materials, labor and construction for execution of the Work.

4.2 (not used)

4.3 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY THE CONTRACTOR

4.3.1 Starting upon the Contractor's receipt of the Notice to Proceed, the Contractor shall again carefully study and compare the Contract Documents and field conditions of the jobsite and shall immediately report to the Construction Manager any error, inconsistency, ambiguity or omission that may be discovered; or, if no such errors, inconsistencies, ambiguities or omissions are found, the Contractor shall so state in writing to the Construction Manager. The Contractor shall perform no portion of the Work at any time without Contract Documents or, where required, without reviewed shop drawings, product data or samples for such portion of the Work and where such review allows fabrication or installation in accordance with the Section 01 340 of the General Requirements.

4.3.2 If the Contractor has not performed a complete review of the Contract Documents within thirty (30) days since the Contractor's receipt of the Notice to Proceed, and should dimensional discrepancies, conflicts, or problems of inadequate detail be discovered after that time period has elapsed, the Contractor must report same to the Construction Manager immediately, and then proceed to rectify such dimensional discrepancies, conflicts, or problems of inadequate detail. However, if the dimensional discrepancies, conflicts, or problems of inadequate detail which are discovered after that time period has elapsed are due to the Contractor's failure to properly research and review the Contract Documents, the Contractor will be completely responsible for all additional direct and indirect costs associated with the resolution of the dimensional discrepancies, conflicts, or problems of inadequate detail, if any costs should occur. Additional costs are those direct and indirect costs which are above and beyond the costs which would have been incurred by the County, had there been no occurrence of dimensional discrepancy, conflict, or problem of inadequate detail.

4.3.3 In the event that dimensional discrepancies, conflicts, or problems of inadequate detail are discovered after the expiration of the 30-day period, which could not reasonably have been discovered by the Contractor's thorough review of the Contract Documents as required by this Paragraph 4.3, the County will accept a proposal from the Contractor for the direct costs associated with these problems, provided that the Contractor can fully substantiate its direct costs according to the requirements of Article 12 of this Agreement.

4.4 SUPERVISION AND CONSTRUCTION PROCEDURES

4.4.1 The Contractor shall provide qualified personnel to supervise and direct the Work. The Contractor shall be solely responsible for all construction, fabrication, delivery, erection, installation, means, methods, techniques, sequences and procedures, and shall coordinate all portions of the Work.

4.4.2 The Contractor shall be responsible to the County for the acts and omissions of the Contractor's officers, directors, employees, subcontractors, suppliers, and their agents and employees, and any other persons performing any of the Work.

4.4.3 The Contractor shall not be relieved from obligations to perform the Work in accordance with the Contract Documents, either by the activities or duties of the Architect, the Construction Manager in the administration of the Contract, or by inspections, tests or reviews required or performed by persons other than the Contractor.

4.5 LABOR AND MATERIALS

- 4.5.1 The Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.
- 4.5.2 The Contractor shall at all times enforce strict discipline and good order among the Contractor's employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned them.
- 4.5.3 After the Owner-Contractor Agreement has been executed, the Construction Manager and the Architect will consider a request for the substitution of materials or equipment in place of those specified only if the Contractor can demonstrate that the material or equipment specified is no longer available, or that the delivery date of specified product is such that the scheduled date of Substantial Completion of the Work will be delayed if the specified product remains a requirement. Refer to Section 01 630 of the General Requirements for additional details and instructions regarding substitutions after contract execution.

4.6 WARRANTY

- 4.6.1 The Contractor warrants to the County that all materials and equipment furnished under this Contract shall be new unless otherwise specified, and that all Work shall be of good, first quality, free from faults and defects. All Work not conforming to these requirements, including substitutions not properly approved and authorized by the County, may be considered defective. If required by the County, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions under Paragraph 13.2 of this Agreement.

4.7 TAXES

- 4.7.1 The Contractor shall pay all sales, consumer, use and other similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted at the time proposals or bids are received, whether or not yet effective at time of bid.

4.8 PERMITS, FEES AND NOTICES

- 4.8.1 The Contractor shall apply for, pay for and secure all permits required for the proper execution of the Work, including all required land disturbance, demolition, and building permits issued by Fulton County and/or any other authority having jurisdiction. The Contractor shall secure and pay for all other permits and governmental fees required to execute the Work, including but not limited to licenses and inspections necessary for the proper execution and completion of the Work, and for the occupancy of the Work upon Substantial Completion and which are legally required at the time bids are received.
 - 4.8.1.1 Other permits required by any department of Fulton County Government, or any other jurisdiction must be paid for and obtained by the Contractor.
 - 4.8.1.2 Contractor shall be responsible for obtaining interim and/or final Certificates of Occupancy from the authority having jurisdiction. The Contractor shall be responsible for all costs which may be necessary in order to obtain these certificates.
 - 4.8.1.3 Contractor shall be responsible for acquiring and installing water and sewer taps for the project including all fees. Cost of meters and other materials and labor shall be the responsibility of the Contractor.
- 4.8.2 The Contractor shall give all notices and comply with all laws, codes, ordinances, rules, regulations and lawful orders of any public authority having jurisdiction which bear on the performance of the Work. The Construction Manager shall be notified within two (2) days in writing of any jurisdiction observations or inspections that require changes to the design and engineering requirements in the Contract Documents.
- 4.8.3 It is not the responsibility of the Contractor to make certain that the Contract Documents are in accordance with applicable laws, statutes, building codes and regulations. If the Contractor observes that any of the Contract Documents are at variance therewith in any respect, the

Contractor shall promptly notify the Construction Manager in writing, and any necessary changes shall be accomplished by appropriate modification. All necessary modifications shall be issued to the Contractor in writing by the Construction Manager.

4.8.4 If the Contractor performs any Work knowing it to be contrary to applicable laws, statutes, building codes, and regulations, and such Work is performed without notice of such having been made to the Construction Manager, the Contractor shall assume full responsibility therefor and shall bear all direct and indirect costs and liabilities attributable thereto.

4.9 ALLOWANCES

4.9.1 The Contractor shall include in the contract sum all allowances stated in the Contract Documents. Descriptions of allowances, if any, are found in Section 01 020 of the General Requirements.

4.9.2 The total amount of each allowance is exclusively for County use. The Contractor shall not include any mark-up within the allowance amount, although applicable mark-up may be included in the total Contract Sum.

4.10 SUPERINTENDENT

4.10.1 The Contractor shall employ a competent, full time, experienced superintendent and necessary assistants who shall be in attendance at the Project site during the progress of the Work. The superintendent shall have project experience comparable to the Contract scope, type, size and cost and shall have full authorization by the Contractor to fully represent the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

4.10.2 The superintendent shall remain on the Project not less than eight (8) hours per day, five days per week minimum, unless the job is closed down due to a general strike or conditions beyond the control of the Contractor, or until Termination of the Contract in accordance with the Contract Documents. The superintendent shall not be employed on any other Project during the course of this Work.

4.10.3 The superintendent or project supervisor shall be satisfactory to the Construction Manager and shall not be changed except with the consent of the Construction Manager, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employ. At any time during the execution of the Work, should the superintendent become unsatisfactory to the Construction Manager, the Contractor shall within 15 (fifteen) days upon receiving written notice from the Construction Manager, remove and replace the superintendent. Any such replacement superintendent shall be satisfactory to the Construction Manager.

4.10.4 In the event that any of the following conditions shall exist, the Contractor shall require that its superintendent be at the job site not less than ten (10) hours per day, six (6) days per week. This shall be done at no additional cost to the County.

4.10.4.1 should Substantial Completion not be accomplished on schedule;

4.10.4.2 should Final Completion not be accomplished on schedule;

4.10.4.3 should a schedule review show the Contractor to be fourteen (14) or more days behind schedule at any time during construction up until 30 days prior to a scheduled Substantial Completion;

4.10.4.4 should the schedule review show the Contractor to be seven (7) or more days behind schedule at any time during the last thirty (30) days prior to scheduled Substantial Completion.

4.10.5 The Contractor's superintendent shall document work activities and conditions on a daily basis. Reference Section 01 320 of the General Requirements for procedural details.

4.11 CONTRACTOR'S CONSTRUCTION SCHEDULE

4.11.1 The Contractor shall prepare and submit for the Construction Manager's review a detailed Contractor's Construction Schedule for the Work, which shall provide for expeditious and practicable execution of the Work. The schedule shall not exceed time limits indicated under this Agreement and shall be revised at intervals as required by conditions of the Work and the Project. Schedules shall be kept current and updated and submitted

monthly with a written report of changes. The Contractor shall also submit to accompany the construction schedule, a schedule showing percentage amount of work completed and dollar value for each month of construction. Reference Section 01 310 of the General Requirements for procedural details.

4.11.2 The Contractor shall prepare and keep current, for the Construction Manager's review, a schedule of submittals which is coordinated with the Contractor's construction schedule. Schedule shall show submittal date, date sent to Construction Manager, date received from Construction Manager, dates of receipt from and return to subcontractors and suppliers, and action taken.

4.12 (not used)

4.13 DOCUMENTS AND SAMPLES AT THE SITE

4.13.1 The Contractor shall maintain at the Project site, on a current basis, one record copy of all Drawings, Specifications, Shop Drawings, Samples, Product Data, Addenda, Change Orders, Modifications and other documents related to the Work in good order and marked currently to record all changes made during construction. These shall be available to the Architect and the Construction Manager for review at any time and shall be delivered to the Construction Manager for submittal to the County upon completion of the Work. The Contractor shall advise the Construction Manager on a current basis of all changes in the Work made during construction.

4.14 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

4.14.1 The Contractor shall prepare and submit to the Construction Manager, per the procedures contained in Section 01 340 of the General Requirements, a comprehensive Submittal Register for review and approval by the Construction Manager.

4.14.2 The Contractor shall prepare, review, approve and submit to the Architect, through the Construction Manager, with reasonable promptness and in such sequence as to cause no delay in the Work or to any separate contractor, all Shop Drawings, Product Data and Samples required by the Contract Documents for review. The Contractor shall coordinate its Shop Drawings, Product Data and Samples with those of other separate contractors, if any. Reference Section 01 340 of the General Requirements for definitions and procedural details.

4.14.3 By approving and submitting Shop Drawings, Product Data, and Samples, the Contractor represents that it has determined and verified all materials, field measurements and field construction criteria related thereto, or shall do so with reasonable promptness, and has checked and coordinated the information contained within such submittals between all trades and with the requirements of the Work, the Project and the Contract Documents.

4.14.4 The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Architect's review of Shop Drawings, Product Data or Samples, unless the Contractor has clearly and specifically informed the Architect in writing of such deviation at the time of submission and the Architect has taken no exception to the specific deviation. The Contractor shall not be relieved of responsibility for errors and omissions in the Shop Drawings, Product Data or Samples by the Architect's review.

4.14.5 The Contractor shall make any corrections required by the Architect and shall resubmit the required number of corrected copies of Shop Drawings/Product Data or new Samples. Resubmittal of Shop Drawings, Product Data, or Samples necessitated by required corrections shall not be cause for an extension of time. The Contractor shall direct specific attention in writing on resubmitted Shop Drawings, Product Data or Samples to revisions other than the corrections requested on previous submittals.

4.14.6 Resubmitted Shop Drawings, Product Data, or Samples necessitated by required corrections due to nonconformance with the Contract Documents which contain the same nonconformity as the first submittal shall be reviewed with the Contractor's understanding that all associated labor costs of said review will be back-charged to the Contractor, and drawn against the next sequential payment application.

4.15 USE OF SITE

4.15.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents, and shall not unreasonably encumber the site with any materials or equipment. The Contractor shall control accessibility to the site and not unreasonably impede the normal flow of traffic in the

vicinity, including truck and equipment entrances, allowable use of contiguous sidewalks and streets, and parking facilities. Reference Section 01 500 of the General Requirements for details.

4.16 CUTTING AND PATCHING / EXISTING STRUCTURES AND UTILITIES

- 4.16.1 The Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the Work.
- 4.16.2 The Contractor shall not damage or endanger any portion of the Work or the work of the County or any separate contractors by cutting, patching or otherwise altering any Work, or by excavation. The Contractor shall not cut or otherwise alter the work of the County or any separate contractor except with the written consent of the County and of such separate contractor. The Contractor shall not unreasonably withhold from the County or any separate contractor consent to cutting or otherwise altering the Work. Reference Section 01 045 of the General Requirements for details regarding cutting and patching.
- 4.16.3 The Contractor shall coordinate and be responsible for any modifications to existing structures which may be required to complete the Work.
- 4.16.4 Construction operations that require physical connection to existing operating buildings or structures and/or affect air quality, noise or utilities, shall be maintained so as to not interfere with any existing ongoing building operations.
- 4.16.5 The Contractor shall coordinate and be responsible for all modifications and connections to the existing utilities, as well as be responsible to coordinate any upgrades and new utility work.

4.17 CLEANING UP

- 4.17.1 The Contractor shall at all times keep the premises free from accumulation of waste materials or rubbish caused by the Contractor's operations, and shall adhere to all of the terms of the General Requirements. At the completion of the Work, the Contractor shall remove all the waste materials and rubbish from and about the Project as well as all the tools, construction equipment, machinery and surplus materials.
- 4.17.2 If the Contractor fails to clean up adequately, the County may do so as provided in Paragraph 3.4 of this Agreement, and the cost thereof shall be charged directly as a deduct to the Contract Sum.

4.18 COMMUNICATIONS

- 4.18.1 The Contractor shall forward all communications to the County and the Architect through the Construction Manager.

4.19 COPYRIGHT, ROYALTIES AND PATENTS

- 4.19.1 The Contractor shall pay all royalties and license fees, shall defend all suits or claims for infringement of any patent rights, and shall hold the County, the Architect, the Construction Manager, and other consultants of the County for the Project, and their agents and employees, harmless from loss on account thereof. If the Contractor has reason to believe that the design, process or product selected is an infringement of a patent, it shall be responsible for such loss unless such information is promptly given to the County.

4.20 INDEMNIFICATION

- 4.20.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the County, the Architect, the Construction Manager, and other consultants of the County for the Project, and their agents and employees from and against any and all claims, damages, losses and expenses, including, but not limited to, attorneys' fees and claims for contribution arising out of, resulting from or related to the performance of the Work, provided that any and all such claims, damages, losses or expenses are caused in whole or in part by any act, error, omission, or negligence of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph 4.20.

4.20.2 In any and all claims against any person or entity indemnified under this Paragraph 4.20 by any officer, director, or employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 4.20 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A subcontractor is a person or entity who has a direct contract with the Contractor to perform any portion of the Work. The term "subcontractor" means a subcontractor or an authorized representative thereof. The term "subcontractor" does not include any separate contractor who may be hired by the County or the Construction Manager or any separate contractor's subcontractors.

5.1.2 A sub-subcontractor is a person or entity who has a direct or indirect contract with a subcontractor to perform any portion of the Work. The term "sub-subcontractor" means a sub-subcontractor or an authorized representative thereof.

5.2 SUBCONTRACTUAL RELATIONS

5.2.1 By an appropriate written agreement, the Contractor shall require each subcontractor, to the extent of the Work to be performed by the subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the County, the Architect, and the Construction Manager. Said agreement shall preserve and protect the rights of the County, the Architect and the Construction Manager under the Contract Documents with respect to the Work to be performed by the subcontractor so that the subcontracting thereof will not prejudice such rights, and shall allow to the subcontractor, unless specifically provided otherwise in the Contractor-Subcontractor agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by these Documents, has against the County. Wherever appropriate, the Contractor shall require each subcontractor to enter into similar agreements with their sub-subcontractors.

5.2.2 The Contractor shall make available to each proposed subcontractor, prior to the execution of such entities' agreement with the Contractor, copies of the Contract Documents to which the subcontractor will be bound by this Paragraph 5.2, and identify to the subcontractor any terms and conditions of the proposed agreement which may be at variance with the Contract Documents. Each subcontractor shall similarly make copies of such Documents available to their sub-subcontractors, who shall also be bound therein.

5.2.3 In the event that a subcontractor or sub-subcontractor fails to perform as required according to the Contract Documents, the Contractor, at the written direction of the County or the Construction Manager and after such notice as is proper according to the Contract Documents, shall direct and guarantee the removal or replacement of said subcontractor or sub-subcontractor at no cost to the County. If desired by the County, the work which was to be performed by the subcontractor or sub-subcontractor shall then be removed from the Contractor's Work and shall be performed by contractors working directly for either the County or the Construction Manager.

5.3 AWARDS OF SUBCONTRACTS

5.3.1 Unless otherwise required by the Contract Documents or the Bidding Documents, the Contractor, within ten (10) days after the receipt of the Notice of Award of the Contract, shall furnish to the Construction Manager in writing for review by the County, the Architect, and the Construction Manager, the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work and executed Contract Compliance Exhibits C, D and E. This requirement shall be coordinated with the requirement for a similar submittal described in Subparagraph 4.5.3 above.

5.3.2 The Construction Manager will promptly reply to the Contractor in writing stating whether or not the County, the Architect or the Construction Manager, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Construction Manager to reply within ten (10) days shall constitute notice of no reasonable objection.

5.3.3 The Contractor shall not contract with any such proposed person or entity to whom the County, the Architect, or the Construction Manager has made reasonable objection under the provisions of this Paragraph 5.3.

5.3.4 If the County, the Architect, or the Construction Manager has reasonable objection to any such proposed person or entity, the Contractor shall submit a substitute to whom the County, the Architect, and the Construction Manager have no reasonable objection, and the Contract Sum shall be increased or decreased by the

difference in costs occasioned by such substitution and an appropriate Change Order shall be issued; however, no increase in the Contract Sum shall be allowed for any such substitution unless the Contractor has acted responsively within ten (10) days by submitting name as required by Subparagraph 5.3.1.

- 5.3.5 The Contractor shall make no substitution for any subcontractor, person, or entity previously selected if the County, the Architect, or the Construction Manager make reasonable objection to such substitution.

ARTICLE 6

WORK BY COUNTY OR BY SEPARATE CONTRACTORS

6.1 COUNTY'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

6.1.1 The County reserves the right to perform work related to the Project with the County's own forces, and to award separate contracts in connection with other portions of the Project, other work on the site under these or similar conditions of the Contract, or work which has been extracted from the Contractor's work by the County.

6.1.2 When separate contracts are awarded for different portions of the Project or other work on the site, the term "separate contractor" in the Contract Documents in each case shall mean the contractor who executes each separate County Agreement.

6.1.3 Prior to any separate contractor starting work, the County shall require that such separate contractor submit an executed insurance certificate indicating all coverages required by the separate contractor's Contract Documents are in effect, or otherwise be covered under the County's Owner-Controlled Insurance Program.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the County and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate the Work with theirs as required by the Contract Documents.

6.2.2 If any part of the Contractor's Work depends for proper execution or results upon the work of the County or any separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report within fourteen (14) days to the Construction Manager any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of the Contractor to so report in writing shall constitute an acceptance of the County's or separate contractor's work as fit and proper to receive the Work, except as to any defects which may subsequently become apparent in such work by others.

6.2.3 Any costs caused by defective or untimely work shall be borne by the party responsible therefore.

6.2.4 Should the Contractor wrongfully cause damage to the work or property of the County, or to other work or property on the site, the Contractor shall promptly remedy such damage.

6.2.5 Should the Contractor be caused damage by any other contractor on the Project, by reason of such other contractor's failure to perform properly his contract with the County, no action shall lie against the County or the Construction Manager, and neither the County nor the Construction Manager shall have liabilities therefore, but the Contractor may assert his claim for damages against such other contractor as the third party beneficiary under the contract between such other contractor and the County or the Construction Manager.

If, after reasonable attempts at resolution, the Contractor and any separate contractor involved in such a third party damages claim are unable to resolve such dispute, the Construction Manager shall intervene to assist the parties in the settlement of such claims. The Construction Manager may make monetary determinations as necessary in order to resolve the issue. Such determinations shall be final. Such action shall in no way prejudice the County's position as stated in the preceding paragraph or elsewhere in the Contract Documents.

6.2.6 Where the Work of this Contract shall be performed concurrently in the same areas as other construction work, the Contractor shall, with the supervision of the Construction Manager, establish a mutually acceptable schedule and procedures that shall permit all jobs to proceed with minimum interference.

6.3 COUNTY'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises between the Contractor and separate contractors as to their responsibility for cleaning up, the County may clean up and charge the cost thereof to the Contractor or contractors responsible therefore as the Construction Manager shall determine to be just.

ARTICLE 7

MISCELLANEOUS PROVISIONS

7.1 GOVERNING LAW & FORUM SELECTION

- 7.1.1 The Contract shall be governed by the laws of the State of Georgia and all other applicable local laws and statutes unless indicated otherwise.
- 7.1.2 The Contract shall be deemed to have been made and performed in Fulton County, Georgia. All suits or causes of action that may arise out of the Contract shall be brought in the courts of the State of Georgia in Fulton County.
- 7.1.3 The Georgia Open Records Act, O.C.G.A. § 50-18-70 et seq, applies to this Agreement. Contractor acknowledges that any documents or computerized data provided to the County by the Contractor may be subject to release to the public. Contractor also acknowledges that documents and computerized data created or held the Contractor in relation to this Agreement may be subject to release to the public, to include documents turned over to the County. Contractor shall cooperate with and provide assistance to the County in rapidly responding to the Open Records Act requests no later than 24 hours following receipt of any such requests by Contractor. Contractor shall promptly comply with the instructions or requests of the County in relation to responding to Open Records Act requests.

7.2 SUCCESSORS AND ASSIGNS

- 7.2.1 The County and the Contractor respectively bind themselves, their partners and successors, to the other party hereto and to the partners and successors of such other party with respect to all covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract or the proceeds therefrom, or sublet it as a whole without the written consent of the other.

7.3 WRITTEN NOTICE

- 7.3.1 All notices shall be in writing and delivered in person or transmitted by certified mail, postage prepaid, to the person and address provided herein. Any notice transmitted according to this Paragraph 7.3 shall be deemed to have been delivered as required by the contract. If delivered in person, the notice shall be effective as of the date of such delivery. If transmitted by mail, the notice shall be effective as of the date it is placed in the mail by the sender.
- 7.3.2 Written notices to the County, relative to the project, shall be made through the Construction Manager:

Fulton County
General Services / Facility Engineering
3977 Aviation Circle
Atlanta, GA 30336
Attn: Vernon Robinson

- 7.3.3 Written notices to the Contractor relative to this contract shall be sent to:

Insert Contractor contact

7.4 NOTICE OF CLAIMS

- 7.4.1 If the Contractor contends that it has suffer injury or damage to person or property because of any act or omission of the County or any of the County's employees, agents, or others for whose acts the County is legally liable, notice of claim shall be made by the Contractor in writing within ten (10) days after the first observance of such perceived injury or damage.
- 7.4.2 If the Contractor contends it is entitles to an increase in the Contract Sum, or an extension of the Contract Time, or contends it has any other claim for monetary compensation, damages or time extensions from the Owner,

the Contractor shall give the Owner written notice of such claim within ten (10) days after the occurrence giving rise to such claim.

7.4.3 The notice requirements under Articles 7.4.1 and 7.4.2 are conditions precedent to the assertion of any claim by the Contractor. If the Contractor fails to give the Owner timely written notice of a claim, as required by Articles 7.4.1 and 7.4.2, the Contractor will be deemed to have waived the claim, and the Owner shall have no further liability respecting the claim. The right of the Owner to receive notice of claims under Articles 7.4.1 and 7.4.2 may not be waived or modified by the Owner except in writing, and the Contractor shall not rely on any purported waiver of this notice requirement by verbal instructions or other conduct of the Owner.

7.5 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

7.5.1 The Contractor is required to furnish a Labor and Materials Payment Bond and a Performance Bond in penal sums of at least the full amount of the Contract, issued by a surety registered to do business in the State of Georgia and acceptable to the County. These bonds shall secure the faithful performance of the Contract, and the payment of all persons, firms or corporations to whom the Contractor may become legally indebted for professional services, construction labor, materials or equipment of any nature employed or used by it in performing the Work.

7.5.2 The bonds shall be written on forms acceptable to the County. Refer to Section 00 610 of the Project Manual for required terms and conditions.

7.5.3 Bonds shall be made out to Fulton County, Georgia.

7.6 RIGHTS AND REMEDIES

7.6.1 The duties and obligations imposed by the Owner-Contractor Agreement and the rights and remedies available thereunder shall be in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

7.6.2 No action or failure to act by the County, the Architect, the Construction Manager, or the Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

7.7 TESTS AND INSPECTIONS

7.7.1 All testing and inspection, whether required by the specification sections or by laws, ordinances, rules, regulations, codes or orders of any public authority having jurisdiction, or whether performed by the Contractor for quality control, shall be at the Contractor's expense unless otherwise indicated in the Contract Documents. The Contractor shall procure and pay for the services of an independent testing and inspection agency registered in Georgia, and acceptable to and for the County. The Contractor shall submit testing and inspection agency qualifications and a comprehensive work plan specific to project to the Construction Manager, with a listing of testing and inspection work required by the Contract Documents, all of which shall be reviewed and accepted by the Construction Manager prior to commencement of any testing or inspection services.

7.7.2 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Contractor shall give the Construction Manager forty-eight (48) hours advance notice of its readiness so the Construction Manager and/or other representative of the County may observe such inspection, testing or approval. The Contractor shall bear all costs of such inspections, tests or approvals conducted by public authorities.

7.7.3 If the County, the Architect, the Construction Manager, or public authority having jurisdiction determines that any Work requires special inspection, testing or approval which this Paragraph 7.7 does not include, the Construction Manager shall, upon written authorization from the County, instruct the Contractor to make arrangements for such special inspection, testing or approval, by an entity acceptable to the County, and the Contractor shall give notice as provided in Subparagraph 7.7.2 above. If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents, the Contractor shall bear all costs thereof, including compensation for the Architect's, the Construction Manager's and/or other consultant's additional services made necessary by such failure, if any; otherwise the County shall bear such costs, and an appropriate Change Order shall be issued.

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- 7.7.4 Required certificates of inspection, testing or approval shall be secured by the Contractor and the Contractor shall promptly deliver them to the Construction Manager.
- 7.7.5 If the County, the Architect, the Construction Manager, or other consultant wishes to observe the inspections, tests or approvals required by the Contract Documents, they shall do so promptly and, where practicable, at the source of supply.
- 7.7.6 In the event notice of readiness pursuant to Subparagraph 7.7.2 above, shall have been issued prematurely by the Contractor, his action shall be deemed to be a "false start," and the Contractor shall be liable for the damage resulting from the aforesaid false start, including but not limited to, the salary, professional fees and travel and living expenses of the persons or parties inconvenienced by the false start.
- 7.7.7 Neither the observations of the County, the Architect, or the Construction Manager, in their administration of the Contract, nor inspections, tests or approvals by persons other than the Contractor, shall relieve the Contractor from his obligations to perform the work in accordance with the Contract Documents.
- 7.7.8 Re-inspections and re-tests to confirm compliance after corrections have been made shall be paid for by the Contractor.
- 7.7.9 All references to standard specifications, American National Standards Institute (ANSI) Standards, American Society for Testing and Materials (ASTM) Standards, or standard methods, trade association standards, or other material of like character in the Contract, shall mean the latest revision or edition of the pertinent standard or specification in effect as of the date of bid submission unless a specific date is established in the Contract Documents.
- 7.7.10 Where these methods (ASTM designations; other test standards) or criteria have not been stipulated in the Contract Documents, the Contractor may contest the applicability of methods or criteria to be used or which have been used.
- 7.7.11 If any test indicates a failure to comply with Contract requirements, the Contractor, at its own expense and subject to the following conditions, may promptly undertake counter-testing for the purpose of demonstrating compliance with Contract requirements.
- 7.7.12 Counter-tests shall be undertaken and concluded within fourteen (14) days after notice to Contractor of failure of previously conducted tests. The testing agency shall be selected by the Contractor, but shall be subject to approval by the County, the Architect, and/or the Construction Manager. Quantity and nature of counter-tests shall be determined by the County after consultation with the Contractor and others. The tests may be observed by the County's representatives and timely advance notice of date, hour and place shall be provided by the Contractor per Subparagraph 7.7.2 above. Application of Paragraph 13.2 of this Agreement is stayed pending reports on the counter-tests, provided that such reports are delivered within seven (7) days of completion of test.
- 7.7.13 If counter-tests demonstrate compliance with Contract requirements, and the Contractor has met the time requirements of Subparagraph 7.7.12 above, the County shall reimburse the Contractor for all definable costs of the counter-tests, as determined by the Construction Manager; and a Change Order shall be issued covering such costs and, if warranted, a reasonable extension of the Contract Time as determined by the Construction Manager. Otherwise, all responsibility for the costs and delays occasioned by the counter-tests shall remain with the Contractor.
- 7.7.14 If the counter-tests indicate defective work or failure to conform to the Contract Documents, the Architect or the Construction Manager may reject the work, after which Paragraph 13.2 of this Agreement applies.
- 7.7.15 If the Contractor objects to the use of a test method or criterion which has not been stipulated in the Contract Documents, it shall so notify the Construction Manager at least seven (7) days prior to the start of the testing.
- 7.7.16 The Contractor shall provide the Construction Manager with a copy of all inspection and test reports. Reports indicating compliant results shall be distributed on white bond paper and reports indicating non-compliance for a specific test shall be distributed on yellow bond paper.
- 7.8 INTEREST
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7.8.1 PROMPT PAY PROVISION: The COUNTY shall make monthly partial payments to the CONSULTANT in accordance with the provisions of the Contract Documents. COUNTY and CONSULTANT, their agents and assigns, agree that in the event any contract provision pertaining to the time of payment, conditions precedent to payment, the rate of payment, and any rates of interest, differs from any provision of the Georgia Prompt Pay Act, such provision of the Prompt Pay Act is hereby waived and said Contract provision shall control.

7.9 WORK PERFORMANCE & CONDUCT

7.9.1 In accordance with O.C.G.A. 36-10-2.1, the Contractor's performance under this Agreement shall be documented with the Fulton County Purchasing Department and may be used by the County in consideration for future contracts.

7.9.2 The Contractor shall be responsible for maintaining satisfactory standards of employees' competency, conduct, courtesy, appearance, honesty, and integrity, and shall be responsible for taking such disciplinary action with respect to any employee, as may be necessary.

7.9.3 The County may request the Contractor to immediately remove from this assignment and/or dismiss any employee found unfit to perform duties due to one or more of the following reasons:

7.9.3.1 Neglect of duty.

7.9.3.2 Disorderly conduct, use of abusive or offensive language, quarreling, intimidation by words or actions or fighting.

7.9.3.3 Theft, vandalism, immoral conduct or any other criminal action.

7.9.3.4 Selling, consuming, possessing, or being under the influence of intoxicants, including alcohol, or illegal substances while on assignment for the County.

7.9.3.5 Other reasons that adversely affect the performance of the work.

7.10 SEVERABILITY

7.10.1 If any provision of this Agreement is held to be unenforceable by for any reason, the unenforceability thereof shall not affect the remainder of the Agreement, which shall remain in full force and effect, and enforceable in accordance with its terms. If any part of this Agreement is found to be in conflict with applicable laws, such part shall be inoperative, null and void insofar as it is in conflict with said laws, but the remainder of this Agreement shall be in full force and effect.

7.11 FORCE MAJEURE

7.11.1 Neither the County nor the Contractor shall be deemed in violation of this Agreement if either is prevented from performing its obligations hereunder for any reason beyond its control, including, but not limited to, acts of God, civil or military authority, act of public enemy, accidents, fires, explosions, earthquakes, floods or catastrophic failures of public transportation, provided however, that nothing herein shall relieve or be construed to relieve the Contractor from performing its obligations hereunder in the event of riots, rebellions, or legal strikes.

ARTICLE 8

TIME

8.1 DEFINITIONS

- 8.1.1 Unless otherwise provided, the Contact Time is the period of time allotted in the Contract Documents from issuance of a Notice to Proceed to the Contractor's Substantial Completion of the Work as defined below, including authorized adjustments thereto.
- 8.1.2 The date of award of the Contract is the date specified in the Notice of Award. This is the date which should be used on the certificate of insurance, performance and payment bonds, and any other information required prior to the issuance of a Notice to Proceed by the County. This date shall also be the date entered in the Contract Documents on page 1 of this Agreement. In the event of a conflict between these dates, the date indicated in this Agreement shall prevail.
- 8.1.3 The date of commencement of the Work is the date established in the Notice to Proceed.
- 8.1.4 The Date of Substantial Completion of the Work or designated portion thereof is the date certified by the Architect and the Construction Manager when construction is sufficiently complete, in accordance with the Contract Documents, so that the County or the County's separate contractors can occupy or utilize the Work or a designated portion thereof for the use for which it is intended. A Certificate of Occupancy is required to achieve Substantial Completion, as well as submission of complete and final project record documents to the Construction Manager for review, including record drawings, operation and maintenance manuals, warranties and other submittal requirements detailed in the General Requirements.
- 8.1.5 The Date of Final Completion of the Work is the date certified by the Architect and the Construction Manager when all construction is fully complete, including rectification of all punch list items, and when all record documentation and other closeout items required by the Contract Documents have been reviewed and found acceptable by the Construction Manager.
- 8.1.6 The term "day" as used in the Contract Documents shall mean "calendar day" unless specifically designated otherwise.
- 8.1.7 The term "milestone" shall mean a date at which an intermediate portion of the Work must be completed, as indicated in the Contract Documents.

8.2 CONTRACT TIME LIMITS

- 8.2.1 Milestones: The Contractor shall begin the Work on the date specified in the Notice to Proceed. The Contractor shall carry the Work forward expeditiously with adequate forces and achieve the following interim milestones:
- 8.2.2 Substantial Completion of the Work: The Contractor shall carry the Work forward expeditiously with adequate forces and shall achieve Substantial Completion of the Work within Eighteen Weeks after receipt of the Notice to Proceed, or this Contract shall be subject to termination by the County in addition to the imposition of damages as set forth herein.
- 8.2.3 Final Completion of the Work: The Work shall be fully completed fourteen (14) calendar days thereafter or Twenty Weeks after receipt of the Notice to Proceed.

8.3 LIQUIDATED DAMAGES - NOT APPLICABLE

8.4 DELAYS AND EXTENSIONS OF TIME

8.4.1 It is hereby understood and mutually agreed, by and between the Contractor and the County, that the date of beginning and the time for completion of the Work, including any activities to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that the Contract Time specified in this Contract shall commence on the date specified in the Notice to Proceed. The County and separate contractors are entitled to rely upon such dates which by its acceptance of this Contract, have been agreed upon by the Contractor.

8.4.2 The Contractor agrees that said Work shall be executed regularly, diligently and uninterruptedly at such rate of progress as shall insure full completion thereof within the time specified. It is expressly understood and agreed that the Contractor has considered all contingencies and factors affecting its ability to perform all the Work within the time specified, including among others, delays caused by bad weather and other possible delays caused by the industrial conditions prevailing in this locality, and after consideration of these factors, it has made an allowance for such factors before agreeing to the completion date specified in the Contract Documents, and does, further, agree that all things considered, such completion date is a reasonable time for completion of all Work to be performed hereunder, without the need for any extension of time or any other reasons than those specified below.

8.4.3 Completion time shall not be extended for normal bad weather. The following bad weather days per month shall be anticipated and included in the contractual time period given for project completion. The Contractor's request for additional time shall only be granted for days beyond those listed below for which work was actually significantly impeded or precluded by bad weather. The burden of proof and documentation for such request for additional time beyond the days shown below shall rest solely with the Contractor. Documentation must clearly show the additional weather days are historically unique to the area. No change in Contract Sum will be granted by the County for adjustments to the Contract Time due to weather.

January	10 days
February	10 days
March	7 days
April	6 days
May	4 days
June	3 days

July	4 days
August	2 days
September	2 days
October	2 days
November	5 days
December	9 days

8.4.3.1 Requests for time extensions for delays due to severe weather shall be considered only after the building is enclosed.

8.4.3.2 Only those days lost in excess of the cumulative allowable number of bad weather calendar days, according to the schedule above, will be considered.

8.4.3.3 Time extensions for time losses due to severe weather conditions will not be considered in fractions of less than one-half (1/2) day.

8.4.4 It is further agreed that time is of the essence of each and every portion of this Contract wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any of the Work, the new time limit fixed by such extension shall be of the essence of this Contract.

8.4.5 The County, Architect, and Construction Manager shall not be responsible or liable to the Contractor for compensation, damages, expenses or any other costs as a result of, or due to any delays, impact and/or acceleration.

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- 8.4.6 In no event shall delay damages be due resulting from the Contractor's submittal of a schedule indicating early completion of the Work, regardless of whether such schedule is acknowledged or approved by the Construction Manager, which is then followed by the Contractor's subsequent completion of the Work on a later date but still within the Contract Time, regardless of cause.
- 8.4.7 If the Contractor is delayed at any time in the progress of the Work by any of the following causes, or by any other cause which the Construction Manager determines may cause the delay, then the Contract Time may be extended, without cost as a no cost change order, for such time as the Construction Manager may determine when the delay in completion of work is due:
- 8.4.7.1 to any preference, priority or allocation order duly issued by Government or the County.
 - 8.4.7.2 to unforeseeable cause beyond the control and without the fault or negligence of the Contractor, restricted to acts of God, or of the public enemy, acts of a separate contractor in the performance of the Contract with the County, fire, floods, epidemics, quarantine restrictions, strikes or labor disputes, freight embargoes or other unusual delays in transportation, and unusually severe weather in excess of normal weather losses allowed in Subparagraph 8.4.3 above.
 - 8.4.7.3 to any delays of subcontractors or suppliers occasioned by any of the causes specified except that delays occasioned by the failure of the Contractor, subcontractors, or suppliers to issue purchase orders with sufficient lead time to assure delivery by the date needed, and production line schedule delays of the product manufacturer, shall not be considered grounds for a time extension.
- 8.4.8 Provided further, that the Contractor shall, within ten (10) days from the beginning of such delay notify the County through the Construction Manager as agent for the County, in writing, of the causes of the delay for each delay caused by reasons other than the weather, and provide whatever supporting or substantiating information required by the Construction Manager. The Construction Manager shall, where possible, ascertain the facts and extent of the delay or delays for time extension, other than those caused by weather, filed by the Contractor and report his findings and recommendations to the County no less frequently than monthly. If the Construction Manager recommends a time extension, it shall be documented in a no cost change order. In cases where a time extension is filed, except those that are of a continuing nature and extend beyond the normal monthly reporting period stated herein, the Construction Manager shall ascertain the facts and render its recommendation within thirty (30) days of the receipt of the final data relating to the time extension.
- 8.4.9 If no agreement is made stating the dates upon which interpretations as provided in Subparagraph 2.3.8 of this Agreement shall be furnished, then no time extension for delay shall be allowed on account of failure to furnish such interpretations until fifteen (15) days after written request is made for them, and not then unless need for such time extension is clearly demonstrated to the Construction Manager, and that such request for interpretation shall have been made prior to thirty (30) days having elapsed since the receipt of the Notice to Proceed.
- 8.4.10 If no event shall Contractor be entitled to other general condition costs, home office overhead, lost profits, loss of use of capital or any other type of consequential damages.

ARTICLE 9

PAYMENTS AND COMPLETION

Note: this form to be filled out after award of contract

9.1 CONTRACT SUM

- 9.1.1 The County shall pay the Contractor for the performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, a Contract Sum not to exceed the following amount:

\$ _____
(in numbers)

(in words)

The Contract Sum is determined as follows:

Base Bid Amount	\$ _____
Bid Alternate No.	\$ _____
Bid Alternate No.	\$ _____

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TOTAL BASE CONTRACT AMOUNT. \$ _____

9.1.1.1 UNIT PRICES – NOT APPLICABLE

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9.2 SCHEDULE OF VALUES

- 9.2.1 Before the first Application for Payment, the Contractor shall submit to the Construction Manager a Schedule of Values allocated to the various portions of the Work (including costs for design and other professional services), prepared in such form and supported by such data to substantiate its accuracy as the Architect and the Construction Manager may require, and as is further defined in the General Requirements. This schedule, as approved by the Architect and the Construction Manager, shall be used as the basis for the Contractor's Applications for Payment.

9.3 PAYMENTS

- 9.3.1 After the Construction Manager has issued a Certificate for Payment as described in Paragraph 9.5 below, the County shall, subject to the provisions of this Article and the General Requirements, pay the Contractor ninety (90) percent of the portion of the Contract Sum properly allocable to labor, materials, and equipment incorporated in the Work, suitably stored at the site or at some other location agreed upon in writing by the parties as of the date the Application for Payment is submitted to the Construction Manager, less the aggregate of previous payments in each case.
- 9.3.2 No certification of an Application for Payment by the Construction Manager, any payment, or any partial or entire use or occupancy of the Project by the County, shall constitute an acceptance of any Work not in accordance with the Contract Documents.
- 9.3.3 Neither the County, Architect, or Construction Manager shall have any obligation to pay or to see to the payment of any monies to any subcontractor except as may otherwise be required by law.
- 9.3.4 The Contractor hereto expressly agrees that the payment provisions within this Article 9 shall supersede the rates of interest, payment periods, and contract and subcontract terms provide for under the Georgia Prompt Pay Act, O.C.G.A. 13-11-1 et seq., pursuant to 13-11-7(b), and the rates of interest, payment periods, and contract and subcontract terms provided for under the Prompt Pay Act shall have no application to this Contract.

- 9.3.5 The Contractor shall promptly pay each subcontractor upon receipt of payment from the County, out of the amount paid to the Contractor on account of such subcontractor's Work, the amount to which said subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such subcontractor's Work. The Contractor shall, by an appropriate agreement with each subcontractor, require each subcontractor to make payments to their sub-subcontractors in a similar manner.
- 9.3.6 The County reserves the right to inquire of the Contractor's subcontractors and suppliers directly or indirectly, to determine the current status of indebtedness. Should undisputed amounts be owed to any such subcontractors or suppliers, and upon seven (7) days written notice to the Contractor, the County may make checks payable jointly to the Contractor and the subcontractor or supplier, or directly to the subcontractor or supplier for the account of the Contractor in such amount. Payment to the Contractor or for its account shall not be deemed to be an admission or approval by the County of the sufficiency of the Work covered by such payment.
- 9.3.7 The County reserves the right to require the Contractor to designate on each check for payment exceeding four hundred dollars (\$400.00) to material suppliers, subcontractors or others that such payment is on account of the Work covered under this Contract.
- 9.4 APPLICATIONS FOR PAYMENT
- 9.4.1 Applications for Payment shall be submitted no more frequently than monthly to the Construction Manager. Each Application for Payment shall be supported by such data substantiating the Contractor's right to payment as the Construction Manager or the County may require, and reflecting retainage, if any, as provided for in the Contract Documents. The Construction Manager will forward a copy to the Architect for its recommendations. Upon receipt of recommendations from the Architect, the Construction Manager, after its own review, will determine the amount to be recommended for payment by the County, and shall certify its recommendation and forward a Certificate for Payment to the County for review and processing. Further provisions are contained in the General Requirements. Reference Section 01 025 of the General Requirements for procedural details.
- 9.4.2 The Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to the County either by incorporation in the construction or upon receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in the Contract as "liens"; and that no Work, materials or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any other person performing Work at the site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor on such other person.
- 9.4.3 Unless otherwise provided in the Contract Documents, payments will be made on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the Project site, and, if approved in advance by the County, payments may similarly be made for materials or equipment suitably stored at some other location agreed upon in writing. Payments for materials or equipment stored on or off the Project site shall be conditioned upon submission by the Contractor of bills of sale or other such procedures satisfactory to the County to establish the County's title to such materials or equipment or otherwise protect the County's interest, including applicable insurance and transportation to the Project site for those materials and equipment stored off of the Project site. Reference Section 01 025 of the General Requirements for detailed instructions.
- 9.4.4 Fulton County requires that all contractors submit Interim Waiver and Release Upon Progress Payment and an Unconditional Waiver and Release Upon Final Payment when submitting applications for payment. These forms are to be attached applications as exhibits.
- 9.4.5 The Prime Contractor must certify in writing and shall document on the Department of Contract Compliance Exhibit G Form (Prime Contractor's Subcontractor Utilization Report), that all Subcontractors and Suppliers have been promptly paid for work and materials and previous progress payments received (less any retainage by the Prime Contractor prior to receipt of any further progress payments). In the event the Prime Contractor is unable to pay Subcontractors and Suppliers until the Prime Contractor has received a progress payment from Fulton County, the Prime Contractor shall pay all Subcontractors or Suppliers funds due from said progress payments within 48 hours of receipt of payment from Fulton County.
- 9.5 CERTIFICATES FOR PAYMENT
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- 9.5.1 The Construction Manager will with reasonable promptness upon receipt of the Contractor's Application for Payment, and with recommendations from the Architect, review the Application for Payment and either issue a Certificate for Payment to the County with a copy for distribution to the Contractor for such amounts as the Construction Manager determines are properly due, or notify the Contractor in writing of the reasons for withholding a Certificate for Payment as provided in Subparagraph 9.6.1.
- 9.5.2 By issuing a Certificate for Payment, it shall not thereby be deemed to be represented that either the Architect or the Construction Manager has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, has reviewed the construction means, methods, techniques, sequences or procedures, or has made any examination to ascertain how or for what purpose the Contractor has used any monies previously paid on account of the Contract Sum.
- 9.6 PAYMENTS WITHHELD
- 9.6.1 The Construction Manager may decline to certify payment, and may withhold a certification for payment in whole or in part to the extent necessary to reasonably protect the County, if in the Construction Manager's opinion, the Construction Manager is unable to make representations as to the accuracy of the Application for Payment to reflect the current status of the Work. If the Contractor and the Construction Manager cannot agree on a revised amount, the Construction Manager shall promptly issue a Certificate for Payment for the amount for which the Construction Manager is able to make such representations. The Construction Manager may also decline to certify payment or, because of subsequently discovered evidence or subsequent observations, the Construction Manager may nullify the whole or any part of any Certificate for Payment previously issued to such extent as may be necessary, in the Construction Manager's opinion, to protect the County from loss for several reasons including, but not limited to:
- 9.6.1.1 defective Work not remedied.
 - 9.6.1.2 third party claims filed or reasonable evidence indicating probable filing of such claims.
 - 9.6.1.3 failure of the Contractor to make payments properly to subcontractors or subconsultants, or for labor, materials or equipment.
 - 9.6.1.4 reasonable belief that the Work cannot be completed for the unpaid balance of the Contract Sum for the line items under discussion.
 - 9.6.1.5 damage to the County or another contractor.
 - 9.6.1.6 reasonable evidence that the Work will not be completed within the Contract Time; or
 - 9.6.1.7 persistent or repeated failure to carry out the Work in accordance with the Contract Documents or written direction provided by the Construction Manager.
- 9.6.2 When the grounds above are removed, payment shall be made for amounts withheld.
- 9.7 SUBSTANTIAL COMPLETION
- 9.7.1 When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the County, is substantially complete, the Contractor shall prepare for the Construction Manager a list of items to be completed or corrected. The Contractor shall proceed to complete and correct items on the list. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- 9.7.2 Upon receipt of the Contractor's list of items to be completed or corrected, the Architect, in conjunction with the County and the Construction Manager, shall make an inspection to determine that the Work or designated portion thereof is substantially complete. When the Architect, on the basis of inspection and consultation with the County, and the Construction Manager determines that the Work or designated portion thereof is substantially complete, the Construction Manager will then prepare a Certificate of Substantial Completion of the Work, on the latest version of AIA Document G704/CMA, Certificate of Substantial Completion – Construction Manager-Advisor Edition, which shall establish the Date of Substantial Completion of the Work, shall state the responsibilities of the County and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall complete the items listed therein as incomplete or requiring correction. The Certificate of Substantial Completion shall be submitted to the County,
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the Architect, the Construction Manager, and the Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.

9.7.3 At no time shall a certification of Substantial Completion be considered for issuance unless a Certificate of Occupancy has been approved and received.

9.7.4 Prior to and as a condition of the Construction Manager issuing a Certificate of Substantial Completion, all Project Closeout Documents including, but not limited to project record documents (as-builts), operation and maintenance manuals, warranties and other documents, shall have been submitted to the Construction Manager for review and approval.

9.7.5 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 of the Work or designated portion thereof. Warranties for Work that is not accepted by the County shall commence on a date when the Work is finally accepted by the County.

9.7.6 Reference Section 01 700 of the General Requirements for additional procedural details regarding Substantial Completion.

9.8 FINAL COMPLETION AND FINAL PAYMENT

9.8.1 Following issuance of the approved Certificate of Substantial Completion of the Work or designated portion thereof, and the Contractor's final completion of the Work, the Contractor shall forward to the Construction Manager a written notice that the Work is ready for final inspection and acceptance, and shall also forward to the Construction Manager a final Application for Payment. The Architect, in conjunction with the County and the Construction Manager shall make such inspections and, when the Architect finds the Work acceptable and fully performed, the Construction Manager shall certify the final Application for Payment, which will approve the final payment due the Contractor. This approval shall constitute a representation that, to the best of the Construction Manager's knowledge, information and belief, and on the basis of observations and inspections, the Work has been completed in accordance with the Terms and Conditions of the Contract Documents and that the entire balance found to be due the Contractor, and noted in said certified final Application for Payment, is due and payable.

9.8.2 Final payment, including all remaining retainage, shall not become due until the Contractor submits to the Construction Manager,

9.8.2.1 A notarized affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the County or the County's property might in any way be responsible, have been paid or otherwise satisfied (AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims, latest version),

9.8.2.2 Consent of Surety to Final Payment (AIA Document G707, latest version), and

9.8.2.3 Other data establishing payment or satisfaction of all such obligations, including receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by the County (including, but not limited to, AIA Document G706A, Contractor's Affidavit of Release of Liens, latest version).

If any subcontractor or subconsultant refuses to furnish a release or waiver required by the County, the Contractor may furnish a bond satisfactory to the County to indemnify the County against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the County all monies that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.8.2.4 All final Project Closeout Documents including, but not limited to project record documents (as-builts), operation and maintenance manuals, warranty manuals and other documents, shall have been finalized and re-submitted to the County for review and final approval and acceptance. Reference Section 01 700 of the General Requirements for additional procedural details regarding Final Completion.

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- 9.8.3 The making of final payment shall, after the Date of Substantial Completion, constitute a waiver of all claims by the County except those arising from:
- 9.8.3.1 unsettled liens;
 - 9.8.3.2 faulty or defective Work appearing after Substantial Completion of the Work;
 - 9.8.3.3 failure of the Work to comply with the requirements of the Contract Documents;
 - 9.8.3.4 terms of any special warranties required by the Contract Documents.
- 9.8.4 The acceptance of final payment shall, after the Date of Substantial Completion of the Work, constitute a waiver by the Contractor of all claims except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment.
- 9.8.5 In the event the Contractor timely disputes the amount of final payment, the amount due the Contractor shall be deemed by the Contractor and the County to be an unliquidated sum, and no interest shall accrue or be payable on the sum finally determined to be due to the Contractor for any period prior to final determination of such sum, whether such determination be by agreement of the Contractor and the County or by final judgment of the proper court in the event of litigation between the parties. The Contractor specifically waives and renounces any and all rights it may have under O.C.G.A. 13-6-13 and agrees that in the event suit is brought by the Contractor against the County for any sum claimed by the Contractor under the Contract or for any extra or additional Work, no interest shall be awarded on any sum found to be due from the County to the Contractor in the final judgment entered in such suit. All final judgments shall draw interest at the legal rate, as specified by law.
- 9.8.6 All provisions of this Agreement, including without limitation those establishing obligations and procedures, shall remain in full force and effect notwithstanding the making or acceptance of final payment prior to the Date of Substantial Completion of the Work.

ARTICLE 10

SAFETY

10.1 OWNER-CONTRACTOR SAFETY, HEALTH AND LOSS PREVENTION PROGRAM

10.1.1 The Contractor shall be responsible for designing and implementing a comprehensive project-specific safety, health and loss prevention process and/or program and employee substance abuse program for this project. All subcontractors must either implement their own program that meets these requirements or follow the Contractor's safety, health and loss prevention process and/or employee substance abuse program.

10.1.2 Safety, health and loss prevention process and/or employee substance abuse program must meet or exceed all governmental regulations (OSHA, EPA, DOT, State, local), comply and other specific Fulton County requirements, and with any other safety, health and loss prevention requirements detailed in the contract documents including the requirements of the Contractor Safety and Health Management Process which is attached hereto and incorporated herein.

10.1.3 Within ten (10) business days of receipt of the Notice of Award (NOA), the Contractor shall submit in writing to the County's designated Representative, the Contractor's written Safety, Health and Loss Prevention Process and/or Program and Employee Substance Abuse Program and those of Sub-Contractors that meet or exceed the requirements referenced in the contract documents. Included in this submittal will be the name and qualifications of the site safety representative.

10.1.3.1 Prior to issuing the Notice to Proceed (NTP), a meeting will be held with the Contractor and all Sub-Contractors to review the safety, health and loss prevention process and/or program requirements, submittals to be provided by the Contractor, and the accident prevention process.

10.1.3.2 These program submittals must be reviewed and accepted by the County's designated Representative as meeting or exceeding safety, health, and loss prevention process and/or program requirements. A Notice To Proceed (NTP) with the work may not be issued until these submittals have been accepted.

10.2 DESIGNATION OF SAFETY REPRESENTATIVE

10.2.1 The Contractor will designate an employee by (name, phone number, pager number) as Site Safety Representative. This employee will have sufficient training and knowledge of safety and health principles, regulations, and procedures to report to the Contractor's Project Manager and/or Superintendent. Sub-Contractors must also designate a similar employee responsible for safety and health. The Sub-Contractor's safety designee will coordinate safety activities with the general contractor's safety designee.

For projects with significant risk or hazard potential or for any project for which the Contractor and its Sub-Contractors of any tier have 50 total employees or greater on site, Contractor must designate a qualified employee to be the full time Site Safety Representative. This person should address safety, health and loss prevention activities for the complete project including Sub-Contractors.

10.3 SAFETY, HEALTH, AND LOSS PREVENTION PROCESS

10.3.1 The County and its agents reserve the right, but assume no duty, to establish and enforce safety, health, and loss prevention guidelines and to make the appropriate changes in the guidelines, for the protection of persons and property and to review the efficiency of all protective measures taken by the Contractor. The Contractor shall comply with all safety, health, and loss prevention process guidelines and requirements and changes made by the County or its agent(s). The issuance of any such guidelines or changes by the County or its agent(s) shall not relieve the Contractor of its duties and responsibilities under this Agreement, and the County or its agent(s) shall not thereby assume, nor be deemed to have assumed, any such duties or responsibilities of the Contractor.

10.4 COMPLIANCE OF WORK, EQUIPMENT, AND PROCEDURES WITH ALL APPLICABLE LAWS & REGULATIONS

10.4.1 All Work, whether performed by the Contractor or its Sub-Contractors of any tier, or anyone directly or indirectly employed by any of them, and all equipment, appliances, machinery, materials, tools and like items incorporated or used in the Work, shall be in compliance with and conform to:

(a) all applicable laws, ordinances, rules, regulations and orders of any public, quasi-public or other governmental authority relating to the safety of persons and their protection against injury, specifically including, but in no event limited to, the Federal Occupational Safety and Health Act of 1970, as amended, and all rules and regulations now or hereafter in effect pursuant to said Act.

(b) all rules, regulations, and requirements of the County or its agent(s) and its insurance carriers relating there to. In the event of a conflict or differing requirements the more stringent shall govern.

10.5 PROTECTION OF THE WORK

10.5.1 The Contractor shall, throughout the performance of the Work, maintain adequate and continuous protection of all Work and temporary facilities against loss or damage from whatever cause, shall protect the property of the County and third parties from loss or damage from whatever cause arising out of the performance of the Work, and shall comply with the requirements of the County or its agent(s) and its insurance carriers, and with all applicable laws, codes, rules and regulations, (as same may be amended) with respect to the prevention of loss or damage to property as a result of fire or other hazards.

10.5.2 The County or its agent(s) may, but shall not be required to, make periodic inspections of the Project work area. In such event, however, the Contractor shall not be relieved of its aforesaid responsibilities and the County or its agent(s) shall not assume, nor shall it be deemed to have assumed, any responsibility otherwise imposed upon the assurance of Contractor by this Agreement.

10.6 SAFETY EQUIPMENT

10.6.1 The Contractor shall provide to each worker on the Project work area the proper safety equipment for the duties being performed by that worker and will not permit any worker on the Project work area who fails or refuses to use the same. The County or its agent shall have the right, but not the obligation, to order the removal of a worker from the Project work site for his/her failure to comply with safe practices or substance abuse policies, and the Contractor shall promptly comply with the Safety Program or Substance Abuse Program and all such orders.

10.7 EMERGENCIES

10.7.1 In any emergency affecting the safety of persons or property, or in the event of a claimed violation of any federal or state safety or health law or regulation, arising out of or in any way connected with the Work or its performance, the Contractor shall act immediately to prevent threatened damage, injury or loss and to remedy said violation. Failing such action the County or its agent(s) may immediately take whatever steps it deems necessary including, but not limited to, suspending the Work as provided in this Agreement.

10.7.2 The County or its agent(s) may offset any and all costs or expenses of whatever nature, including attorneys' fees, paid or incurred by the County or its agent(s) (whether such fees are for in-house counsel or counsel retained by the County or its agent), in taking the steps authorized by Section 10.7.1 above against any sums then or thereafter due to the Contractor. The Contractor shall defend, indemnify and hold the County, its officers, agents, employees harmless against any and all costs or expenses pursuant to Section 10.7.1, by whomsoever incurred. If the Contractor shall be entitled to any additional compensation or extension of time change order on account of emergency work not due to the fault or neglect of the Contractor or its Sub-Contractors, such additional compensation or extension of time shall be determined in accordance with this Agreement.

10.8 SUSPENSION OF THE WORK

10.8.1 Should, in the judgment of the County or its agent(s), the Contractor or any Sub-Contractor fail to provide a safe and healthy work place or fail to follow the safety requirements defined in the contract documents and approvals, the County or its agent shall have the right, but not the obligation, to suspend work in the unsafe areas until deficiencies are corrected. All costs of any nature (including, without limitation, overtime pay, liquidated damages or other costs arising out of delays) resulting from the suspension, by whomsoever incurred, shall be borne by the Contractor.

10.8.2 Should the Contractor or any Sub-Contractor fail to provide a safe and healthy work place or fail to follow the safety requirements defined in the contract documents and approvals after being formally notified in writing by the County or its agents of such non-compliance, the contract may be terminated following the termination provision of the contract.

10.9 CONTRACTOR'S INDEMNITY OF THE COUNTY FOR CONTRACTOR'S NON-COMPLIANCE WITH SAFETY PROGRAM

- 10.9.1 The Contractor recognizes that it has sole responsibility to assure its Safety Program is implemented and to assure its construction services are safely provided. The Contractor shall indemnify, defend and hold the County and its agents harmless, from and against any and all liability (whether public or private), penalties (contractual or otherwise), losses, damages, costs, attorneys' fees, expenses, causes of action, claims or judgments resulting, either in whole or in part, from any failure of the Contractor, its Sub-Contractors of any tier or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, to comply with the safety requirements of the contract. The Contractor shall not be relieved of its responsibilities under the safety requirements of the Contract should the County or its agent(s) act or fail to act pursuant to its rights hereunder.
- 10.9.2 The Contractor shall not raise as a defense to its obligation to indemnify under this Subparagraph 10.9 any failure of those indemnified hereunder to assure Contractor operates safely, it being understood and agreed that no such failure shall relieve the Contractor from its obligation to assure safe operations or from its obligation to so indemnify. The Contractor also hereby waives any rights it may have to seek contribution, either directly or indirectly, from those indemnified hereunder.
- 10.9.3 In any and all claims against those indemnified hereunder by any employee of the Contractor, any Sub-Contractor of any tier or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Subparagraph 10.9 shall not be limited in any way as to the amount or type of damages, compensation or benefits payable by or for the Contractor or any Sub-Contractor of any tier under any workers' compensation act, disability benefit or other employee benefit acts.

ARTICLE 11

INSURANCE

11.1 CONTRACTOR PROVIDED-INSURANCE

It is Fulton County Government's practice to obtain Certificates of Insurance from our Contractors and Vendors.

Insurance must be written by a licensed agent in a company licensed to write insurance in the State of Georgia. Respondents shall submit with the bid/proposal evidence of insurability satisfactory to Fulton County Government as to form and content. Either of the following forms of evidence is acceptable:

- A letter from an insurance carrier stating that upon your firm/company being the successful Bidder/Offeror that a Certificate of Insurance shall be issued in compliance with the Insurance and Risk Management Provisions outlined below.
- A Certificate of Insurance complying with the Insurance and Risk Management Provisions outlined below (Request for Bid/Proposal number and Project Description must appear on the Certificate of Insurance).

Upon award, the Contractor/Vendor must maintain at their expense, insurance with policy limits equal to or greater than the limits described below. Any and all Insurance Coverage(s) and Bonds required under the terms and conditions of the contract shall be maintained during the entire length of the contract, including any extensions or renewals thereto, and until all work has been completed to the satisfaction of Fulton County Government.

11.2 ADDITIONAL INSURED

11.2.1 The Additional Insured on policies shall include Fulton County; the County's officers, agents, employees, and consultants; including Sub-Contractors of any tier (but excluding suppliers, vendors, material-delivery, truckers or haulers).

11.3 OWNER'S RIGHT TO AUDIT

11.3.1 The Contractor hereby agrees that the County, its officers, agents and insurance carriers may audit the records of the Contractor and its Sub-Contractors to confirm the accuracy of the information provided, including, but not limited to, the accuracy of all estimated payrolls, and to ascertain any effect on insurance resulting from changes in the Work. The audit will be held during the Contractor's normal business hours at the office of the Contractor or at another mutually agreeable location.

11.3.2 The County shall be entitled to credits in insurance premiums that may accrue as a result of the audit.

11.3.3 The Contractor shall maintain or cause to be maintained sufficient records as may be necessary to audit its compliance and its Sub-Contractors' compliance.

11.4 CLAIMS

The Contractor, its Sub-Contractors and uninsured parties shall assist the County and its agents and provide the utmost cooperation in the adjustment of claims arising out of the operations conducted under, or in connection with, the Work and shall cooperate with the County's insurance carriers in claims and demands that arise out of the Work and that the insurance carriers are called upon to adjust or resist.

11.5 NOTICES, COSTS AND LOSSES

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- (a) All policies of insurance that either the Contractor, its Sub-Contractors, or the County is required to secure and maintain, shall be endorsed to provide that the insurance company shall notify the County, the Contractor, and each Named Insured at least thirty (30) days prior to the effective date of any cancellation or modification of such policies.
 - (b) The Contractor shall furnish to the County's designated Representative certificates of insurance for insurance required to be maintained by the Contractor and its Sub-Contractors, as provided herein. Prior to the issuance of the Notice to Proceed, the Contractor shall not be permitted on the Project site.
 - (c) The Contractor shall be responsible for all losses greater than their policy limits.
 - (f) Payments by the insurer for all losses covered under the Builder's Risk policy will be made to the County. The County will make proceeds from the Builder's Risk policy available to the Contractor for rebuilding work damaged by covered perils.

11.6 SUBROGATION AND WAIVER

The Contractor shall require its Sub-Contractors of every tier to waive the rights of recovery in the same manner (as waived in the preceding paragraph by the Contractor) against the County, its officers, agents, employees and consultants rendering services at the Project site, and other Project contractors and their Sub-Contractors, regardless of tier.

11.7 COVERAGE DETERMINED BY POLICY

The coverages referred to above are set forth in full in the respective policy forms, and the foregoing descriptions of such policies are not intended to be complete, or to alter or amend any provision of the actual policies, and in matters, if any, in which the said description may be conflicting with such instruments, the provisions of the policies of the insurance shall govern.

11.8 CONTRACTOR'S LIABILITY INSURANCE

11.9 The Contractor shall purchase and maintain during the life of this Agreement, from a company or companies licensed to do business in its agents and acceptable to the County, such insurance as shall fully protect him, the County, any other Professional Consultant or Engineer or Engineer hired by the County, and any parties, consultants, or Sub-Contractors performing work covered by this Agreement from any and all claims, including those resulting from bodily injury (including accidental death), professional liability of the property damage (other than to the work itself) or personal injury which may arise or result from the Contractor's operations under this Agreement whether such operations be by himself or by any 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.

- (a) Said insurance shall specifically provide coverage during the life of this Agreement to the County, its agents, any Professional Consultant or Engineer or Engineer hired by the County, and any Sub-Contractor performing work covered by this Agreement for claims made by any persons, including the employees and parties in privity of the contract with the Contractor, claiming injury as a result of the performance of the Project.
- (b) At a minimum, such insurance must include but not necessarily be limited to:
 - (i) Worker's Compensation and Employer's Liability insurance (for all operations away from the Project site);
 - (ii) Motor Vehicle Liability insurance, covering all motor vehicles, whether owned, non-owned, or hired (for all operations both at and away from the Project site);

(iii) Comprehensive (or Commercial) General Liability insurance, with Broad Form Liability endorsement. Comprehensive (or Commercial) General Liability policy with Broad Form Liability endorsement shall be further endorsed naming County, the Construction Manager, and County's Professional Consultants as additional insured (for all operations away from the Project site).

(iv) Professional Liability insurance, specifying that the Contractor shall be responsible to the County for acts, errors and omissions of the Contractor's directors, officers, employees and parties in privity of the contract with the Contractor to perform a portion of the work, including their agents and employees (for all operations both at and away from the Project site). The Contractor shall require the Engineers and the engineers that are responsible for the design and engineering to purchase and maintain liability insurance with no less coverage than \$1,000,000.00 or 10% of the construction value of the Work, whichever is greater, throughout the duration of the project and for two years following the Date of Substantial Completion.

11.10 The insurance required by this Article 11 shall be written for not less than the following liability limits, or greater if required by law. Evidence of such insurance shall be provided PRIOR to the work being performed.

11.11 The insurance required by this Article 11 shall be written for not less than the following liability limits, or greater if required by law. Evidence of such insurance shall be provided PRIOR to the day of actual work being performed.

1. WORKERS COMPENSATION/EMPLOYERS'S LIABILITY INSURANCE – STATUTORY (In compliance with the Georgia Workers Compensation Acts and any other State or Federal Acts or Provisions in which jurisdiction may be granted)

Employer's Liability Insurance	By Accident	Each Accident	\$500,000
Employer's Liability Insurance	BY DISEASE	POLICY LIMIT	\$500,000
(Aggregate)	BY DISEASE	EACH EMPLOYEE	\$500,000

2. COMMERCIAL GENERAL LIABILITY INSURANCE (Including contractual Liability Insurance)

Bodily Injury and Property Damage Liability (Other than Products/Completed Operations)	Each Occurrence	\$1,000,000
	General Aggregate	\$2,000,000
Products\Completed Operation	Aggregate Limit	\$1,000,000
Personal and Advertising Injury	Limits	\$1,000,000
Fire Damage	Limits	\$100,000

3. BUSINESS AUTOMOBILE LIABILITY INSURANCE

Combined Single Limits	Each Occurrence	\$1,000,000
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(Including operation of non-owned, owned, and hired automobiles).

4. ELECTRONIC DATA PROCESSING LIABILITY

(Required if computer contractor)	Limits	\$1,000,000
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5. UMBRELLA LIABILITY

(In excess of above noted coverages)	Each Occurrence	\$2,000,000
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6. PROFESSIONAL LIABILITY

(Required if respondent providing professional services)	Each Occurrence	\$1,000,000
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7. FIDELITY BOND

(Employee Dishonesty)	Each Occurrence	\$ 100,000
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8. BUILDERS RISK

“All-risk” form of builder’s risk insurance providing coverage against loss or damage by fire or other peril on an “all-risk” form, including demolition and increased cost of construction, debris removal and the full replacement cost of the Project foundations and containing an agreed amount endorsement, and, until Final Completion and Acceptance of the Project. Such policy of insurance shall contain at least the following sub-limits of insurance and deductibles:

Sublimits:

Property in Transit	\$1,000,000
Property in Offsite Storage	\$1,000,000
Plans & Blueprints	\$25,000
Debris Removal	25% of Insured Physical Loss
Delay in Completion / Soft Cost	\$25,000
Deductibles:	
Flood and Earthquake	\$25,000
Water Damage other than Flood	\$100,000
All other Perils	\$10,000

Owner and Contractor waive all rights against each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 4.2.5 or other property insurance applicable to the Work, accept such rights as they have to the proceeds of such insurance.

Certificates shall state that the policy or policies shall not expire, be cancelled or altered without at least thirty (30) days prior written notice to Fulton County Government. Policies and Certificates of Insurance are to list Fulton County Government as an Additional Insured (except for Workers’ Compensation) and shall conform to all terms and conditions (including coverage of the indemnification and hold harmless agreement) contained in the Insurance and Risk Management Provisions.

If Fulton County Government shall so request, the Offeror, Contractor or Vendor will furnish the County for its inspection and approval such policies of insurance with all endorsements, or confirmed specimens thereof certified by the insurance company to be true and correct copies.

Such certificates and notices shall be sent to:

Fulton County Government – Purchasing Department
130 Peachtree Street, S.W.
Suite 1168
Atlanta, Georgia 30303-3459

The Contractor/Vendor shall insure that the ITB proposal number and Project Description appear on the Certificate of Insurance. The Contractor shall provide and shall require all Sub-Contractors performing work under this Agreement to obtain an insurance certificate showing proof of insurance coverage conforming to the above limits, and showing FULTON COUNTY GOVERNMENT as the “Certificate Holder” and “Additional Insured”. Without such certificate, the Contractor and any Sub-contractor cannot commence work.

It is understood that Insurance in no way limits the Liability of the Contractor/Vendor.

ARTICLE 12

CHANGES IN THE WORK

12.1 CHANGE ORDERS

12.1.1 A Change Order is a written order to the Contractor signed to show the approval and the authorization of the County, issued after execution of the Contract, authorizing a change in the Work and/or an adjustment in the Contract Sum or the Contract Time. Change Orders shall be written using the Fulton County Change Order format and processed per Fulton County Change Order Policy 800-6. The Contract Sum and the Contract Time may be changed only by Change Order presented to and approved by the Fulton County Board of Commissioners. A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including the adjustment in either or both of the Contract Sum or the Contract Time.

12.1.2 The cost or credit to the County resulting from a change in the Work shall be determined in one or more of the following ways:

12.1.2.1 by mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

12.1.2.2 by unit prices stated in the Contract Documents or subsequently agreed upon;

12.1.2.3 by cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

12.1.2.4 by the method provided in Subparagraph 12.1.3 below.

12.1.3 If none of the methods set forth in Subparagraphs 12.1.2.1, 12.1.2.2 or 12.1.2.3 above is agreed upon, the Contractor, provided a written order signed by the Construction Manager is received, shall promptly proceed with the Work involved. The cost of such Work shall then be determined by the Construction Manager on basis of the reasonable expenditures and savings of those performing the Work attributable to the change. The cost of the change shall include only the items listed in Subparagraph 12.1.4.1 below, and in the case of either a decrease or an increase in the Contract Sum, an allowance for overhead and profit in accordance with Subparagraphs 12.1.4.2 and 12.1.5 below shall be applied to the cost or credit.

12.1.3.2 In such case, and also under Subparagraph 12.1.3.3 above, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting of all actual costs expended, together with appropriate supporting data for inclusion in a Change Order.

12.1.3.2 All hourly rate charges shall be submitted to the Construction Manager for prior review and approval. All hourly rate charges shall be properly supported as required by the Construction Manager with certified payrolls, or their acceptable equivalent. When authorized to proceed for a given change and actual expenditures have been made prior to execution of a Change Order for the entire change, such actual expenditures may be summarized monthly, and if approved, incorporated into a Change Order. When both additions and credits covering related Work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase or decrease, if any, with respect to that change.

12.1.4 In Subparagraphs 12.1.3 and 12.1.4 above, the items included in "Cost" and "Overhead" shall be based on the following schedule:

12.1.4.1 Unless otherwise provided in the Contract Documents, "Cost" shall be limited to the following: cost of materials incorporated into the Work, including sales tax and cost of delivery; cost of direct labor (labor cost may include a pro rata share of foreman's account of the change) including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; workers' or workmen's compensation insurance; rental value of equipment and machinery; costs for preparing Shop Drawings.

12.1.4.2 Unless otherwise provided in the Contract Documents, "Overhead" shall include the following: bond and insurance premiums including increase and decreases from change in the Work, supervision, superintendence, construction parking, wages of timekeepers, watchmen and clerks, small tools,

consumable supplies, expendables, incidentals, general office expense, the cost of additional reproduction for the Contractor's subcontractors beyond that agreed upon in the Contract Documents, construction parking, any additional costs of craft supervision by the Contractor's or subcontractors' superintendents, and overhead charges which would be customary and expended regardless of the change in the Work due to other overlapping activities which are included as part of the original Contract, and all other expenses not included in "Cost" above.

12.1.4.3 In the event that a change is issued by the County which would require the expenditure of substantial amounts of special supervision (beyond the foreman level) by the Contractor, the Contractor may, at the sole direction of the Construction Manager, be allowed to incorporate these charges into the agreement cost for the change.

12.1.5 In Subparagraphs 12.1.3 and 12.1.4 above, the allowance for overhead and profit combined, included in the total cost or credit to the County, shall be based on the following schedule:

12.1.5.1 For the Contractor, for any work performed by the Contractor's own forces, ten (10) percent of the cost.

12.1.5.2 For the Contractor, for any work performed by a Contractor's subcontractor, five (5) percent of the amount due the subcontractor.

12.1.5.3 For each subcontractor or sub-subcontractor involved, for any work performed by that subcontractor's or sub-subcontractor's own forces, ten (10) percent of the cost.

12.1.5.4 For each subcontractor, for work performed by a sub-subcontractor, five (5) percent of the amount due to the sub-subcontractor.

12.1.5.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 12.1.5 above unless modified otherwise.

12.1.6 In order to facilitate checking of quotations for extras or credits, all proposals or bids, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs, including labor cost, materials and subcontracts. Labor and materials shall be itemized in the manner defined in Subparagraph 12.1.4 above. Where major cost items are subcontracts, they shall be itemized also. In no case shall a change be approved without such itemization.

12.1.7 No payment shall be made for any changes to the contract that are not included in a fully executed Change Order.

12.2 CONCEALED CONDITIONS

12.2.1 Should concealed conditions be encountered in the performance of the Work below the surface of the ground, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Contract Documents, or should unknown physical conditions below the surface of the ground or concealed or unknown conditions in an existing structure of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract, be encountered, the Contract Sum and Contract Time shall be equitably adjusted by Change Order upon request by either party made within twenty (20) days after the first observance of the conditions. No such request for equitable adjustment shall be valid unless the Contractor complies with this (20) days notice and Subparagraph 12.3.1 below.

12.3 REQUESTS FOR ADDITIONAL COST

12.3.1 If the Contractor wishes to request an increase in the Contract Sum, the Contractor shall give the Construction Manager written notice thereof within twenty (20) days after the occurrence of the event, or identification of the conditions, giving rise to such request. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property in which case the Contractor shall proceed in accordance with Paragraph 10.7 of this Agreement, and Subparagraph 12.1.4 above. No such request shall be valid unless so made within the twenty (20) days specified above. If the County and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined by the Construction Manager. Any change in the Contract Sum resulting from such claim shall be documented by Change Order.

12.3.2 If the Contractor claims that additional cost is involved because of, but not limited to (1) any interpretation pursuant to Subparagraph 2.2.7 of this Agreement, (2) any order by the County to stop the Work pursuant to Paragraph 3.3 of this Agreement where the Contractor was not at fault, or any such order by the Construction Manager as the County's agent, or (3) any written order for a minor change in the Work issued pursuant to Paragraph 12.4 below, the Contractor shall submit a request for an increase in the Contract Sum as provided in Subparagraph 12.3.1 above. No such claim shall be valid unless the Contractor complies with Subparagraph 12.3.1 above.

12.4 MINOR CHANGES IN THE WORK

12.4.1 The Architect and the Construction Manager will have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order issued by the Construction Manager, and shall be binding on the County and the Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 13

UNCOVERING AND CORRECTION OF WORK

13.1 UNCOVERING OF WORK

- 13.1.1 If any portion of the Work should be covered contrary to the request of the Architect or the Construction Manager, or to requirements specifically expressed in the Contract Documents, the work must, if requested in writing, be uncovered for their observation and shall be replaced at the Contractor's expense.
- 13.1.2 If any other portion of the Work has been covered which the Architect or the Construction Manager has not specifically requested to observe prior to its being covered, either may request to see such Work and it shall be uncovered by the Contractor. If such Work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be submitted to the Construction Manager. If such Work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by the County or a separate contractor as provided in Article 6 of this Agreement, in which event the County shall be responsible for the payment of the cost of uncovering and replacing the cover, and the cost of repair of any damage to the Work shall be borne by the party responsible as provided in Article 6 of this Agreement.

13.2 CORRECTION OF WORK

- 13.2.1 The Contractor shall, within seven (7) days after notice, commence correction of all Work rejected by the Architect or the Construction Manager as defective or as failing to conform to the Contract Documents whether observed before or after Substantial Completion of the Work and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including compensation for the Architect's and the Construction Manager's additional services made necessary thereby.
- 13.2.2 If within one (1) year after the Date of Substantial Completion of the Project or designated portion thereof, or within one year after acceptance by the County of designated equipment, or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor shall commence correction within 14 days after receipt of a written notice from the County to do so unless the County has previously given the Contractor a written acceptance of such condition. This obligation shall survive both final payment for the Work or designated portion thereof and termination of the Contract.
- 13.2.2.1 The warranty against defects in equipment and workmanship on all mechanical and electrical equipment and work shall be for the specified period of time of normal operation without breakdown or malfunction.
- 13.2.2.2 The warranty period for mechanical and electrical equipment shall begin at the Date of Substantial Completion of the Work or from the date the equipment is put into normal operation after a breakdown or malfunction that occurred after the Date of Substantial Completion of the Work, but before the date of Final Completion, whichever date is the later.
- 13.2.3 The Contractor shall remove from the site all portions of the Work which are defective or nonconforming and which have not been corrected under Subparagraphs 4.6.1, 13.2.1 and 13.2.2 of this Agreement, unless removal is waived by the County.
- 13.2.4 If the Contractor fails to correct defective or nonconforming Work as provided in Subparagraphs 4.6.1, 13.2.1, and 13.2.2 of this Agreement, the County may correct it in accordance with Paragraph 3.4 of this Agreement.
- 13.2.5 If the Contractor does not proceed with the correction of such defective or nonconforming Work within the time limits set herein, the County may remove it and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten (10) days thereafter, the County may, upon ten (10) additional days' written notice, sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Contractor, including compensation for the Architect's and the Construction Manager's additional services made necessary thereby. If such proceeds of sale do not

cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the County.

13.2.6 The Contractor shall bear the cost of making good all Work of the County or separate contractors destroyed or damaged by correction or removal of defective work.

13.2.7 Nothing contained in this Paragraph 13.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Paragraph 4.6 of this Agreement. The establishment of the time periods noted in Subparagraph 13.2.2 above, or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents, relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the Contractor's obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

13.3 ACCEPTANCE OF DEFECTIVE OR NONCONFORMING WORK

13.3.1 If the County prefers to accept defective or nonconforming Work, the County may do so instead of requiring its removal and correction, in which case a Change Order shall be issued to reflect a reduction in the Contract Sum where appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 14

TERMINATION OF THE CONTRACT

14.1 TERMINATION FOR DEFAULT

14.1.1 This Contract may be terminated for default by the County upon the occurrence of any of the following events:

14.1.1.1 Persistent failure or refusal on the part of the Contractor to perform the Work in accordance with the Contract Documents, including, but not limited to, failure or refusal to supply enough properly skilled workers or suitable materials or equipment, or failure to adhere to the required construction scheduling responsibilities;

14.1.1.2 Insolvency or bankruptcy of the Contractor, whether voluntary or involuntary;

14.1.1.3 Any general assignment by the Contractor for the benefit of creditors;

14.1.1.4 Appointment of a trustee, receiver, custodian, or agent of the Contractor for the benefit of creditors or for the purpose of enforcing a lien against the property of the Contractor;

14.1.1.5 Written admission by the Contractor of its inability to pay its debts generally as they become due;

14.1.1.6 Disregard on the part of the Contractor of laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction; or

14.1.1.7 Substantial violation of any other provision of the Contract Documents.

14.1.2 Should any of the above events occur, and should the Contractor fail within seven (7) days after receipt of written notice to commence and continue correction of such default, neglect or violation with diligence and promptness, the County may, after seven (7) days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the County may have, terminate the services the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by or in the possession of the Contractor, and may finish the Work by whatever methods the County may deem expedient.

14.1.3 If the unpaid balance of the Contract Sum exceeds the cost of finishing the Work, including compensation for the Construction Manager's, the Architect's, and the County's other Professional Consultant's additional services made necessary thereby, such excess shall be paid to the Contractor. However, in such case the Contractor shall not be entitled to receive any payment until the Work is finished. If the cost of finishing the Work exceeds the unpaid balance of the Contract Sum, the Contractor shall pay the difference to the County. The amount to be paid to the Contractor or to the County, as the case may be, shall be made, upon application, in the manner provided in Article 9 of this Agreement, and this obligation for payment shall survive the termination of the Contract.

14.2 TERMINATION FOR CONVENIENCE OF THE COUNTY

14.2.1 Immediately upon receipt of written notice to the Contractor, or within such time as may otherwise be specified in such notice, the County may, without cause and without prejudice to any other right or remedy, terminate this Contract, in whole or in part, for its convenience.

14.2.2 In the event of termination in accordance with Subparagraph 14.2.1 above, the Contractor shall be paid for all Work performed and acceptable to the County, and any expense sustained shall be limited to the cost of such Work plus reasonable termination expenses, to include costs required for an orderly shutdown of the Work on site.

14.3 TERMINATION PROVISIONS

14.3.1 After receipt of written notice of termination from the County pursuant to Paragraph 14.1 or 14.2, the Contractor shall:

- 14.3.1.1 Stop work on the date and to the extent specified in the notice of termination;
- 14.3.1.2 Place no further purchase orders or subcontracts for materials, equipment, supplies, services, or facilities except as may be necessary for the completion of such portion of the Work under this Contract not terminated;
- 14.3.1.3 Terminate all purchase orders and subcontracts to the extent that they relate to the performance of the Work terminated by the notice of termination;
- 14.3.1.4 Assign to the County, in the manner, at the times, and to the extent directed by the County, all of the rights, title, and interests of the Contractor under the purchase orders and subcontracts so terminated, in which case the County shall have the right, at its discretion, to settle or pay any or all claims arising out of the termination of such purchase orders and subcontracts;
- 14.3.1.5 Transfer title and deliver to the County, in the manner, at the times, and to the extent directed by the County:
 - a. The fabricated and unfabricated parts, Work in process, completed Work, supplies, and other material produced as a part of, or acquired in connection with, the performance of the Work terminated by the notice of termination; and
 - b. The completed or partially completed plans, drawings, information, and other property related to the Work.
- 14.3.1.6 Complete performance of such part of the Work as shall not have been terminated by the notice of termination.
- 14.3.2 The Contractor acknowledges and agrees that if any court rules that termination by the County was a wrongful termination, such action by the County shall be deemed a termination for convenience, and the Contractor shall only be entitled to recover legitimate expenses up to the time of termination, and shall not be entitled to fees, costs, expenses, profits, or overhead after the date of termination.

ARTICLE 15

NON-DISCRIMINATION IN CONTRACTING & PROCUREMENT

- 15.1.1 It is the policy of Fulton County that discrimination against businesses by reason of the race, color, gender or national origin of the ownership of any such business is prohibited. Furthermore, it is the policy of the Board of Commissioners that Fulton County and all vendors and contractors doing business with it shall provide to all businesses the opportunity to participate in contracting and procurement paid, in whole or in part, with monetary appropriations of the Board without regard to the race, color, gender or national origin of the ownership of any such business. Similarly, it is the policy of Fulton County that the contracting and procurement practices of Fulton County should not implicate Fulton County as a passive participant in discriminatory practices engaged in by private contractors or vendors who seek to obtain contracts with Fulton County.

- 15.1.2 The above policy is formalized in the “Ordinance providing for non-discrimination in purchasing and contracting; to provide for the monitoring of purchasing and contracting by the Department of Contract Compliance; to provide for the investigation by the Department of Contract Compliance regarding allegations of discrimination by persons or entities that do business with Fulton County; to provide for hearings regarding allegations of Discrimination; to provide for sanctions; and for other purposes”, established by the Fulton County Board of Commissioners on July 7, 1999.

- 15.1.3 A summary of the objectives and provisions of the ordinance, as well as forms required to be submitted by the Design/Builder, are included in Section 00 430 of the Bidding Manual.

ARTICLE 16

FULL PERFORMANCE REPRESENTATION

By executing this Agreement, the undersigned Contractor declares and represents that it has reviewed and understands the Contract Documents and has examined the site of the Work and informed itself fully in regard to all conditions pertaining to the place where the Work is to be done, including those conditions affecting the cost of the Work and the delivery, handling and storage of equipment and materials at the place where the Work is to be executed; that the Contractor and its subcontractors have examined and read the Contract Documents; and it has satisfied itself that the Contract Documents are an adequate and acceptable reflection of Work which is required to be performed; that it is willing and able to perform all of the necessary Work based upon the information and representations contained within the Contract Documents; and that it shall perform such necessary Work according the requirements of the Contract Documents, for the price prescribed, and within the time allotted. The Contractor hereby agrees that no additional information is required to complete the Work within the cost and schedule constraints established and agreed upon within this Agreement.

In witness whereof, the parties have executed this [*contract/agreement/amendment] this ____ day of _____, 2007.

For *[Legal Name of Vendor], Inc. Attest:

*[Name of person signing for vendor] (Signature)

*[Title of person signing] (seal) Name (Typed or Printed)

Title

For Fulton County

Attest:

, Chair
Board of Commissioners

Mark Massey, Clerk to the Commissioners (seal)

Approved as to Content:

Approved as to Form:

Willie A. Hopkins, Jr., Director
General Services Department

Office of the County Attorney

This agreement was approved by the Fulton County Board of Commissioners on [insert approval date and item number.]

END OF SECTION NO. 7

PERFORMANCE BOND

No contract with Fulton County for work to be done shall be valid for any purpose unless the Contractor provides a Performance Bond with good and sufficient surety payable to, in favor of, and for the protection of Fulton County. The Performance Bond shall be in the amount of 100% of the total contract amount, payable by the terms of the Contract, and shall be written on the following form.

Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business as a surety in Georgia.

Attestation for the corporation must be by the corporate officer; for a partnership by another partner; for an individual by a notary with the corporate seal.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that _____
(hereinafter called the "Principal") and _____
(hereinafter called the "Surety"), are held and firmly bound unto **FULTON COUNTY**, a political subdivision of the State of Georgia (hereinafter called the "Owner"), its successors and assigns, in the penal sum of _____ [100% of Contract amount], lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated _____, which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for construction-type services of a project known as **[NAME OF PROJECT]**, as more particularly described in the Contract (hereinafter called the "Project");

NOW, THEREFORE, the conditions of this obligation are as follows, that if the Principal shall fully and completely perform all the undertakings, covenants, terms, conditions, warranties, and guarantees contained in the Contract, including all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made, then this obligation shall be void; otherwise it shall remain in full force and effect.

Whenever the Principal shall be, and declared by the Owner to be, in default under the Construction-Type Contract, the Surety shall promptly remedy the default as follows:

1. Complete the Contract in accordance with its terms and conditions; or, at the sole option of the Owner,
2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the Surety and the Owner of the lowest responsible bidder, arrange for a contract between such bidder and Owner and make available as the work progresses (even though there should be a default or succession of defaults under the Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the penal sum set forth in the first paragraph hereof, as may be adjusted, and the Surety shall make available and pay to the Owner the funds required by this Paragraph prior to the payment of the Owner of the balance of the contract price, or any portion thereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the Owner to the Contractor under the Contract, and any amendments thereto, less the amount paid by the Owner to the Contractor; or, at the sole option of the Owner,
3. Allow Owner to complete the work and reimburse the Owner for all reasonable costs incurred in completing the work.

In addition to performing as required in the above paragraphs, the Surety shall indemnify and hold harmless the Owner from any and all losses, liability and damages, claims, judgments, liens, costs and fees of every description, including reasonable attorney's fees, litigation costs and expert witness fees, which the Owner may incur, sustain or suffer by reason of the failure or default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Contract, including any and all amendments and modifications thereto, or incurred by the Owner in making good any such failure of performance on the part of the Principal.

The Surety shall commence performance of its obligations and undertakings under this Bond promptly and without delay, after written notice from the Owner to the Surety.

The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and any other amendments in or about the Contract, and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, change in payment terms, and amendments.

The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment to the Contract, so as to bind the Principal and the Surety to the full and faithful performance of the Contract as so amended or modified, and so as to increase the penal sum to the adjusted Contract Price of the Contract.

No right of action shall accrue on this Bond to or for the use of any person, entity or corporation other than the Owner and any other obligee named herein, or their executors, administrators, successors or assigns.

This Bond is intended to comply with O.C.G.A. Section 36-91-1 et seq., and shall be interpreted so; as to comply with; the minimum requirements thereof. However, in the event the express language of this Bond extends protection to; the Owner beyond that contemplated by O.C.G.A. Section 36-91-1 et seq. and O.C.G.A. Section 13-10-1, as amended, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

IN WITNESS WHEREOF the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this _____ day of _____, _____.

_____(SEAL)
(Principal)

By: _____

Attest:

Secretary

_____(SEAL)
(Surety)

By: _____

Attest:

Secretary

(Address of Surety's Home Office)

(Resident Agent of Surety)

END OF SECTION

PAYMENT BOND

No Contract with Fulton County for work to be done shall be valid for any purpose unless the Contractor provides a Payment Bond with good and sufficient surety payable to Fulton County for the use and protection of all sub-contractors and all persons supplying labor, materials, machinery, and equipment in the prosecution of the work provided for in the Contract. The Payment Bond shall be in the amount of 100% of the total contract amount, payable by the terms of the Contract, and shall be written on the following form.

Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Georgia.

Attestation for the corporation must be by the corporate officer; for a partnership by another partner; for an individual by a notary with the corporate seal.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that _____
(hereinafter called the "Principal") and _____
(hereinafter called the "Surety"), are held and firmly bound unto **FULTON COUNTY**, a political subdivision of the State of Georgia (hereinafter called the "Owner"), its successors and assigns as obligee, in the penal sum of _____ [100% of Contract amount], lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated _____, which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for construction-type services of a project known as **[NAME OF PROJECT]**, as more particularly described in the Contract (hereinafter called the "Project");

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all persons working on or supplying labor or materials under the Contract, and any amendments thereto, with regard to labor or materials furnished and used in the Project, and with regard to labor or materials furnished but not so used, then this obligation shall be void; but otherwise it shall remain in full force and effect.

1. A "Claimant" shall be defined herein as any subcontractor, person, party, partnership, corporation or the entity furnishing labor, services or materials used, or reasonably required for use, in the performance of the Contract, without regard to whether such labor, services or materials were sold, leased or rented, and without regard to whether such Claimant is or is not in privity of contract with the Principal or any subcontractor performing work on the Project, including, but not limited to, the following labor, services, or materials: water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.
2. In the event a Claimant files a lien against the property of the Owner, and the Principal fails or refuses to satisfy or remove it promptly, the Surety shall satisfy or remove the lien promptly upon written notice from the Owner, either by bond or as otherwise provided in the Contract.
3. The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in the payment terms, and any other amendments in or about the Contract and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and amendments.
4. The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment or modifications to the Contract, so as to bind the Principal and Surety, jointly and severally, to the full payment of any Claimant under the Contract, as amended or modified, provided only that the Surety shall not be liable for more than the penal sum of the Bond, as specified in the first paragraph hereof.
5. This Bond is made for the use and benefit of all persons, firms, and corporations who or which may furnish any materials or perform any labor for or on account of the construction-type services to be performed or supplied under the Contract, and any amendments thereto, and they and each of them may sue hereon.
6. No action may be maintained on this Bond after one (1) year from the date the last services, labor, or materials were provided under the Contract by the Claimant prosecuting said action.

7. This Bond is intended to comply with O.C.G.A. Section 13-10-1, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the Owner beyond that contemplated by O.C.G.A. Section 13-10-1, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

IN WITNESS WHEREOF the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this day of _____, _____.

_____(SEAL)
(Principal)

By: _____

Attest:

Secretary

_____(SEAL)
(Surety)

By: _____

Attest:

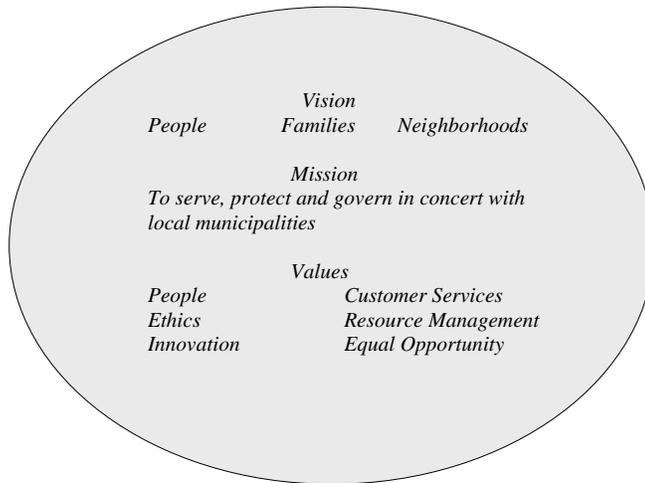
Secretary

(Address of Surety's Home Office)

(Resident Agent of Surety)

END OF SECTION

Volume 2



REQUEST FOR INVITATION TO BID NO. 07ITB 54805K-DJ

**THE INSTALLATION OF EMERGENCY/STANDBY
ENGINE GENERATORS AT FOUR FULTON COUNTY
SENIOR MULTIPURPOSE COMPLEXES**

Volume 2 of 2

For

General Services Department

BID DUE TIME AND DATE: Monday, July 9, 2007, 11:00 A.M.

BID ISSUANCE DATE: May 25, 2007

PURCHASING CONTACT: Donna Jenkins at (404)-730-4213

E-MAIL: Donna.Jenkins@fultoncountyga.gov

**LOCATION: Fulton County Department of Purchasing and Contract Compliance
130 PEACHTREE STREET, S.W., SUITE 1168
ATLANTA, GA 30303**

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1. SECTION 01 010 – SUMMARY OF WORK

2. GENERAL

- A. This Section includes detailed information regarding the scope of work for this Contract. Scopes of work for any separate contracts for the Project, if any, and other information relating to or affecting this Contract shall also be provided in this Section.
- B. The Contractor is responsible for performing the Work described in this Section for the Contract for which it has submitted a bid. The Contractor shall have taken all of the provisions herein into consideration when preparing its bid, and all costs associated with performing all Work required by the Contract Documents shall be included in the Contractor's Contract Sum. The Contractor is responsible for knowing what Work has been assigned to any preceding or succeeding separate contracts. No additional reimbursement or extensions of time will be allowed the Contractor due to its ignorance of the Work assigned to this Contract or to any separate contract which may affect its Work.
- C. The Contract Documents shall be construed so as to require the Contractor to perform all Work reasonably inferable as being necessary in order to produce the indicated functional, operational or finished result.
- D. The Contract Documents issued are deemed by the County to contain sufficient information for bidding and contracting for the Work specified. However, the Contractor is advised to check documents for thoroughness of information and notify the Construction Manager immediately in writing of any valid discrepancies.
- E. Time is of the essence for every portion of this Contract wherein a definite and certain length of time is fixed for performance of any act whatsoever. The Contractor shall be aware of the extreme importance of performing the Work and achieving all required milestones and completion dates within the allotted Contract Time.

3. PROJECT LOCATIONS

- A. The project sites are located at:

Dorothy C. Benson Senior Multipurpose Complex
6500 Vernon Woods Drive
Atlanta, GA 30328

H.J.C. Bowden Senior Multipurpose Facility
2885 Church Street
East Point GA 30344

Harriet G. Darnell Senior Multipurpose Facility
677 Fairburn Rd NW
Atlanta GA 30331

Helene S. Mills Senior Multipurpose Facility
515 John Wesley Dobbs Ave
Atlanta GA 30312

4. REGULATORY REQUIREMENTS & STANDARDS

- A. Permitting: The Contractor assumes responsibility for securing all land disturbance permits, demolition permits and building permits; providing meters and paying all utility tie-in fees; restoring of roads and right-of-ways; maintaining situation control; and securing all final releases from regulating bodies. Minimum permits required for this Project:
 - 1. Building Permit from Fulton County Development Services Department

- B. Fees: The Contractor is responsible for payment of fees associated with the permits and inspections per the following schedule. ANY FEE FOR REQUIRED PERMITS OR INSPECTIONS NOT SPECIFICALLY NOTED BELOW AS WAIVED IS THE RESPONSIBILITY OF THE DESIGN/BUILDER.
1. Land Disturbance Permitting-Fee Waived
 2. Fulton County Building Permit-Fee Waived
 3. ARC Review -Fee Waived
 4. Road Inspection-Fee Waived
 5. Curb and Gutter-Fee Waived
 6. Base/Paving-Fee Waived
 7. Commercial Driveway-Fee Waived
 8. Storm Drainage-Fee Waived
 9. Wastewater-Fee Waived
 10. Water Main-Fee Waived
 11. Erosion Control-Fee Waived
 12. Landscape-Fee Waived
 13. Street Name Markers-Not Waived
 14. Traffic Signs-Not Waived
 15. Microfilming-Not Waived
 16. Wastewater Use Fee-Not Waived
 17. Water & Wastewater Tap Fee-Not Waived
 18. Tree Harvest Permit-Not Waived
 19. Health Department-various fees at the discretion of the Health Department
- C. Codes: It is the Contractor's responsibility to comply with all applicable laws, statutes, ordinances, building codes, rules and regulations applicable to the Work.

5. PROJECT DESCRIPTION & SUMMARY SCOPE OF SERVICES

- A. This scope includes Electrical and general requirements for the installation of emergency/standby engine generators at four Fulton County Senior Multipurpose Complexes. The installation will include site/civil work (for basic land clearing, repair of landscaping damaged by construction, and installation of concrete pad for the generator) and electrical work (installation of conduit and conductors from generator to transfer equipment in electrical rooms, and connection of transfer equipment to existing electrical service).
- B. The Contractor's services shall include all construction and equipment installation required to complete the Work as indicated in the Contract Documents. The Contractor shall provide or cause to be provided and shall pay for all testing services, labor, materials, equipment, tools, construction equipment and machinery, temporary utilities, transportation and all other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent, and whether or not incorporated or to be incorporated in the Work. The above shall be provided such that the facility is turned over to the County in a complete, finished, and fully functional and operating manner.

6. SCOPE OF WORK

- A. The work generally includes but is not limited to the following:
1. Dorothy C. Benson Senior Multipurpose Complex
 - a. Provide and install 400kva (320kW) diesel engine generator.
 - b. Provide and install 8" concrete pad, with site clearing and removal of soil.
 - c. Provide and install 1200A automatic transfer switch.
 - d. Provide and install 4 sets of #350kcmil in 3" conduit between automatic transfer switch and existing main switchboard.
 - e. Provide and install 2 sets of #3/0 in 2" conduit between new engine generator and automatic transfer switch.
 - f. Provide necessary clean-up and light landscaping to repair damaged areas.

2. H.J.C. Bowden Senior Multipurpose Facility
 - a. Provide and install 400kva (320kW) diesel engine generator.
 - b. Provide and install 8" concrete pad, with site clearing and removal of soil.
 - c. Provide and install 1200A automatic transfer switch.
 - d. Provide and install 4 sets of #350kcmil in 3" conduit between automatic transfer switch and existing main switchboard.
 - e. Provide and install 2 sets of #3/0 in 2" conduit between new engine generator and automatic transfer switch.
 - f. Provide necessary clean-up and light landscaping to repair damaged areas.

 3. Harriet G. Darnell Senior Multipurpose Facility
 - a. Provide and install 500kva (400kW) diesel engine generator.
 - b. Provide and install 8" concrete pad, with site clearing and removal of soil.
 - c. Provide and install 1600A automatic transfer switch.
 - d. Provide and install 4 sets of #600kcmil in 4" conduit between automatic transfer switch and existing main switchboard.
 - e. Provide and install 3 sets of #3/0 in 2" conduit between new engine generator and automatic transfer switch.
 - f. Provide necessary clean-up and light landscaping to repair damaged areas.

 4. Helene S. Mills Senior Multipurpose Facility
 - a. Provide and install 500kva (400kW) diesel engine generator.
 - b. Provide and install 8" concrete pad, with site clearing and removal of soil.
 - c. Provide and install 1600A automatic transfer switch.
 - d. Provide and install 4 sets of #600kcmil in 4" conduit between automatic transfer switch and existing main switchboard.
 - e. Provide and install 3 sets of #3/0 in 2" conduit between new engine generator and automatic transfer switch.
 - f. Provide necessary clean-up and light landscaping to repair damaged areas.
- B. The work includes providing all labor, materials, and equipment required by the Contract Documents, including items of work required for successful completion of the Project, reasonably implied but not specifically mentioned in these documents.
- C. Owner will occupy premises during entire construction period to conduct normal business operations. Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner's normal usage of the facility.
- D. Bidders shall visit the site and examine existing conditions before submitting bid. The contractor (successful bidder) shall not receive additional compensation above bid price for any work that can be reasonably inferred through observation of existing conditions.
- E. The Contractor shall be responsible for securing and paying for all permits, fees, taps, meters, inspections and bonds required to complete the Work. The Contractor shall also be responsible for paying for and coordinating all the required Work with all utility companies required for services to the Project. Additionally, any disruption in service must be coordinated to the satisfaction of the Owner so as not to disrupt any ongoing activities and requirements of the Owner.

End of Section 01 010 Summary of Work

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SECTION 01 020 - ALLOWANCES

1. DEFINITIONS / GENERAL

- A. Allowances: Allowances are defined as sums of monies within the Contract Sum which may, at Owner's option and under terms established in the Contract, be utilized at the Owner's discretion to supplement corresponding basic requirements of Contract Documents.
- B. Owner allowances are exclusively for the cost of materials, delivery to the site and associated installation. The total allowance amount is exclusively for Owner use, and shall include no markup for the Contractor or for its subcontractors.

2. SCHEDULE OF ALLOWANCES

A. OWNER-PROVIDED ALLOWANCES

- a. Div. 01 Owner's Allowance
- b. Allowance Amount: \$ 50,000.00
- c. Scope of Work: As determined by the Owner, through the Construction Manager.
- d. Procurement Procedure: Selected by the Owner, procured by the Contractor, and coordinated by the Construction Manager.
- e. Schedule Conditions: As required.
- f. Coordination Responsibility: As determined by the Construction Manager.

END OF SECTION 01 020, ALLOWANCES

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SECTION 01 025 - APPLICATIONS FOR PAYMENT

1. SUBMITTAL OF APPLICATION FOR PAYMENT

- A. The County will make payments to the Contractor on the basis of a duly certified and approved estimate of the Work completed through the 25th day of each calendar month, as reviewed by the Construction Manager, provided the estimate was submitted in accordance with the following requirements:
- B. The Applications for Payment shall be itemized as directed by the Construction Manager. Applications for Payment are to serve as certification by the Contractor as to the status of the Work.
- C. On or prior to the 20th day of each month, the Contractor will prepare a preliminary, itemized Application for Payment for work completed and the value of any stored materials, projected through the 25th of the current month, as well as additional information required herein or as the County and Construction Manager may require to verify and approve the amount of payment applied for. The Contractor may be requested to review the Application for Payment with the Construction Manager on the jobsite in order to verify work in place or the location of stored materials. A copy will also be transmitted to the Architect for its review and recommendations.
- D. After the Construction Manager has advised the Contractor of the acceptability of the Application for Payment, and on or before the 25th day of each month, the Contractor shall submit to the Construction Manager an itemized, notarized Application for Payment. The Contractor shall also submit, if requested, additional documentation, including, but not limited to, all sworn statements, waivers and releases of liens and claims, including those required of subcontractors of any tier as may be requested by the Construction Manager, reflecting all retainage, previous Applications for Payment, payment for labor and material, payment for materials stored and other documentation and requirements related to Work performed as provided elsewhere in the Contract Documents or as required by the Construction Manager.
- E. Late applications will not be accepted for any reason whatsoever. If the Contractor is late with its pay application, it will not be processed until the next pay cycle.
- F. The Contractor shall submit the Application for Payment in two (2) hardcopies on the latest version of *AIA Document G702/CMA, Application and Certificate for Payment – Construction Manager-Advisor Edition* and *AIA Document G703, Continuation Sheet for G702*, and each copy shall display an original signature by a duly authorized agent of the Contractor. The application may be generated by the use of a software applications package acceptable to the Construction Manager, and provided that the forms generated are in the format of the standard AIA Documents indicated above. All two copies shall be individually notarized.
- G. The Contractor shall submit Interim Waiver and Release Upon Progress Payment and an Unconditional Waiver and Release Upon Final Payment when submitting the Application for Payment. Appendix B, is to be used for Progress Payments. Appendix C or the *AIA Document G706A, Contractor's Affidavit of Release of Liens*, latest version, is to be used for Final Payment.
- H. The Owner will withhold ten (10) percent of each payment until the Contractor's contracted Work is fifty (50) percent complete. If the Contractor's performance is satisfactory, and if the Contractor is on schedule, then further retainage will cease to be withheld. If at any later date, the Construction Manager determines that the Contractor's progress is unsatisfactory in any manner, the Construction Manager may reinstate the entire ten (10) percent withholding on the sum of all of the payments made to that date. The Construction Manager shall be the sole determining party with regards to the reinstatement of the entire ten (10) percent retainage. No appeal from the Contractor will be entertained. Retainage release upon Substantial Completion shall be per O.C.G.A. 13-10-2.
- I. At no time during the contract will the Contractor be allowed to bill for an amount which is in excess of the amount of its contract, including all signed and executed change orders.

2. PAYMENT FOR MATERIALS STORED ON SITE

- A. As provided in the Contract Documents, payments will be made on account of materials or equipment not incorporated in the Work, but delivered and suitably stored at the site, provided such materials are stored

according to the provisions of the Contract Documents and the satisfaction of the Construction Manager. Provisions for storing materials at the site are described elsewhere in the General Requirements.

- B. The Contractor shall include with his payment request an itemization of the quantity of such materials, and shall document with invoices, Bills of Sale or other documentation acceptable to the Construction Manager, the cost of said materials.

3. PAYMENT FOR MATERIALS STORED OFF SITE

Payment for materials stored at a location off the project site will be made only if the following requirements are fully met:

- A. Materials to be stored away from the project site must be fully fabricated, identified by paint stencil or other permanent marking device, to be the property of Fulton County, for the Project, and not readily usable on another project (i.e., not of a raw or stock materials nature).
- B. The Contractor must submit a written request to the Construction Manager, no later than the 10th of the month of the Application for Payment, to be allowed to request payment for materials stored off the project site.
- C. Upon obtaining the Construction Manager's approval, each Contractor making a request for payment for materials stored off-site shall comply with the following, prior to making application for payment for materials stored off site:
 - 1. Execute a Bill of Sale of Personal Property including all attachments, using the form provided in Appendix A to this section. No exceptions or substitutions of other forms are to be made.
 - 2. Submit evidence that the materials have been fully paid for by the Contractor or subcontractor. Typically, this should be in the form of a receipted invoice from the supplier describing the material exactly as listed in the Bill of Sale, plus the supplier's corresponding waiver of lien.
 - 3. Provide evidence of insurance coverage on the stored materials. Note that this requires the Contractor to furnish the County with a loss payable clause endorsement to its insurance policy providing for payment to the County in the event of a loss.
 - 4. The Contractor must submit a written statement from its Surety consenting to the payment for the materials stored off-site.
 - 5. A certification shall be submitted from the Contractor certifying that he has actually visited the location where the materials are stored and has verified the quantity of materials so stored, that they are being safely stored, and that they are physically and clearly identified as being the property of the County. (This requirement may be waived only at the sole discretion of the County.)
 - 6. Until such time that all off-site stored materials for which the Contractor or subcontractor has requested payment have been delivered to the job site, the Contractor shall submit with each succeeding payment request, a notarized certificate to the County certifying as to the quantity and value of the stored materials, if any, which have been delivered to the project site, and the quantity and value of materials still being stored at the off-site location, as of the date applicable to the application.
 - 7. All payments for materials stored off-site will be made net of retention as provided for in the Contract Documents. Under no circumstances will such retention for stored materials be reduced regardless of the percentage or completion of the Contractor's or subcontractor's Work.
- D. The Construction Manager shall be notified by the Contractor when the materials are to be transferred to the project site and when the materials are received at the project site.

4. PROGRESS PAYMENTS

- A. If the Contractor has made Application for Payment as detailed herein, the Construction Manager will confirm the amounts to be paid to the Contractor, certify each copy by original signature, retain one signed copy for its project files, and transmit the remaining copies as Certification for Payment to the County.
- B. The Contractor may expect payment from the County within thirty (30) days of the Contractor's submittal of an Application for Payment per Paragraph 1.0 of this Section. Any follow-up inquiries on the status of payments shall be through the Construction Manager. The Contractor is not permitted to contact the County directly with any payment inquiries.
- C. No approval of any application for progress payment, nor any progress payment, nor any partial or entire use of occupancy of the Work or the Project by the County, shall constitute an acceptance of any Work not in accordance with the Contract Documents.

APPENDIX A - PAGE 1 OF 6

BILL OF SALE OF PERSONAL PROPERTY

KNOW ALL MEN BY THESE PRESENTS,

THAT,

For and in consideration of the sum of

_____ Dollars (\$ _____)

and other good and valuable consideration, the receipt of which is hereby acknowledged,

_____, the Undersigned ("Seller"), does by these presents BARGAIN AND SELL

UNTO FULTON COUNTY, GEORGIA ("Purchaser") the goods and chattels located at

_____ as described on the Schedule attached hereto and by this reference made a part hereof (the "Property").

IN CONSIDERATION OF THE FOREGOING AND THE COVENANTS HEREIN CONTAINED, SELLER AGREES AS FOLLOWS:

Seller does hereby covenant and warrant to the Purchaser that Seller is the lawful owner of the Property; that the Property is free from all liens and claims whatsoever; that Seller has good right to sell the same; that Seller will warrant and defend same against the claims and demands of all persons.

Seller will provide safe and proper storage for the Property and will cause to be placed conspicuously and securely on the Property a sign or signs, which will show that the Property is the Property of the Purchaser.

The Property shall be held at Seller's risk, and shall be kept insured, against fire, theft, and all other hazards by Seller at Seller's expense while in its custody or control in an amount equal to the replacement cost thereof, with loss payable to Purchaser. Copies of policies or certificates of such insurance will be furnished to Purchaser.

Seller shall indemnify, defend, and hold the Purchaser harmless from and against claims, liabilities, damages, suits, actions, losses, costs or expenses, including reasonable attorneys' fees, arising out of or occasioned by the loss, theft, damage, destruction handling, repair and maintenance of the Property or any part thereof.

The Purchaser or his agents shall have the right to inspect the Property at any time during normal business hours at the storage facilities of the Seller. The failure to inspect shall not be deemed a waiver of any of the rights of the Purchaser, and, if the Property is found to be defective, in material or workmanship, stolen or lost, in whole or in part, the Seller shall replace the same at its own cost.

The Property shall be subject to removal by Purchaser, at any time, upon Purchaser's instruction.

IN WITNESS WHEREOF, the Undersigned has set hand this _____ day of _____, 2007.

SELLER:

APPENDIX A - PAGE 2 OF 6
BILL OF SALE OF PERSONAL PROPERTY

ATTEST:

STATE OF _____

COUNTY OF _____

This is to certify that _____ is personally known to me to be the same person whose name subscribed on the foregoing bill of sale appeared before me, _____, a notary public, this _____ day of _____, 2007, and expressly acknowledged to me the execution of said foregoing bill of sale a free and voluntary act, receipt of consideration as recited therein, and that _____ understood the foregoing bill of sale and intended to be legally bound by the same.

NOTARY PUBLIC:

My Commission expires on:

APPENDIX A - PAGE 3 OF 6

BILL OF SALE OF PERSONAL PROPERTY

Schedule of Stored Materials

This Schedule is an attachment to the Bill of Sale of Personal Property dated _____.

CONTRACTOR'S CERTIFICATE OF QUANTITY AND VALUE OF STORED MATERIAL

This is to certify that the stored materials intended for installation on the _____ (Project Site), for which the Contractor or Vendor (Seller) has requested payment tabulated in Column "F" of the Contractor's Application for Payment dated _____, and as conveyed by the aforementioned Bill of Sale of Personal Property, are comprised of the items or bulk quantities of goods insured as certified by the attached loss payable clause endorsement to the Seller's insurance policy, as provided by the attached written consent of Surety, and as set forth below in numbered Sections 1 and 2.

This attachment further certifies that, of the items or quantities of materials previously conveyed by Bill(s) of Sale provided prior to the date of the aforementioned Bill of Sale to which this is an attachment, and previously stored at locations other than the Project Site, only the following items or bulk quantities, as set forth in numbered Section 3 below, remain so stored:

Section 1 - MATERIALS PERTAINING TO THE AFOREMENTIONED BILL OF SALE AND STORED AT LOCATIONS OTHER THAN THE CONSTRUCTION PROJECT SITE:

Quantity	Description	Value (before retainage)	Storage Location
-----------------	--------------------	---	-------------------------

SUBTOTAL BEFORE RETAINAGE: _____

APPENDIX B - PAGE 1 OF 2

Waiver and Release of Lien Upon Progress Payment

_____PROJECT

_____GENERAL CONTRACTOR

STATE OF GEORGIA
FULTON COUNTY

_____The undersigned, in consideration of the sum of \$ _____, hereby waives and releases its lien and right to claim a lien for labor, services, or materials furnished through _____(date of this waiver) under contract with Fulton County (Owner) for the following Property:

(Project Name)

(Project Address)

This waiver and release does not cover any retention or labor, services or materials furnished after the date specified.

Any and all contractors, subcontractors, laborers, suppliers and materialmen that have provided labor, material or services to the undersigned for use or incorporation into the construction of the improvements to the Property have been paid and satisfied in full, and there are no outstanding claims of any character arising out of, or related to, the undersigned's activities on, or improvement to the Property.

This waiver constitutes a representation by the undersigned signatory, for and on behalf of the firm or company listed below, that the payment referenced above, once received, constitutes full and complete payment for all work performed, and all cost or expenses incurred (including, but not limited to, costs for supervision, field office overhead, home office overhead, interest on capital, profit, and general conditions costs) relative to the work or improvements at the Property as of the date of this Waiver, except for the payment of retainage. The undersigned hereby specifically waives, quitclaims and releases any claim for damages due to delay, hindrance, interference, acceleration, inefficiencies or extra work, or any other claim of any kind it may have against the Owner, the Tenant, the General Contractor (if this Waiver is signed by a subcontractor or supplier), or any other person or entity with a legal or equitable interest in the Property, as the date of this Waiver, except as follows:

_____This Waiver is specifically made for the benefit of the Owner and any other person or entity with a legal or equitable interest in the Property. The amount of money set forth as due and owing in the immediately preceding Waiver dated _____, 2007, has been received, and is deemed paid in full.

_____In Witness Whereof, the undersigned signatory, acting for and on behalf of the firm of company listed below and all of its laborers, subcontractors, and suppliers, has placed his hand and seal this ____ day of _____, 2007.

APPENDIX B - PAGE 2 OF 2

Waiver and Release of Lien Upon Progress Payment

FIRM OR COMPANY:

Sworn to and subscribed

_____ Before me this _____ day of _____, 2007

Notary Public
signature

print name

(NOTARY SEAL)

By: _____

Its: _____

My Commission Expires:

APPENDIX C - PAGE 1 OF 1

Waiver and Release of Lien Upon Final Payment

PROJECT

GENERAL CONTRACTOR

STATE OF GEORGIA
FULTON COUNTY

_____The
undersigned, in consideration of final payment in the amount of \$ _____, hereby
waives and releases its lien and right to claim a lien for labor, services, or materials furnished to Fulton County on the
project _____ . (Name and Address of Project)

Any and all contractors, subcontractors, laborers, suppliers and materialmen that have provided labor, material or services to the undersigned for use or incorporation into the construction of the improvements to the Property have been paid and satisfied in full, and there are no outstanding claims of any character arising out of, or related to, the undersigned's activities on, or improvement to the Property. This Waiver is specifically made for the benefit of Owner, any tenant and lender of any tenant, and any other person or entity with a legal or equitable interest in the Property.

This waiver constitutes a representation by the undersigned signatory, for and on behalf of the undersigned, that the payment referenced above, once received, constitutes full and complete payment for all work performed, and all cost or expenses incurred (including, but not limited to, costs for supervision, field office overhead, home office overhead, interest on capital, profit, and general conditions costs) relative to the work or improvements at the Property. The undersigned hereby specifically waives, quitclaims and releases any claim for damages due to delay, hindrance, interference, acceleration, inefficiencies or extra work, or any other claim of any kind it may have against the Owner, the General Contractor (if this Waiver is signed by a subcontractor or supplier), or any other person or entity with a legal or equitable interest in the Property, relative to the work or improvement at the Property.

In Witness Whereof, the undersigned signatory, acting for and on behalf of the firm of company listed below and all of its laborers, subcontractors, and suppliers, has placed his hand and seal this ____ day of _____, 20____.

FIRM OR COMPANY:

Sworn to and subscribed

_____ Before me this _____ day of _____, 2007

By: _____

Notary Public
signature

_____ *print name*

(NOTARY SEAL)

Its: _____

My Commission Expires: _____

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SECTION 01 040 – PROJECT COORDINATION

1. GENERAL

- A. The Contractor shall become thoroughly familiar with the requirements of the Contract Documents, as well as jobsite conditions and the work of separate contractors (if any), and shall make any adjustments necessary to maintain the Project schedule.
- B. Close coordination will be required by the Contractor with the County, Construction Manager, other authorities having jurisdiction, separate contractors (if any), and others having an interest in the Project to assure that all work on the site, access to and from the site, and the general conduct of the operations is maintained in a safe and efficient manner, and that disruption and inconvenience to existing streets and property are minimized.
- C. The Contractor and its subcontractors of all tiers shall be subject to such rules and regulations for the conduct of the Work as the County, Construction Manager, or other authority having jurisdiction may establish.

2. COORDINATION OF THE WORK

- A. The Contractor shall be completely responsible for the coordination of its Work, including the Work performed by its subcontractors of all tiers.
- B. Observation of the Work by the Construction Manager or others shall not be interpreted as relieving the Contractor of its responsibility for the coordination of all Work, superintendence of the Work, or scheduling and direction of the Work.
- C. The Contractor shall coordinate its Work with the work of any separate contractors through the Construction Manager for proper function and sequence, coordinating material deliveries and staging of same, all to avoid construction delays.
- D. The Contractor shall review material and equipment staging requirements with the Construction Manager prior to placing such materials or equipment on the site.
- E. The Contractor shall conduct the Work so as to provide the least possible interference to the activities of adjacent properties and traffic patterns. Confine operations only to areas where construction or support functions are required. Portions of the site beyond areas in which construction or support functions are required are not to be disturbed.
- F. Conceal pipes, ducts, and wiring in floor, wall, and ceiling construction of finished areas wherever possible. If doubt arises as to the means of concealment or the intent of the Contract Documents, request clarification from the Construction Manager prior to proceeding. Mechanical, plumbing, and electrical work shall be tested and inspected in advance of concealment.

3. ACCESS & TRAFFIC CONTROL

- A. The Contractor shall maintain free access to all buildings and areas of the site for emergency vehicles, service vehicles, and fire fighting equipment and at no time shall block off or close roadways or designated fire lanes without providing auxiliary roadways and means of entrance acceptable to the County, the Construction Manager, and any other authority having jurisdiction. Fire hydrants shall remain accessible at all times. The Contractor shall provide at least forty-eight (48) hours notice of any changes to such routes.
- B. The Contractor shall be responsible for security of the site and building(s) until acceptance of the Project by the County. The Contractor shall cooperate with the County, the Construction Manager, and any separate contractors with respect to entry into the Project when requested during non-standard working hours.
- C. The Contractor shall coordinate its operations to minimize the impact on vehicular and pedestrian traffic around the site. Operations and traffic control measures shall comply with the requirements of the authority having jurisdiction.

- D. The Contractor shall protect all street pavements, curbs, sidewalks, and other existing infrastructure not intended for demolition or alteration during the course of the Work, and shall repair all parts of same which become damaged.
- E. The Contractor shall be responsible for the cleaning of adjacent and surrounding streets and sidewalks from debris, dirt, mud, or other deleterious materials resulting from operations under this Contract. The Contractor shall immediately clean any such areas as directed by the Construction Manager.

4. WORKING HOURS

- A. The Contractor shall work whenever conditions permit (regardless of anticipated or orderly procedure, the operations of the County or other contractors, or conditions encountered) to proceed without delay and to maintain schedule dates. All operations shall be conducted so as to comply with all applicable laws, ordinances, and regulations regarding allowable hours of work.
- B. The Contractor shall notify the Construction Manager at least forty-eight (48) hours in advance of planned late night or weekend work. Failure to provide such notice may be cause for the Construction Manager to require the removal or uncovering of Work performed without the knowledge of the Construction Manager.

5. EXISTING UTILITIES AND OTHER SERVICES

- A. Utilities and/or other services which are shown, or not shown but encountered, shall be protected by the Contractor from any damage from any work operations of the Contract, unless or until they are abandoned. If the utilities or services are not abandoned at the time of damage, the Contractor shall immediately repair any damage from its work operations and restore the utilities or services to an equal or better conditions than that which existed prior to the damage.
- B. The Contractor and its subcontractors of all tiers shall be responsible for all damage to the Project including any existing buildings and grounds due to its operations under this Contract. Repair or replacement of damaged items shall be to the satisfaction of the County and the Construction Manager.

6. PROTECTION OF FINISHED WORK

- A. The Contractor shall be responsible for protecting its finished Work and materials from damage from any source, and shall maintain such protection until acceptance of the Work by the County. Any damage to finished Work caused by the work operations of this Contract shall be repaired, or such damaged Work replaced, by the Contractor at no additional cost to the County. No exceptions to this policy will be allowed.
- B. The Contractor shall coordinate the proper means by which materials and/or equipment are moved through the construction, ensuring that no structural overloading is allowed and that existing construction is protected from physical damage.
- C. Protect existing trees on the site to be saved, and those on adjacent properties where in close proximity to the Work. Carefully wrap trees adjacent to the construction work, material storage area, and trucking lanes in burlap and encase with protective framework. Protect roots during excavation and grading to minimize disturbance and damage.
- D. Keep concrete floors free of oils, grease, and other materials to prevent discoloring if to be left exposed, or to prevent adverse bonding affects if a finished floor is to be applied. Where work is performed over finished floors, the Contractor shall provide an acceptable cover to protect the finished surface against damage, paint, or stains.
- E. Load no part of the structure during construction with a load greater than calculated to bear safely when completed. Make temporary supports as strong as permanent supports. Place no load on a concrete slab until it has cured and achieved sufficient strength.
- F. Take strict precautions against unnecessary traffic on finished roofing surfaces.

- G. Protect all glass surfaces during construction. Prior to Substantial Completion, replace any broken, scratched, or otherwise damaged glass with glass of the same type, size, and quality as the original.

END OF SECTION 01 040, PROJECT COORDINATION

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SECTION 01 045 – CUTTING, CORING & PATCHING

1. GENERAL

- A. "Cutting, Coring and Patching" is hereby defined to include, but not necessarily be limited to, removal, cutting (including excavation), coring, fitting and patching of nominally completed and previously existing Work, as shown or required in order to accommodate the coordination of Work, installation of new Work, to uncover other Work for access or inspection, remove and replace defective Work or Work not conforming to the Contract Documents, or to obtain samples for testing or for similar purposes.
- B. For existing buildings, the sizes, dimensions, and elevations shown on the drawings represent measurements which should be regarded as typical dimensions; actual dimensions may and will vary due to prevailing building practices at the time of construction, and building settlement over time.
- C. The requirements of this section apply generally to all aspects of the Work, including mechanical, electrical and special systems work, unless otherwise indicated. The Technical Specifications may include additional or more specific requirements or limitations applicable to individual units of work.
- D. The Contractor shall note that it is its responsibility to coordinate the locations and sizes and to cut or core all openings and penetrations for all trades involved in the Work of this Contract. Any openings and penetrations which may be shown on drawings provided by the County are intended only to assist the Contractor in coordinating the major openings and penetrations and are not representative of all openings which will be required to complete the work.

2. QUALITY ASSURANCE

- A. The Contractor shall not cut, core and patch structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio. Prior to cutting, coring and patching structural work, obtain Architect's approval to proceed with cutting and patching as proposed in a written submittal by the Contractor.
- B. The Contractor's submittal requesting consent to proceed with cutting, coring and patching structural work must include:
 - 1. Identification of the Project
 - 2. Description of the affected Work
 - 3. Necessity for cutting or coring
 - 4. Affects on other Work, and on the structural integrity of the Work
 - 5. Description of the proposed Work, which designates:
 - a. Scope of cutting, coring and patching
 - b. Subcontractor who will execute the work
 - c. Products proposed to be used
 - d. Extent of refinishing required
 - 6. Alternates to cutting, coring and patching
 - 7. Designation of the responsibility for the costs associated with the cutting, coring and patching
- C. Prior to performing any cutting, coring and patching as extra work, the Contractor shall have submitted a written cost proposal and received written direction from the Construction Manager.
- D. The Contractor shall be responsible for providing, locating, and installing all embeds necessary for the completion of the Work, so as to avoid unnecessary cutting and patching.

3. OPERATIONAL AND SAFETY LIMITATIONS

- A. The Contractor shall not cut and patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended including energy performances, or resulting in decreased operational life, increased maintenance, or decreased safety.
- B. The Contractor shall not cut, core drill or otherwise penetrate any post-tensioned cast-in-place concrete elements.

4. VISUAL REQUIREMENTS

- A. The Contractor shall not cut and patch work which is exposed on the exterior, or exposed on the interior in occupied spaces of the building, in a manner resulting in a reduction of visual qualities, or resulting in substantial evidence of cut and patch work, as judged solely by the Architect. The Contractor shall remove and replace work judged by the Architect to be cut and patched in a visually unsatisfactory manner.

5. MATERIALS

- A. The Contractor shall provide materials for cutting and patching which will result in equal or better work than work being cut and patched, in terms of performance characteristics and including visual effect where applicable. The Contractor shall comply with requirements, and use materials identical with original materials where feasible and where recognized that satisfactory results can be produced thereby.

6. PREPARATION

- A. Inspection of Concealed Conditions (for construction existing prior to this Contract, if applicable) - Prior to beginning installation or preparation of shop drawings for each unit of work involving exposure of existing concealed construction, the Contractor shall remove the minimum of finishes, substrates and other existing construction as necessary to expose existing conditions where work is required behind existing surfaces. The Contractor shall verify that work can proceed in accordance with the requirements of the Contract Documents. The Contractor shall prepare detailed drawings of any existing conditions which differ substantially from conditions indicated or implied by the Contract Documents and the existing construction visible prior to exposure of concealed conditions. Submit drawings and a cost proposal to the Construction Manager for transmittal to the Architect a minimum of fourteen (14) calendar days prior to the scheduled installation of work in that area or the preparation of any required submittals relating to the area in question.
- B. Inspection of Concealed Conditions (for Work installed under this Contract) – In the event work is required behind existing surfaces previously installed under this Contract, the Contractor shall remove the minimum of finishes, substrates and other existing construction as necessary to expose existing conditions where work is required behind existing surfaces. Inspect and assess all conditions affecting the continued performance of the Work, and immediately report any circumstances which could have an adverse effect on the performance of the Work to the Construction Manager.
- C. Temporary Support - The Contractor shall provide shoring and protection and/or temporary support for work to be cut, to prevent failure. Do not endanger other work.
- D. Protection - The Contractor shall provide protection of other work during cutting and patching, to prevent damage and provide protection of the Work from adverse weather conditions. The Contractor shall not cut or alter work of another contractor without written consent of the Construction Manager.

7. CUTTING AND PATCHING

- A. The Contractor shall employ skilled tradesmen to perform all cutting, coring and patching and who have experience working with the materials involved. Except as otherwise indicated or approved by the Construction Manager or the Architect, the Contractor shall proceed with cutting and patching at earliest feasible time in each instance, and complete work without delay.
- B. The Contractor shall cut work by methods least likely to damage work to be retained and work adjoining. Employ the original installing subcontractor to perform cutting and patching for weather-exposed or moisture-resistant elements, and for exterior or interior surfaces exposed to view.
- C. In general, where physical cutting action is required, the Contractor shall cut work with sawing and grinding tools, not with hammering and chopping tools. Make cuttings to neat, straight lines and only to the size required to accommodate the construction to be installed. Core drill openings through finished concrete work.

- D. The Contractor shall patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work. Where feasible, inspect and test patched areas to demonstrate integrity of work.
- E. The Contractor shall restore exposed finishes of patched areas and extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching and refinishing. Where a patch occurs in a smooth painted surface, the Contractor shall extend the final paint coat over entire unbroken surface containing patch, after patched area has received prime and base coats.
- F. Wherever existing concrete floors are required to be patched or leveled, and where slabs are chopped out to provide for installation of new concrete floors, and where existing concrete is to be extended, the Contractor shall apply concrete bonding agent before placing new concrete. Apply such bonding agent in accordance with the manufacturer's specifications.

END OF SECTION 01 045, CUTTING, CORING & PATCHING

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SECTION 01 090 – REFERENCE STANDARDS

1. APPLICABILITY OF STANDARDS

- A. Where reference is made to standards or specifications published by various organizations ("standards"), the Work shall conform to latest edition of such standards as amended and revised in effect at the date of Contract, unless a specific date is indicated.
- B. Where material is designated for certain applications, material shall conform to standards designated in the applicable building code governing the Work. Similarly, unless otherwise specified, installation methods and standards of workmanship shall also conform to standards required by such code. Where no particular material is specified for a certain use, the Contractor shall select from choices offered in the governing code.
- C. Where a standard does not provide all information necessary for the complete installation of an item, comply with manufacturer's instructions for installation and workmanship.
- D. Where specific articles, sections, divisions or headings for standards are not given, such standards shall apply as appropriate. Standards when included in the Contract Documents by abbreviations or otherwise, shall form a part of Contract Documents. In the event of conflicts between cited standards and/or the Contract Documents, the more stringent shall govern.

2. ABBREVIATIONS AND ACRONYMS

- A. Abbreviations and acronyms used throughout the Contract Documents refer to associations, institutes, societies and other public bodies who publish standards which are readily available to the public, and to the titles of the standards which they publish. Where such abbreviations or acronyms are used in the Contract Documents, they shall mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.
- B. Whenever initials representing such a body are shown, followed by a number or a combination of numerals and letters, reference is to a particular standard to which Contractor shall conform. The number or combination of numerals and letters following abbreviation designates the particular standard to be followed.

3. CONTRACTOR'S DUTIES AND RESPONSIBILITIES

- A. The Contractor shall be responsible when required by Contract Documents, or upon written request from the Construction Manager, to deliver required proof that materials or workmanship, or both, meet or exceed the requirements of a reference standard.

4. CONFLICTING STANDARDS

- A. Where compliance with two or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels refer requirements that are different but apparently equal and other uncertainties to the Architect, through the Construction Manager, for a decision before proceeding.

5. COPIES OF STANDARDS

- A. Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

END OF SECTION 01 090, REFERENCE STANDARDS

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SECTION 01 200 – PROJECT MEETINGS

1. GENERAL

- A. The Construction Manager will determine the agenda for and chair the meetings described below, and also shall prescribe the format for the documentation of the meetings to be produced by the Contractor.
- B. Representatives of the Contractor and its subcontractors and suppliers in attendance at any project meeting shall be qualified and authorized to act on behalf of the entity each represents.
- C. The Contractor shall schedule and administer project meetings throughout progress of Work where specified or required, and shall have the following specific responsibilities:
 - 1. Distribute Construction Manager's agenda for meetings
 - 2. Distribute written notice of each meeting a minimum of four days in advance of meeting date
 - 3. Make physical arrangements for meetings
 - 4. Record minutes, in the format to be provided by the Construction Manager, to include significant proceedings and decisions
 - 5. Reproduce and submit word processed minutes, within four working days after each meeting, to the Construction Manager for approval before further distribution. After approval, distribute copies as follows:
 - a. to all participants in the meeting
 - b. to all parties affected by decisions made at meeting
 - c. to all other parties as may be designated by the County or Construction Manager
- D. The County's user department(s) will be active participants in the design and construction process for this project, and their representative(s) shall be invited to all project meetings for which their presence and/or participation is appropriate.

2. PRE-CONSTRUCTION MEETING

- A. A. Scheduling: Meetings shall be held at least two weeks prior to any Work commencing on the site.
- B. Location: Designated by Construction Manager.
- C. Attendance:
 - 1. Owner/user group representative(s), as appropriate
 - 2. Construction Manager' representative
 - 3. Architect's representative (at it option)
 - 4. Contractor's Project Manager, Superintendent, and other representative(s) as appropriate
 - 5. Major subcontractors and suppliers
 - 6. Others as appropriate
- D. Suggested Minimum Agenda:
 - 1. Discussion of major subcontractors and suppliers
 - 2. Projected construction schedules
 - 3. Critical work sequencing
 - 4. Major equipment deliveries and priorities
 - 5. Project coordination and designation of responsible personnel
 - 6. Procedures and processing of:
 - a. Design issues and decisions
 - b. Field decisions
 - c. Proposal requests
 - d. Submittals
 - e. Change orders
 - f. Applications for payment

7. Adequacy of distribution of Construction Documents
8. Procedures for maintaining record documents
9. Use of premises:
 - a. Office, work and storage areas
 - b. County's, Architect's, and Construction Manager's requirements
10. Construction facilities, controls and construction aids
11. Temporary utilities
12. Safety and first-aid procedures
13. Security procedures and site access controls
14. Housekeeping procedures
15. Traffic and parking procedures
16. Other administrative procedures

3. CONSTRUCTION PROGRESS MEETINGS

- A. Scheduling: Meetings shall be conducted at least bi-weekly throughout the construction phase.
- B. Location of the Meetings: Project field office of Contractor or other location designated by Construction Manager.
- C. Attendance:
 1. Owner/user group representative(s), as appropriate
 2. Construction Manager' representative
 3. Architect's representative (at its option)
 4. Contractor's Project Manager, Superintendent, and other representative(s) as appropriate
 5. Subcontractors and suppliers as appropriate to the agenda
 6. Others as appropriate
- D. Suggested Minimum Agenda:
 1. Actual vs. scheduled progress since previous meeting
 2. Planned construction activities for the next four weeks
 3. Problems with and revisions to construction schedule
 4. Review of off-site fabrication and delivery schedules
 5. Corrective measures and procedures to regain projected schedule
 6. Submittal schedules and expediting
 7. Construction Document clarifications
 8. Field observations, problems, conflicts
 9. Quality control
 10. Actual and potential changes and their impacts
 11. Safety issues

4. PRE-INSTALLATION MEETINGS

- A. Scheduling: Schedule pre-installation meetings for installation of various aspects of the Work prior to the start of installation, or as otherwise specified in the Project Manual. Do not schedule pre-installation meetings until required submittals have been approved.
- B. Location: At jobsite.
- C. Meeting Requirements:
 1. Prior to installation of work, conduct pre-installation meeting at project site with Contractor's superintendent and foreman, primary materials installer, installer of each component of associated work, representative(s) of materials manufacturer(s), inspection and testing agency representative (if any), installers of other work requiring coordination, Construction Manager, Architect, and Owner's representative for the purpose of reviewing job mock-up (if any), job conditions, project requirements and procedures to be followed in performing work.

2. At pre-installation meeting, examine areas and conditions under which work is to be performed. Report in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected. Commencement of work shall constitute acceptance of substrate conditions.
3. At pre-installation meeting, the manufacturer's authorized representative shall inspect storage of job site materials, establish scheduling of initial and final installation of products, and establish the method of preparing written progress reports to Contractor (with copy to Construction Manager) of job conditions and installation.
4. At pre-installation meeting, review manufacturer's product data publications and other published instructions for material installation compliance including shop drawings. Shop drawings and submittals shall be reviewed and approved prior to pre-installation meetings. Contractor shall provide a set of approved shop drawings and submittals for meeting use.
5. Where manufacturer's representative offers recommendations on material use, such recommendations shall be submitted in writing and substantiated by dated, printed, published product data or material use statement which is complete, definite, and clear, and signed by authorized company official.
6. Meeting Report: Submit copy of pre-installation job meeting report. Include copy of manufacturer's inspection report, manufacturer's recommendations, and any statement of non-compliance as applicable.

5. INSPECTION TOURS

- A. Formal inspection tours shall be made of the job progress for the Owner and any other officials as the occasion warrants and as scheduled by the Construction Manager.
- B. If requested by the Construction Manager, the Contractor shall be prepared to show and explain work completed and in progress throughout the Project to the inspection parties.

END OF SECTION 01 200, PROJECT MEETINGS

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SECTION 01 310 – SCHEDULING OF THE WORK

1. INTRODUCTION

- A. This Section describes the construction scheduling and progress reporting requirements of the Contract. The primary objectives of the requirements of this Section are:
1. to insure adequate planning and execution of the Work by the Contractor;
 2. to assist the County and Construction Manager in evaluating the progress of the Work;
 3. to provide for optimum coordination by Contractor of its trades, subcontractors and suppliers, and of its Work with the work or services provided by the County or any separate contractors; and
 4. to permit the timely prediction or detection of events or occurrences which may affect the timely prosecution of the Work.

2. GENERAL SCHEDULING REQUIREMENTS

- A. The Work of this Contract shall be planned, scheduled, executed, and reported. The Contractor shall use the following software program to develop its Detailed Construction Schedule:
1. Microsoft Project, latest version (MPX file)
- B. The Detailed Construction Schedule, as defined herein, shall represent the Contractor's commitment and intended plan for completion of the Work in compliance with the Contract completion date and interim milestone dates specified. The Detailed Construction Schedule shall take into account all foreseeable activities to be accomplished by any separate contractors or the County, and interface dates with utility companies, the County's operations, and others. The Detailed Construction Schedule shall anticipate all necessary manpower and resources to complete the Work within the dates set forth.
- C. Once approved by the Construction Manager, the Detailed Construction Schedule will become the Schedule of Record, and will be the basis for coordinating the Work, scheduling the Work, monitoring the Work, reviewing progress payment requests, evaluating time extension requests, and all other objectives listed above. No other schedule will be recognized for this Contract.
- D. The Contractor is responsible for determining the sequence of activities, the time estimates of the detailed construction activities and the means, methods, techniques and procedures to be employed. The Detailed Construction Schedule shall represent the Contractor's best judgment of how it will prosecute the Work in compliance with the Contract requirements. The Contractor shall ensure that Detailed Construction Schedule is current and accurate and is properly and timely monitored, updated and revised as Project conditions and the Contract Documents may require.
- E. When there are separate contractors working concurrently on the Project whose work must interface or be coordinated with the Work of the Contractor, the Contractor shall coordinate its activities with the activities of the separate contractors, and the Detailed Construction Schedule shall take into account and reflect such work by others.
- F. The Contractor shall be solely responsible for expediting the delivery of all materials and equipment to be furnished by it so that the progress of construction shall be maintained according to the currently approved construction schedule for the Work. The Contractor shall notify the Construction Manager in writing, and in a timely and reasonable manner, whenever the Contractor determines or anticipates that the delivery date of any material or equipment to be furnished by the Contractor will be later than the delivery date indicated by the currently approved construction schedule, or required consistent with the completion requirements of this Contract, subject to schedule updates as herein provided.

3. DETAILED CONSTRUCTION SCHEDULE

- A. Within two (2) weeks after the Notice to Proceed, the Contractor shall submit a Detailed Construction Schedule according to the requirements established herein.

- B. The Detailed Construction Schedule shall consist of a time-scaled, detailed network graphic representation of all activities which are part of the Contractor's construction plan and an accompanying listing of activity's dependencies and interrelationships. The Detailed Construction Schedule submission shall include, but not be limited to, the following information:
1. Project name
 2. Distinct, logical and identifiable subdivisions of Work
 3. Activities for all aspects of the Work, with durations not exceeding fourteen (14) calendar days for all activities for which the Contractor will perform actual construction work. Material procurement, submittals, concrete curing and other similar activities may exceed fourteen (14) calendar days if approved by the Construction Manager. Related activities, each of a duration of five (5) calendar days or less, may be shown as one activity together, if not on the critical path of timely job completion.
 4. Outage schedules for existing utility services that will be interrupted during the performance of the Work
 5. Acquisition and installation of equipment and materials supplied and/or installed by the County or separate contractors
 6. All start dates, milestones, float and completion dates
 7. An accounting of the number of workdays anticipated to be lost due to weather. This accounting shall be in accordance with allowable days per month provided in Article 8 of the *Owner-Contractor Agreement* (Section 00 500).
 8. A tabular report listing all predecessor and successor activities for each activity
 9. A legible time scaled network diagram showing the critical path.
 10. A listing of the project calendar, indicating the anticipated days of work performance
 11. A floppy computer disk, in a form and format acceptable to the Construction Manager, of the Detailed Construction Schedule including all required submission information resident in the computer system and containing all of the files associated with the schedule.
- C. Activities and milestones to appear on the Detailed Construction Schedule shall include, but not be limited to, demolition, major material fabrication and delivery, shop drawings submittals, bi-weekly progress meetings, equipment delivery and installation, coordination requirements, mock-up installations and inspections, dates of Substantial and Final Completion, Certificate of Occupancy inspection, systems testing and instruction, and special County reviews and decision points that impact the Work.
- D. Schedule Reports: Schedule submissions will contain the following minimum information for each activity:
1. Activity number, description and estimated duration
 2. Anticipated start and finish dates
 3. Responsibility for activity
 4. The cost loading values for each activity.
- E. For all major equipment and materials to be fabricated or supplied for the Project, the Detailed Construction Schedule shall show a sequence of activities including:
1. Preparation of shop drawings and sample submissions
 2. A reasonable time for review of shop drawings and samples or such time as specified in the Contract Documents
 3. Shop fabrication, delivery and storage
 4. Erection or installation
 5. Testing of equipment and materials.
- F. The Contractor shall submit, as a part of the data submitted to the Construction Manager, a narrative report indicating the anticipated allocation by the Contractor of the following resources and work shifts for each activity which he proposes to be utilized on the Project:
1. labor resources;
 2. equipment resources; and
 3. whether it proposes the Work to be performed on single, double or triple shifts, and whether it is to be done on a 5, 6 or 7 day work week basis.

- G. The Construction Manager shall have the right to require the Contractor to modify any portion of the Contractor's Detailed Construction Schedule, or Recovery Schedule, as herein required, (including cost loading) with the Contractor bearing the expense thereof, which the Construction Manager reasonably determines to be:
1. impractical or unreasonable;
 2. based upon erroneous calculations or estimates;
 3. not in compliance with other provisions of the Contract Documents;
 4. required in order to ensure proper coordination by the Contractor of the Work of its subcontractors and with the work or services being provided by any separate contractors;
 5. necessary to avoid undue interference with the County's operations or those of any utility companies or adjoining property owners;
 6. necessary to ensure completion of the Work by the milestone and completion dates set forth in the Contract Documents;
 7. required in order for the Contractor to comply with the requirements of this Section or any other requirements of the Contract Documents; or
 8. not in accordance with the Contractor's actual operations.

4. COST LOADING

- A. As part of the submission of the Detailed Construction Schedule, the Contractor shall submit a breakdown of the expected value of each of the schedule activities for which payment is required.
- B. The cost breakdown of the Detailed Construction Schedule shall have a direct correlation to the Schedule of Values to be used as the basis for Applications for Payment.

5. UPDATING OF CONSTRUCTION SCHEDULE/PROGRESS REPORTS

- A. Not less than seven (7) calendar days before the submission of the monthly progress payment request, or on a date specified by the Construction Manager, the Contractor shall arrange for its Project Manager, Superintendent and necessary subcontractors and suppliers to attend a monthly schedule meeting with the Construction Manager to review the Contractor's report of actual progress. Said report shall set forth up-to-date and accurate progress data, and shall be prepared by the Contractor in consultation with all principal subcontractors and suppliers.
- B. The progress report of the Contractor shall show the activities, or portions of activities, completed during the reporting period, the actual start and finish dates for these activities, remaining duration and/or estimated completion dates for activities currently in progress, and quantities of material installed during the reporting period.
- C. The Construction Manager will produce a computerized update worksheet for the Contractor to complete as a part of this process.
- D. At the monthly schedule meeting a total review of the Project will take place including but not limited to, the following:
1. Current update of the Detailed Construction Schedule
 2. Anticipated detailed construction activities for the subsequent report period
 3. Critical items pending
 4. Contractor requested changes to the Detailed Construction Schedule.
- E. The Contractor shall submit a narrative with the progress report which shall include, but not be limited to, a description of problem areas, current and anticipated delaying factors and their impact, explanations of corrective actions taken or planned, any proposed newly planned activities or changes in sequence, and proposed logic for a Recovery Schedule, if required, as further described herein. The report shall also include:
1. A narrative describing actual Work accomplished during the reporting period
 2. A list of major construction equipment used on the Project during the reporting period

3. The total number of men by craft actually engaged in the Work during the reporting period, with such total stated separately as to office, supervisory, and field personnel
 4. A manpower and equipment forecast for the succeeding thirty (30) days, stating the total number of men by craft, and separately stating such total as to office, supervisory and field personnel
 5. A list of Contractor supplied materials and equipment, indicating current availability and anticipated job site delivery dates
 6. Anticipated changes or additions to Contractor's supervisory personnel.
- F. As part of the updating process, the Construction Manager will calculate, based upon progress data provided by the Contractor and agreed to by the Construction Manager, the value of Work completed based on the sum of the cost loading amounts for all activities, including activities specifically defined for stored materials, less the amount previously paid. Summation of all values of each activity less the appropriate percent of retainage shall be the maximum amount payable to the Contractor, provided that the Contractor has complied with all requirements of the Contract Documents.
- G. No invoice for payment shall be submitted and no payment whatsoever will be made to the Contractor until the required narrative reports, as defined herein, have been submitted and the Detailed Construction Schedule has been updated.

6. RECOVERY SCHEDULE

- A. Should the updated Detailed Construction Schedule, at any time during the Contractor's performance, show, in the sole opinion of the Construction Manager, that the Contractor is behind schedule for any milestone or completion date for any location or category of work, the Contractor, at the request of the Construction Manager, shall prepare a Recovery Schedule within five (5) days, at no additional cost to the County (unless the County is solely responsible for the event or occurrence which has caused the schedule slippage), explaining and displaying how the Contractor intends to reschedule its Work in order to regain compliance with the Detailed Construction Schedule within thirty (30) calendar days.
- B. If the Contractor believes that all of the time can be recovered within thirty (30) calendar days, the Contractor will be permitted to prepare a Recovery Schedule as set forth below. However, if the Contractor believes it will take more than thirty (30) days to recover all of the lost time, it shall prepare and submit a request for revision to the Detailed Construction Schedule and comply with all of the requirements of a Schedule Revision as set forth in Paragraph 8 below.
- C. The Contractor shall prepare and submit to the Construction Manager a one month maximum duration Recovery Schedule, incorporating the best available information from subconsultants, subcontractors and others which will permit a return to the Detailed Construction Schedule at the earliest possible time. The Contractor shall prepare a Recovery Schedule to the same level of detail as the Detailed Construction Schedule. The Recovery Schedule shall be prepared in coordination with other separate contractors on the Project.
- D. Within two (2) days after submission of the Recovery Schedule to the Construction Manager, the Contractor and any of the necessary subcontractors, suppliers, vendors, manufacturers, etc. shall participate in a conference with the Construction Manager to review and evaluate the Recovery Schedule. Within two (2) days of the conference, the Contractor shall submit the revisions necessitated by the review for the Construction Manager's review and approval. The Contractor shall use the approved Recovery Schedule as its plan for returning to the Detailed Construction Schedule.
- E. The Contractor shall confer continuously with the Construction Manager to assess the effectiveness of the Recovery Schedule. As a result of these conferences, the Construction Manager will direct the Contractor as follows:
1. If the Construction Manager determines the Contractor continues behind schedule, the Construction Manager will direct the Contractor to prepare a Schedule Revision and comply with all of the requirements of a Schedule Revision as stated herein and the other requirements of the Contract Documents; provided, however, that nothing herein shall limit in any way the rights and remedies of the County and Construction Manager as provided elsewhere in the Contract Documents; or

2. If the Construction Manager determines the Contractor has successfully complied with provisions of the Recovery Schedule, the Construction Manager will direct the Contractor to return to the use of the approved Detailed Construction Schedule.
- F. In carrying out any approved Recovery Schedule, or whenever it becomes apparent that any critical activity completion date may not be met, the Contractor shall take any or all of the following minimum actions, as may be required, at no additional cost to the County:
 1. Increase manpower to put the Work back on schedule.
 2. Increase the number of working hours per shift, shifts per working day, working days per week, amount of construction equipment, or any combination which will place the Work back on schedule.
 3. Reschedule activities to achieve maximum practical concurrence and place the Work back on schedule.
- G. If the Contractor fails to take appropriate action as required by this Paragraph 7 to recover delays in the schedule, the Construction Manager may take action to attempt to put the Work back on schedule and deduct the cost of such action from monies due or to become due the Contractor in accordance with the Contract Documents.

7. SCHEDULE REVISIONS

- A. Should the Contractor desire to or be otherwise required under the Contract Documents to make modifications or changes in its method of operation, its sequence of Work or the duration of the activities in its Construction Schedule, it shall do so in accordance with the requirements of this
 1. Paragraph and the Contract Documents. The approved Detailed Construction Schedule may only be revised by written approval of the Construction Manager as provided herein.
- B. The Contractor shall submit requests for revisions to the Detailed Construction Schedule to the Construction Manager, using a Schedule Revision Form provided by the Construction Manager, together with written rationale for revisions and description of logic for rescheduling work, substantiating that the milestone and completion dates will be met as listed in the Contract Documents. Proposed revisions acceptable to the Construction Manager and County will be approved in writing and incorporated into the Detailed Construction Schedule.
- C. Requests for revision will be accompanied by evidence acceptable to the Construction Manager that the Contractor's suppliers, subcontractors and sub-subcontractors are in agreement with the proposed revisions.
- D. If there are separate contractors on the Project, the approval of the separate contractors shall be obtained to make the proposed schedule revisions. If accepted by the Construction Manager and County, the revisions shall be binding upon the Contractor and all separate contractors on the Project.
- E. The impact of all change orders to this Contract shall be included in the Detailed Construction Schedule.

8. FLOAT TIME

- A. Float or slack time associated with one chain of activities is defined as the amount of time between earliest start date and latest start date or between earliest finish date and latest finish date for such activities, as calculated as part of the currently approved construction schedule. Float or slack time shown on the currently approved construction schedule is not for exclusive use or benefit of either the County or the Contractor and is available for use by either of them according to whichever first needs the benefit of the float to facilitate the effective use of available resources and to minimize the impact of Project problems, delays, impact, acceleration or changes in the Work which may arise during performance. The Contractor specifically agrees that float time may be used by the County or Construction Manager in conjunction with their review activities or to resolve Project problems. The Contractor agrees that there will be no basis for any modification of the milestone or completion dates or an extension of the Contract Time, or a claim for additional compensation as a result of any Project problem, delay, impact, acceleration, or change order which only results in the loss of available float on the currently approved construction schedule.
- B. Float time shown on any construction schedule shall not be used arbitrarily by the Contractor in a manner which, in the opinion of the Construction Manager, unnecessarily delays separate contractors from proceeding with their work in a way which is detrimental to the interests of the County.

END OF SECTION 01 310, SCHEDULING OF THE WORK

SECTION 01 320 – REPORTS

1. DAILY REPORTS

- A. The Contractor's Superintendent shall prepare and submit Daily Reports throughout the construction phase of the Work. Daily Reports shall be kept in an orderly manner at the site, available for inspection or review when requested by the Construction Manager or the Architect. Copies of Daily Reports shall be accumulated and submitted to the Construction Manager on a weekly basis, on a regular day and time to be determined by the Construction Manager. Failure to submit Daily Reports or to comply with the format requirements below is cause for the Construction Manager to retain additional monies due the Contractor from the monthly Application(s) for Payment until such time as the reports have been brought up to date by the Contractor.
- B. Each Daily Report shall include the following information at a minimum:
1. Manpower by subcontractor, trade, and skill level
 2. Weather and temperatures (AM and PM)
 3. List of visitors to the jobsite
 4. Specific work performed with locations
 5. Situations or circumstances which could delay the Work or give cause for a time extension or additional cost
 6. Instructions requested (and of whom)
 7. Materials received
 8. Major equipment arrival/departure
 9. Total days accrued under the terms of the Contract Documents
 10. Accidents and incidents
 11. Safety issues
 12. Meetings
 13. Other significant events at the jobsite
- C. The Contractor shall take the necessary action required to specifically alert the Construction Manager to items which could result in impacts to the progress of the Work. Such items shall be clearly highlighted in the report.
- D. All Daily Reports shall be clearly handwritten or typed. Poor copies, reports in sloppy or illegible handwriting, or on wrinkled paper will not be accepted.

END OF SECTION 01 320, REPORTS

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SECTION 01 340 – SHOP DRAWINGS, PRODUCT DATA & SAMPLES

1. GENERAL

- A. This Section covers provisions for the submittal of shop drawings, product data, and samples prior to construction, and supplements the Owner-Contractor Agreement.
- B. The Contractor is required to make all submittals in accordance with the Contract Documents. Refer to the individual Technical Specifications for identification of equipment and materials for which submittals are required.
- C. Provisions in this Section are mandatory procedures for preparing and submitting shop drawings, product data, and samples.
- D. Required shop drawings, product data, and samples shall be coordinated, prepared, and submitted so as not to impact the project schedule. Submittals for interfacing units of work, and different categories of submittals for the same work, shall be coordinated and sequenced so that one will not be delayed by another. Adequate time shall be allowed for review by the Architect, and for possible resubmittal. Delays or impacts due to the Contractor's failure to make or process submittals in a timely fashion are solely the responsibility of the Contractor. The Contractor has an obligation to notify the Construction Manager in a timely manner if the submittal review process, with respect to reviews by the Architect might cause a schedule impact on the required delivery of any materials or fabricated assemblies required to execute the Work.
- E. Project delays or delays in the purchasing of materials or equipment occasioned by the requirement for resubmission of shop drawings, product data, and samples not in accordance with the Contract Documents are the Contractor's sole responsibility and will not be considered valid justification for time extensions.
- F. No portion of the Work requiring the submittal of shop drawings, product data, or samples shall be commenced until each such submittal has been reviewed by the Architect, and the action required on the returned submittal does not require a correction and resubmittal (i.e., "No Exceptions Taken" or "Make Corrections Noted," or similar notation); and further, each installer shall have possession of such final reviewed submittal prior to commencing its portion of the Work.
- G. The Contractor shall be responsible for distribution of all copies of initial and approved submittals required for coordination with others concerned with the Work.
- H. Submittals requiring review by the Architect shall be delivered to the Construction Manager's office, unless directed otherwise by the Construction Manager. Submittals are to be scheduled and submitted to allow adequate time for review.

2. DEFINITIONS

- A. "Shop Drawings" are drawings, diagrams, illustrations, schedules, performance charts, manufacturer's data sheets, brochures and other data which are prepared and submitted by the Contractor and its subcontractors to illustrate in detail some portion of the Work. The Architect's drawings are not acceptable as shop drawings.
- B. "Product Data" are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor and its subcontractors to illustrate a material, product, or system for some portion of the Work.
- C. "Samples" are physical examples prepared for submission by the Contractor and its subcontractors to illustrate materials, equipment, or workmanship, and to establish standards by which the work will be judged as complying with the Contract Documents. Mock-ups are a special form of samples, too large or otherwise inconvenient for transmittal in the manner specified. Mock-up requirements are specified elsewhere in the Contract Documents.

3. SUBMITTAL REGISTER

- A. Within ten (10) days of the Contractor's receipt of the Notice of Award, the Contractor shall submit a comprehensive Submittal Register to the Construction Manager, showing all items requiring submission as defined in the General Requirements and the Technical Specifications.
- B. No submittals will be accepted or reviewed until the Submittal Register has been submitted, reviewed, and approved by the Architect and the Construction Manager as to content and format.
- C. The Submittal Register shall be updated by the Contractor and resubmitted on a monthly basis, or as otherwise required by the Construction Manager.
- D. The initial format of the Submittal Register shall be determined by the Contractor. If any aspect is lacking, the Submittal Register shall be reworked and resubmitted in a format as prescribed by and to the level of detail required by the Construction Manager.
- E. The Submittal Register shall be organized by Specification Section, and shall be further broken down as submittals from subcontractors will be structured.
- F. The Submittal Register shall include all required submittals for test procedures, training programs, operation and maintenance manuals, and any other submittals required by the General Requirements.
- G. The Submittal Register shall include the following information at a minimum:
 - 1. Submittal breakdown by Specification Section and Paragraph number.
 - 2. Scheduled date for initial submittal of each item.
 - 3. Number of calendar days required after review to fabricate and deliver the specified item to the jobsite (if applicable).

4. PREPARATION OF SUBMITTALS

- A. General Identification: All shop drawings, product data, and samples submitted for review shall have the following identification data, as applicable, contained thereon or permanently affixed thereto.
 - 1. Date of submission and the dates of any previous submissions
 - 2. Project title and location
 - 3. Job number
 - 4. Contract identification
 - 5. Names of the Contractor, subcontractor, installer, supplier, and manufacturer
 - 6. Identification of product (brand name, model number), use, and location
 - 7. For each shop drawing: drawing number, drawing title, revision number, and date of drawing and all subsequent revisions
 - 8. Corresponding Specification Section and Paragraph reference from Contract
 - 9. Documents
 - 10. Field dimensions, clearly identified as such
 - 11. Relation to adjacent or critical features of Work or materials
 - 12. Applicable standards, such as ASTM or Federal Specification numbers
 - 13. Identification of deviations from the Contract Documents
 - 14. Identification of revisions from previous submittals (if a resubmittal)
 - 15. Contractor's stamp, initialed or signed, and dated
- B. Shop Drawing Preparation
 - 1. Provide newly-prepared information with graphics at accurate scale (except as otherwise indicated).
 - 2. Number all sheets consecutively.
 - 3. Indicate all working and erection dimensions. Identify all dimensions based on field measurement.
 - 4. Show arrangements and sectional views.

5. Indicate kinds of materials and finishes, anchoring and fastening details, including information for making connections to other Work. Furnish installation instructions to be followed in the field to achieve manufacturer's designed and planned intentions.
6. Indicate corresponding detail numbers from Contract Drawings in addition to numbering systems used on shop drawings.
7. Form:
 - a. Up to 11" x 17" in size may be either prints on opaque paper, or reproducible transparency. The use of 8-1/2" x 14" size shall not be acceptable.
 - b. Prepare submissions larger than above on reproducible, correctable transparent sheets between 18" x 24" (minimum) and 30" x 45" (maximum) in size.
8. Number of copies to be submitted:
 - a. The Contractor shall submit one (1) reproducible copy and five (5) print copies for review.
 - b. Copies shall be grouped together such that one set of all copies can be removed
 - c. immediately without the necessity to remove and re-sequence the remaining copies.
9. Associated drawings relating to a complete assembly shall be submitted simultaneously to the greatest extent possible, so that each may be checked in relation to each other and the total assembly.
10. Composite Coordination Shop Drawings:
 - a. a. The locations and routing of all mechanical and electrical systems shall be delineated on coordinated composite layout drawings, to be submitted by the Contractor and reviewed by the Architect and the Construction Manager according to the procedures above. Such coordination shall consider all other building systems, including structural members and their elevations.
 - b. The composite drawings shall accommodate layering of ductwork, plumbing supply, waste, roof drainage and vent piping, fire protection piping, HVAC piping, electrical conduit, control systems conduit, light fixture locations, sprinkler head locations, HVAC ceiling-mounted and wall-mounted air devices, and life-safety system device locations.
 - c. Provide plan views of all ceiling plenum spaces, duct and pipe shafts, and mechanical and electrical rooms. Show all ceiling grid patterns and walls. Clearly indicate top and bottom elevations of work, including elevations of wall-mounted devices.
 - d. Clearly indicate all penetrations of smoke and fire-rated walls and ceilings. Indicate recommended smoke stop or fire stop method, cross-referenced to Division 7 Specification requirements.
 - e. Composite drawings shall be 1/4" = 1'-0" minimum scale.

C. Product Data Preparation

1. Product data submittals shall be made by Specification Section. All items within a Specification Section requiring submissions shall be submitted together. If two or more Sections require inter-coordination (e.g. Air Handling Unit and Vibration Isolation, or Emergency Generator and Transfer Switch), they shall be submitted at the same time. Each individual submittal item shall be marked to show the Specification Paragraph number which pertains to that item.
2. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and coordination requirements.

3. Clearly mark each copy to identify pertinent products, brand names, or models, and to indicate which choices and options are applicable to the Work.
4. Modify each copy to delete information which is not applicable to the Work. Supplement standard information to provide information specifically applicable to the Work and to job conditions.
5. Include performance characteristics and capacities.
6. Include dimensions and clearances required.
7. Include wiring or piping diagrams and controls.
8. Form:
 - a. Submit all items within a Specification Section in a tabbed binder, with an index.
 - b. Submittals for multiple but related Specification Sections may be grouped in the same binder, if adequately indexed and tabbed for easy reference.
 - c. If product submittals bound together exceed the capacity of one binder, two or more binders shall be used, and notations shall be made on the covers of each indicating the number of binders in the set and the number of each binder (i.e., 2 of 3).
9. Number of copies to be submitted: five (5).

D. Sample Preparation

1. Provide samples which are identical with the final condition of proposed materials or products for the Work.
2. Provide "range" samples (not less than three (3) units) where unavoidable variations must be expected, and describe or identify variations between units of each set.
3. Provide a full set of optional samples where selection is required.
4. Provide information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards.
5. Number of samples to be submitted: three (3).
6. Maintain one set of all approved samples at the jobsite, in suitable condition, for quality control comparisons by the Construction Manager. Jobsite quality control samples shall become the property of the County.
7. Returned submittals which are intended or permitted to be incorporated into the Work shall be so indicated in the individual Specification Sections, and shall be in a suitable and undamaged condition at the time of incorporation.

E. Other Submittals

1. Inspection and Test Reports: Classify each as either a "shop drawing" or "product data," depending on whether report is uniquely prepared for the Project or a standard publication of workmanship control testing at point of production, and process accordingly.
2. Letters of Material Certification: Submit for specified materials, items, or equipment, and when requested. Letters of certification shall certify that material or equipment submitted complies with the Contract Documents and shall be submitted with substantiating supporting data (i.e., test reports from approved independent testing laboratory or other approved source). Classify as "product data."
3. Fire Rating and Acoustical Rating Certifications: Submit notarized certifications with shop drawings and material samples which are required to show or have a fire or acoustical rating.

5. TRANSMITTAL

- A. Transmit all shop drawings, product data, and samples to the Construction Manager for transmittal to the Architect.
- B. Accompany each submittal to the Construction Manager with a transmittal letter, in duplicate, containing the Project name, Contractor's name, contract number and description, and brief description of submittal, including the number of drawing sets, data sets, and/or samples included. Include an outline of deviations, if any, from the requirements of the Contract Documents, and itemize proposed changes in the Contract Sum or Contract Time, if any. Where no change in the Contract Sum or Contract Time is indicated by the Contractor, it shall be concluded that no such change is involved for making the change.

6. CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall prepare and submit all submittals with promptness and in accordance with the project schedule.
- B. The Contractor shall determine and verify prior to submittal of any shop drawing, product data, or sample, the following:
 - 1. Field measurements
 - 2. Field construction criteria and job conditions
 - 3. Catalog numbers and similar data
 - 4. Conformance with Specifications
- C. Any deviation in a submittal from the requirements of the Contract Documents shall be called to the attention of the reviewing party in writing at the time of the submittal.
- D. The Contractor shall affix its stamp, with initials or signature, and date, prior to submittal to the Construction Manager, indicating its review and concurrence that the submittal conforms to the Contract Documents.
- E. All copies of submittals shall include the stamp indicated above, and previous revisions, if any, shall be clouded and noted. Failure to adhere to these requirements will result in the return of the unreviewed submittal to the Contractor for re-submittal, with the Contractor responsible for any impact to the project schedule resulting there from.
- F. If re-submittals are necessary, they shall be made as specified above for initial submittals. Re-submittals shall highlight all revisions made and the cover shall include the phrase, "Re-submittal No. _____."
- G. All re-submittals shall carry the same submittal number but shall have a suffix designation which is designed to signify that the package is a re-submittal. This suffix designation shall be changed for each subsequent re-submittal.

7. CONSTRUCTION MANAGER'S RESPONSIBILITIES

- A. The Construction Manager will provide a general review of all submittals for completeness and compliance with submittal procedures as outlined herein.
- B. The Construction Manager will return to the Contractor, without review, all submittals not bearing the Contractor's review stamp or not indicating that the submittal has been reviewed by the Contractor. All costs resulting from unnecessary delays of this type will be the responsibility of the Contractor.
- C. The Construction Manager will forward acceptable submittals to the Architect for review.
- D. After the Architect review, the Construction Manager will forward reviewed submittals to the Contractor and retain one copy for the County. The Contractor will provide additional distribution copies to the Construction Manager of any submittals in a "No Exceptions Taken" status as directed by the Construction Manager at any time during execution of the contract.

8. ARCHITECT'S RESPONSIBILITIES

- A. Shop drawings, product data, and samples will be examined by the Architect with reasonable promptness and returned to the Construction Manager. Allow a reasonable time for processing by the Architect and the Construction Manager in addition to transit time.
- B. Shop drawings, product data, and samples will be returned to the Contractor noted for action as follows:
 - 1. "Rejected" – indicates that the submission is unacceptable and requires resubmission. In the case of a mock-up, reconstruction will be required. The Contractor shall make corrections as noted and resubmit. Fabrication shall not begin on items covered by submittals bearing this notation.
 - 2. "Make Corrections Noted" – indicates that the Contractor shall make the corrections indicated on the returned submittal. This notation will permit fabrication to begin on all items subject to the corrections indicated. If "Resubmit" has been added after "Make Corrections Noted," the Contractor shall delay fabrication on items affected by the corrections, make appropriate changes and resubmit.
 - 3. "No Exceptions Taken" – indicates that fabrication may begin on all items.
 - 4. "Not Required for Review" – indicates that no submittal is required.
- C. The Architect will apply its document review stamp, with signature or initials, on all reviewed copies of submittals. Through the Construction Manager, one copy of all reviewed submittals will be returned to the Contractor; for shop drawings where reproducible copies are submitted, one print and one reproducible copy will be returned.
- D. The Technical Specifications for structural, mechanical and electrical work may modify the above requirements and shall govern in the event of conflict.
- E. If the Contractor has a complaint with either the time required or the information provided by the Architect's review, it shall be expressed in writing at the time the submittal is returned. Failure by the Contractor to file such complaints at that time will prevent attempting to allege delays or impacts resulting there from at a later date. Such complaints must be fully detailed, and if additional information is requested by the Construction Manager, it shall be provided as soon as becomes available, but in no case later than ten (10) days from the return of the submittal in question.
- F. The Architect's review of a submittal shall not be construed as an indication that it is correct or suitable, nor that Work represented by a submittal complies with the Contract Documents, except as to matters of finish, color, and other aesthetic matters left to the Architect's decision by the Contract Documents. Further, reviews by the Architect of submittals of details for any material, apparatus, device, etc., will not relieve the Contractor from responsibility for furnishing same of proper dimension, size, quantity, and quality to efficiently perform the Work and carry out the requirements and intent of the Contract Documents.

9. RECORD SUBMITTALS

- A. At Substantial Completion of the Work, the Contractor shall deliver to the Construction Manager one copy of all final, approved submittals for the County's record.
- B. Record submittals not in the form of drawing rolls shall be neatly labeled and organized by Specification Section and boxed in a "Banker's Box" or equivalent. Rolls of shop drawings shall be labeled appropriately for easy reference.

END OF SECTION 01 340, SHOP DRAWINGS, PRODUCT DATA & SAMPLE

SECTION 01 370 - SCHEDULE OF VALUES

1. GENERAL SUMMARY

- A. The Contractor shall submit to the Construction Manager a Schedule of Values for the entire Contract, either within ten (10) days of Contract award or fifteen (15) days prior to the first Application for Payment deadline, whichever comes first.
- B. Breakdown and Content
 - a. The Schedule of Values will be submitted in a format as prescribed by and to the level of detail specified by the Construction Manager.
 - b. The sum of the parts of the Schedule of Values shall aggregate to the total Contract Sum.
- C. The minimum level of breakdown will normally be:
 - a. General Conditions line item(s) as required
 - b. Construction costs, by CSI Division or major trade, and broken down into labor and material line items for specific areas of the facility
 - c. Stored material projections
- D. Schedule of Values items shall have a direct and understandable relation to the Project CPM Schedule.

2. SCHEDULE OF VALUES UTILIZATION

A. Applications for Payment

The Schedule of Values, unless objected to by the Construction Manager or the Architect, shall be the basis for the Contractor's Applications for Payment.

B. Changes to the Schedule of Values

The Construction Manager shall have the right to require the Contractor to alter the value or add/delete categories listed on the Schedule of Values at any time for the following reasons:

- 1. The Schedule of Values appears to be incorrect or unbalanced.
- 2. A revision to the segregation of values is required due to the Contractor revising the sequence of construction or assembly of building components, which in turn invalidates the Schedule of Values.
- 3. Change Orders are issued to the Contractor and require incorporation into the Schedule of Values.

C. Stored Materials

The Contractor is required to correlate the documentation for payment of stored materials requested in the Application for Payment against the agreed upon breakdown of the Schedule of Values. The Construction Manager reserves the right to not process the Application for Payment if this correlation has not been submitted in conjunction with the Application.

END OF SECTION 01 370, SCHEDULE OF VALUES

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SECTION 01 400 – QUALITY CONTROL

1. GENERAL

- A. Refer to the Technical Specifications for specific quality control activities to be performed, and for the inspection and testing required by public authorities having jurisdiction.
- B. The Contractor shall furnish all labor, materials, tools, equipment and services for quality control of materials, components and systems incorporated or to be incorporated the Work, so as to adequately and acceptably perform the Work as required by the Contract Documents. All testing and inspection, whether required by the Contract Documents; by laws, ordinances, rules, regulations, codes or orders of any public authority having jurisdiction; or whether performed by the Contractor for qualification of materials or its convenience, shall be at the Contractor's expense unless otherwise indicated in the Contract Documents.
- C. The Contractor shall be fully responsible for quality control. The Contractor shall employ an individual on its staff who shall be primarily responsible for ensuring an acceptable level of quality on the Project. This individual shall not be the Contractor's Project Superintendent.
- D. The Contractor shall completely coordinate its Work internally and with the work of any separate contractors. Although such Work may not be specifically indicated in the Contract Documents, the Contractor shall furnish and install all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation.
- E. At any time during the execution of the Contract, the Construction Manager may notify the Contractor that some aspect of quality control is not being correctly performed. If the Contractor fails to respond to a request for quality control surveys or reports, or to a second request for proper preparatory work in an area for the purpose of a test or inspection, including a punch list inspection, the Construction Manager or the County may provide this work and deduct the cost of such work from the value of the Contract.

2. PUNCH LIST INSPECTIONS

- A. The preparation of the Work or a portion thereof prior to a punch list inspection shall be solely the Contractor's responsibility. The Contractor shall first verify, and then certify that the Work for which a punch list inspection is being requested is in such a state that it may be easily punched out for acceptance by the Architect, the Construction Manager and/or the County. Failure to properly prepare the Work for a punch list inspection shall constitute a failure to perform a quality control duty, and the Construction Manager may take appropriate action as defined in Paragraph 1.E above.

END OF SECTION 01 400, QUALITY CONTROL

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SECTION 01 500 – CONSTRUCTION FACILITIES & TEMPORARY CONTROLS**1. INTRODUCTION**

- A. The Contractor shall provide all construction facilities and temporary controls throughout the construction period unless otherwise indicated in the Contract Documents.
- B. The Contractor shall pay all costs for providing, maintaining, and removing all construction facilities and temporary controls unless otherwise indicated in the Contract Documents.

2. QUALITY ASSURANCE

All work specified herein shall be performed in a workmanlike manner and shall be in accordance with applicable codes, OSHA regulations, utility company rules and regulations, and other rules and regulations of any other authorities having jurisdiction.

3. JOB CONDITIONS

- A. The Contractor shall establish and initiate use of each construction facility or temporary control at the time first reasonably required for proper performance of Work. Terminate use and remove facilities and controls at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.
- B. The Contractor shall install, operate, maintain and protect construction facilities and temporary controls in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.
- C. Conservation: In compliance with County policy on energy/materials conservation, install and operate construction facilities and temporary controls and perform construction activities in a manner which reasonably will be conservative and avoid waste of energy and materials, including water and electric power.

4. TEMPORARY UTILITIES – GENERAL

(NOT USED)

5. TEMPORARY POWER DISTRIBUTION

- A. Temporary electrical power service shall be installed and maintained such that power can be secured at any desired point with no more than a 60 foot extension cord.
- B. Service shall be sufficient for the following items:
 - 1. Power centers for miscellaneous tools and equipment used in the construction work, each with a minimum of four 20-amp, 120 volt grounding type outlets. Each outlet shall provided with ground fault detecting circuit breaker protection.
 - 2. Adequate lighting for safe working conditions, provided and maintained on a 24-hour basis, throughout the building including stairways. At least 0.25 watts of incandescent lighting per square foot for general use must be installed and maintained in all areas where work is in progress. Each lamp must be rated at least 100 watts. Voltage of each socket must be at least 110 volts.
 - 3. Power for any equipment used for temporary heating and ventilation, and for start-up testing of any permanent electric-powered equipment prior to its connection to permanent electrical system.
- C. Power for electric welding shall be provided via the temporary electrical system or engine-driven power generator sets. Coordinate all connections for welding equipment with the Construction Manager.

D. Regulatory Agency Requirements:

1. The Contractor shall obtain any and all permits required by local authorities having jurisdiction, as applicable to any temporary power work performed.
2. The temporary electrical service shall comply with the National Electrical Code as currently adapted by local authorities, and all other applicable local codes and utility regulations.

E. Materials:

1. The materials may be new or used, but must be adequate in capacity for the purposes intended and must not create unsafe conditions or violate the requirements of applicable codes.
2. Use wire, cable, or busses of appropriate type, sized in accordance with the National Electrical Code for the applied loads. Use only UL-labeled wire and devices.

F. Equipment: Provide appropriate enclosures for the environment in which equipment is placed and used, in compliance with NEMA standards.**G. Installation:**

1. Install all work with a neat and orderly appearance.
2. Make the work structurally sound throughout.
3. Maintain the system to give continuous service and to provide safe working conditions.
4. Modify temporary power and lighting installation as job progress requires.
5. Locate work such that interference with storage areas, traffic areas and other work is avoided.
6. Remove all temporary equipment and materials completely upon completion of construction.
7. Repair all damage caused by the installation and restore to satisfactory condition.

H. TEMPORARY LIGHTING**(NOT USED)****I. TEMPORARY WATER**

J. Water for Construction: Construction water may be provided from available existing water mains or by use of temporary tanks. When connecting to existing water service lines, perform all work according to the requirements of, and obtain any and all permits required by, local authorities having jurisdiction. Remove all temporary installations and equipment upon completion of construction.

K. Drinking Water: Provide drinking water adequate in quantity, quality and locations for all personnel at the project site. Furnish paper drinking cups and waste receptacles at each drinking water dispensing location.

6. TEMPORARY HEAT AND VENTILATION**(NOT USED)****7. TEMPORARY FIRE PROTECTION****(NOT USED)**

8. TEMPORARY ENCLOSURES**(NOT USED)****9. TEMPORARY SANITARY FACILITIES**

A. Provide and maintain sanitary toilet facilities for use of all personnel at the project site. Either piped (wet) toilet facilities or self-contained chemical toilet units may be used.

B. The number of sanitary facilities required shall be based on the total number of workers employed on the site and shall be in accordance with the provisions of the applicable code. Separate toilet facilities for men and women shall be provided when both sexes are working in any capacity on the project site.

C. All sanitary facilities shall be maintained by the Contractor in a safe, clean, and sanitary conditions at all times.

10. CONSTRUCTION TRAFFIC INGRESS TO AND EGRESS FROM SITE

A. Routes to Construction Site: The Contractor shall inform and insure compliance of its subcontractors and suppliers regarding the recommended traffic route(s) from major highways to the jobsite. For all traffic off of the jobsite, the Contractor shall coordinate with, and obtain any necessary permits from, appropriate authorities having jurisdiction.

B. Construction Site Access: All construction traffic, including deliveries of materials and equipment, shall enter and exit the site only by the routes prescribed on a site access and parking plan submitted by the Contractor and approved by the Construction Manager prior to start of construction (see Subparagraph 14.I below).

C. Cleaning: The Contractor shall take all precautions necessary to prevent the tracking of mud and debris onto paved roads adjacent to the jobsite. The Contractor shall immediately clean any affected area if directed by the Construction Manager. The utilization of wheel wash areas located at all site entrance/exit points is mandatory for all vehicles leaving the site if the tracking of mud or debris onto adjacent streets would result otherwise.

11. SITE ACCESS ROADS AND PARKING AREAS

A. Provide and maintain vehicular access to and within the site for use by all persons and equipment involved in construction of the Project.

B. New temporary access roads shall be constructed across designated easements from public thoroughfares only as allowable by local authority having jurisdiction.

C. Provide adequate access for emergency vehicles.

D. Provide and maintain temporary parking areas for use by construction personnel. Do not use any existing parking lots which may exist at existing facilities on the site unless specific authorization is given by the County. If parking needs exceed onsite capacity, provide offsite parking as necessary, as well as transportation to and from the site if distance dictates.

E. All traffic and parking areas shall be filled, compacted, and graded as necessary to provide suitable support for vehicular traffic under anticipated loadings.

F. Maintain all onsite traffic and parking areas free of excavated materials, construction equipment, construction materials, debris, snow and ice. Provide for surface drainage for all traffic and parking areas, and implement and maintain dewatering if and as necessary.

- G. Keep fire hydrants, water control valves, and all other utilities requiring possible access free from obstructions.
- H. Provide temporary directional signage as necessary.
- I. Prior to the start of construction, submit to the Construction Manager for approval a complete site access/utilization and parking plan, incorporating the requirements described above.

12. STORAGE AREAS

- A. The Contractor shall be responsible for all onsite and offsite storage of materials and equipment required for the Project. Onsite storage is subject to the review and approval of the Construction Manager.
- B. All combustible or flammable materials shall be safely stored in a secured area in strict accordance with regulations, codes, and laws enforced by local, State, or Federal agencies, whatsoever is the most stringent.
- C. If the Construction Manager, for good reason, directs that any or all materials stored on the site must be removed, the Contractor shall do so within ten (10) days of written notice of same. Stored materials not removed in a timely manner will be removed by the Construction Manager at the Contractor's expense.

13. TEMPORARY FIELD OFFICE AND TOOL STORAGE FACILITIES

- A. The Contractor shall provide a trailer or other suitable temporary building for a field office, which shall contain office space required for the Contractor's operations, a conference room of suitable size for regular progress meetings, toilet facilities, and a separate spare office for a County, Architect, or Construction Manager representative to use when onsite. Ample space shall be provided for storage of all construction documentation. The trailer shall have telephone service for use by the Contractor and its subcontractors, and shall also have a working intrusion alarm system. One sign with the Contractor's name may be placed on the trailer.
- B. The Contractor may provide other temporary trailers or buildings for storage and maintenance as required and as space permits.
- C. All field office and storage structures shall be placed or constructed in accordance with the regulations of the local Fire Marshal having jurisdiction.
- D. Field offices and sheds shall be of suitable design, maintenance, and appearance.
- E. The Contractor shall provide power and heat to its field office, and to storage sheds if storing climate-sensitive materials or equipment.
- F. The Contractor shall adequately maintain the designated space designated for its field office and storage sheds, including the removal of weeds, debris, and trash.
- G. Temporary field offices and sheds shall not be used for living quarters.
- H. If the Construction Manager, for good reason, directs that any or all field offices or storage sheds on the site must be removed, the Contractor shall do so within ten (10) days of written notice of same. Structures not removed in a timely manner will be removed by the Construction Manager at the Contractor's expense.

14. FIRST AID STATION

- A. The Contractor shall provide and maintain at least one unmanned first aid station for its personnel and subcontractors.

15. SECURITY

- A. Neither the County or any of its agents assumes any responsibility for loss, theft or damage to the Work, tools, equipment and/or construction. In the instance of any such loss, theft or damage, the Contractor shall be responsible to renew, restore or remedy the Work, tools, equipment and construction in accordance with requirements of the Contract Documents without additional cost to the County.
 - 1. The Contractor shall immediately advise the Construction Manager of any theft or damage which may delay the execution of the Work.
 - 2. The Contractor shall furnish the Construction Manager with a copy of any theft report filed with appropriate law enforcement agencies.
- B. Site parked equipment, operable machinery and hazardous parts of the new construction subject to mischief and accidental operation shall be inaccessible, locked or otherwise made inoperable when left unattended.
- C. The Contractor shall utilize specific entrances for material deliveries, equipment deliveries, and worker access to the construction site as indicated on its site access/utilization plan and approved by the Construction Manager.
- D. The County or Construction Manager, as the Project progresses, may establish additional security policies and procedures. The Contractor shall cooperate with the County and/or Construction Manager in implementing such additional procedures.

16. TEMPORARY SIGNAGE

- A. Project Sign: The Contractor shall construct, erect and maintain one (1) 4 foot by 8 foot project sign of ¾ inch (minimum) exterior grade plywood, given two coats of paint and mounted securely on two 4 inch by 4 inch posts set 30 inches (minimum) into the ground. The sign shall be clearly lettered by one skilled in the sign trade with the facility name, address, County logo, names of County Commissioners, the County Manager and other County representatives, Contractor name, major subcontractors' names, and the jobsite telephone number. Locate the project sign as designated by the Construction Manager. Avoid a placement that may inhibit safe entry or exit from the site. Verify sign content with County, through the Construction Manager, prior to procuring and erecting the sign.
- B. No other signs or advertising shall be displayed on the premises without the approval of the Construction Manager, other than the posting of required notices and cautionary signage by the Contractor, and signage on equipment and trailers to designate ownership.

17. TRASH / DEBRIS DISPOSAL

- A. The Contractor shall provide dumpsters sufficient to hold site waste from its operations and that of its subcontractors, and shall remove same from the jobsite on a regular basis.
- B. Debris such as soil waste, concrete, steel, or other bulky items from excavation and/or demolition work not disposed of in dumpsters shall be removed and disposed off-site by appropriate means. Methods of debris removal and disposal shall be reviewed with the Construction Manager.

18. SITE CLEANING

- A. The Contractor shall be responsible for the maintenance of a clean, neat and safe project site. The Construction Manager is hereby placing the Contractor on notice that failure to clean up on a weekly basis will immediately result in the Construction Manager bringing in labor to perform this task and deducting the cost of such measures from the Contract Sum. The Construction Manager shall be the sole authority which shall determine the amounts to be deducted from the Contractor's contract for this type of cleaning.
- B. The Contractor shall assign at least five (5) percent of his own and his subcontractors' work forces to clean-up activities for at least four (4) hours per week, or as deemed necessary by the Construction Manager.

- C. No exceptions to these rules will be allowed. Failure to immediately adhere to all of the Construction Manager's directions in this regard will result in the holdup of Contractor's progress payments until compliance with these rules are obtained.

19. MISCELLANEOUS CONSTRUCTION FACILITIES

- A. The Contractor shall be responsible for providing and maintaining its own scaffolding and for conforming with all safety regulations related thereto.
- B. The Construction Manager retains the right to inspect all erected scaffolding, and to request written verification from an inspection agency as to the soundness of erected scaffolding to perform its intended function. However, the Construction Manager assumes no responsibility to do so, or of the results of such inspections.
- C. Except as otherwise provided, the Contractor shall provide and maintain all necessary temporary stairs, ladders, ramps and runways to facilitate conveyance of men, materials, tools, and equipment for proper execution of the Work.
- D. All protection and safety barricades, devices, covers, etc., shall be provided by the Contractor as it relates to the safe conduct of his work in accordance with OSHA requirements.
- E. The Contractor shall maintain safe temporary access to the work as construction progresses.
- F. All barriers and barricades shall comply with OSHA or other applicable safety requirements of the Project. All barriers and barricades shall be installed in a manner that will allow for the continued progress of the Work. Installation and removal of barriers, barricades and railings will be monitored by the Construction Manager.
- G. If the Contractor or any subcontractor, who in the course of its work, creates a hazard, it is responsible for providing, at its own expense, all required protection, including all safety barriers, barricades and perimeter protection as necessary.
- H. If any safety protection is required to be temporarily removed during the progress of the Work, it shall be reinstalled at the completion of the specific activity requiring such removal, and in a manner that provides a level of compliance equal to the initial installation.
- I. The Contractor shall enclose all construction areas in such a manner so as to protect the public from injury and in accordance with authorities having jurisdiction
- J. Provide any other types of construction facilities as may be reasonably required for performance of the Work and accommodation of personnel at the project site, including the County's and Construction Manager's personnel.

END OF SECTION 01 500, CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

SECTION 01 560 – ENVIRONMENTAL PROTECTION

1. GENERAL

- A. Provide all facilities, establish procedures, and conduct construction activities in a manner which will ensure compliance with the County's environmental requirements and other regulations controlling construction activities at the Project site.
- B. Definitions:
 - 1. Sediment: Soil that has been eroded and transported by runoff water.
 - 2. Degradable Debris: Debris which can undergo biodegradation or combustion, or which can be dissolved in or suspended by water.
 - 3. Non-degradable Debris: Inorganic debris which will not disintegrate nor dissolve when exposed to moisture or water.
 - 4. Chemicals: Petroleum or cementitious products, bituminous materials, salts, acids, solvents, alkalis, herbicides and pesticides.
 - 5. Waste: Sewage, including domestic sanitary sewage, garbage and trash resulting from food and food packaging.

2. PRODUCTS

- A. General: Products, devices and materials shall be approved by authorities having jurisdiction.
- B. Earth Stabilizer: Rye grass seed, hay, straw mulch, chemical stabilizer or any other device approved by authorities having jurisdiction.
- C. Hay Bales: Type and size as recommended by environmental protection authorities having jurisdiction.
- D. Silt Fence: Type and size as recommended by land disturbance and environmental protection authorities having jurisdiction.

3. ENVIRONMENTAL PROTECTION PROCEDURES

- A. General
 - 1. In the means and methods of construction, and in the coordination and control of the Work at the site, establish and enforce ecological preservation standards which avoid pollution of the atmosphere, waterways and vegetation.
 - 2. Conform to laws, ordinances, restrictions, and rules of governmental bodies having enforcement power in regard to site preservation and erosion control.
 - 3. Prevent droppings of petroleum products, cementitious waste and chemical substances on the ground or into storm, sanitary drains or waterways.
 - 4. This Section may be supplemented by notes on drawings relative to environmental protection.

5. The Contractor shall designate one person, the Superintendent or other, to enforce strict discipline on activities related to generation of wastes, pollution of air/water, generation of noise and similar harmful or deleterious effects which might violate regulations or reasonably irritate persons at or in vicinity of the Project site.
 6. Take special precautions when working on floors directly above or below any occupied floors and adjacent to circulation or vehicular circulation. Minimize noise, dust, or other environmental hazards to spaces.
- B. Air Quality Control: Maintain acceptable air quality at all times. Acceptable air quality shall also be maintained in any existing, operating buildings or structures during construction operations that require physical connection to such buildings or structures so as to not interfere with any existing operations.
- C. Water Control
1. All pumping, bailing, or well point equipment necessary to keep excavations free from the accumulation of water during the entire progress of the Work shall be the responsibility of the Contractor.
 2. Keep the building or portions thereof free from water ingress due to construction operations at all times until Final Completion of the Work.
 3. Provide all pumping necessary to keep site utility lines, sewers, manholes and meter pit excavations and mass excavation free from water.
 4. Dispose of water in such a manner as will not endanger public health or cause damage or expense to public or private property. Abide by the requirements of all public authorities having jurisdiction.
- D. Dust Control
1. Effectively confine dust, dirt and noise to the actual construction area(s) until Substantial Completion of the Work.
 2. Clean up operations shall be by vacuuming, wet mopping, wet sweeping, or wet power brooming. In sandblasting operations, if any, confine the dust.
 3. Use wet-cutting methods for cutting concrete, asphalt, and masonry. Do not shake out bags containing cement, lime, and other dust-causing substances.
 4. Do not leave areas of disturbed earth unworked for long periods of time. As the earth is disturbed, continue the work to achieve temporary or permanent earth stabilization promptly.
 5. Keep dust down at all times, including non-working days, weekends and holidays. Temporary methods consisting of water sprinkling or similar methods will be permitted to control dust. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding and pollution.
 6. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.
- E. Disposal of Debris, Chemicals and Waste

1. Dispose of debris, chemicals, and waste off the site in compliance with Federal, State and local laws and regulations.
 2. Collect and contain materials before disposal in an orderly fashion and by means which prevent contamination of air, water and soil.
 3. Store chemicals in watertight containers.
 4. Degradable debris, not contaminated by chemicals, e.g., leaves, tree limbs, twigs and logs, may be shredded on site and used as mulch. Exclude paper, cementitious waste, and material which could cause contamination of waterways. Non-degradable and degradable debris in excess of the above shall be disposed of off the site.
 5. Do not burn materials on the site.
- F. Clean-Up and Restoration of the Site
1. Maintain the site in good order through periodic pick up and clean-up of construction waste and wind-borne trash. Dispose of all waste and trash in tightly covered containers and schedule regular removal of trash and waste from the site.
 2. Existing sitework damaged during construction shall be restored to good and acceptable condition.
- G. Damage from Storms: Secure the site to avoid damage to the Work and stored materials, as well as damage to adjacent property.

END OF SECTION 01 560, ENVIRONMENTAL PROTECTION

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SECTION 01 610 – MATERIAL & EQUIPMENT HANDLING

1. GENERAL SUMMARY

- A. Deliver, handle and store materials and equipment in accordance with manufacturer's recommendations and by methods and means which will prevent damage, deterioration and loss, including theft. Provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged or sensitive to deterioration, theft and other sources of loss.
- B. Prior to starting work, the Contractor shall meet with the Construction Manager to determine the use of available areas for site offices and storage.
 - 1. The Contractor shall confine his equipment, the storage of material and the operations of his workmen to limits indicated by the Contract Documents, laws, ordinances, permits or directions of the Construction Manager.
 - 2. Neat and orderly stockpiling of all materials shall be maintained.
 - 3. Materials which require significant amounts of storage space, as determined by the Construction Manager, shall be brought to the site in quantities no greater than required for two (2) weeks work.
 - 4. Delivery of materials shall be scheduled so as not to encumber the site with items which will not be required for a significant length of time.
- C. If at any time it becomes necessary to move material or equipment which have been stored during construction, the Contractor, when directed by the Construction Manager, shall move them to another location without charge.
- D. The Contractor shall not load or permit any part of the site or structures to be loaded with a weight that will endanger its safety.
- E. Storage of materials outside the limits of construction, but on the County's property, is strictly prohibited without written permission from the County through the Construction Manager.
- F. All costs relating to temporary storage and protection shall be borne by the Contractor or subcontractor requiring such storage and protection. The Contractor shall retain full responsibility for any form of damage or deterioration to stored materials and any form of damage or deterioration caused by materials to surrounding surfaces.

2. MATERIALS HANDLING PLAN

- A. The Contractor shall develop and submit to the Construction Manager for approval, at least ten (10) days prior to the start of construction on the site, a comprehensive materials handling plan. This plan shall take into consideration the following:
 - 1. Control delivery of materials to maintain the construction schedule.
 - 2. Coordination with any separate contractors.
 - 3. The County's operation of adjacent facilities, if any.
 - 4. Provisions for both vertical and horizontal transportation and utilization of material and personnel hoists, if required.
 - 5. Limitations on space available for storage.
 - 6. Requirements for handling and installation of large equipment.

3. VERTICAL TRANSPORTATION

- A. The Contractor shall be responsible for providing vertical transportation for materials, equipment, and personnel if and as required for multi-story buildings or significant heights. Cranes, hoists, conveyors, and other equipment used for this purpose shall be placed/installed and maintained according to applicable codes and regulations of authorities having jurisdiction.
- B. Temporary hoists and permanent elevators used as construction lifts shall be provided with an operator at all times such equipment is in use.
- C. The Contractor shall cooperate with the County, the Construction Manager and any separate contractors in the event that hoists or elevators are required for use by such entities during the course of the Project.

4. MATERIAL AND EQUIPMENT REMOVAL

- A. Any required cranes, hoists, conveyors and other equipment mobilized and utilized by the Contractor shall be removed from the site within ten (10) days after completion of the Work.
- B. Upon completion of the Work, or sooner if directed by the Construction Manager, the Contractor shall remove his temporary structures and sheds and place the areas in a clean and orderly condition.
- C. No materials or equipment shall be removed from the site without the permission of the Construction Manager.

5. PASSAGE OF MATERIALS AND EQUIPMENT

- A. Establish passage clearances required to deliver and install materials and equipment.
- B. In case of insufficient clearance for passage of materials and equipment, deliver and protect such equipment before confining construction is installed.
- C. If existing structures, equipment and systems must be removed or altered to provide access for new materials and equipment, engage those skilled in the respective trade to restore structures, equipment and systems to their original condition at no additional cost. Do not alter structure, equipment or systems without written approval of the Construction Manager.
- D. In lieu of altering structures to provide passage of materials and equipment, provide materials and equipment that can be disassembled, brought into the building, and reassembled.

END OF SECTION 01 610, MATERIAL & EQUIPMENT HANDLING

SECTION 01 630 – PRODUCTS & SUBSTITUTIONS

1. GENERAL

- A. This Section covers mandatory provisions for submission of product information and for substitution procedures, after Contract award.
- B. Definitions:
 - 1. "Products" are defined to include purchased items for incorporation into the Work, regardless of whether specifically purchased for this Project or taken from the Contractor's stock of previously purchased products.
 - 2. "Materials" are defined as products which must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, installed or applied to form units of the Work.
 - 3. "Equipment" is defined as a product with operational parts, regardless of whether motorized manually operated, and particularly including products with service connections (wiring, piping, etc.).
- C. Definitions in this paragraph are not intended to negate the meaning of other terms used in the Contract Documents, including specialties, systems, finishes, accessories, furnishings, special construction and similar terms which are self-explanatory and have recognized meanings in the construction industry.

2. INITIAL PRODUCT SUBMISSION

- A. As part of the Submittal Register specified in Section 01 340 of the General Requirements, provide a list showing names of products together with the names of manufacturer of each and, where applicable, the name of the installing subcontractor.
- B. Only specified products will be reviewed, except as herein below provided for substitutions.

3. PRODUCTS

- A. General Product Compliances
 - 1. The compliance requirements for individual products as indicated by the Contract Documents are multiple in nature and may include generic, descriptive, proprietary, performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details and other similar forms and methods of indicating requirements, compliance with all of same being a requirement.
 - 2. The Contractor's options for selection of products are limited by the Contract Document requirements and by governing regulations, and are NOT controlled by industry traditions or procedures experienced by the Contractor on previous construction projects. Required procedures for the selection of product options include, but are not limited to, the following:
 - a. If material specified in the Contract Documents is not available on the current market, alternate materials may be proposed by the Contractor through the Construction Manager for Architect and County approval.
 - b. In the Contract Documents where a specific brand, make, or manufacturer is denoted, the intent is that it be considered the standard for establishing the style, type, character and quality level of the article desired, but not as a restriction in the selection process to the specific brand, make or manufacturer named.
 - c. Alternate brands, make of material, device or equipment which, in the opinion of the Architect, are recognized as the equal of that specified on the basis of quality, workmanship and economy of operation considerations and are suitable for the purpose intended may qualify for acceptance.

- d. Standards, Codes and Regulations: Where only compliance with an imposed standard, code or regulation is required, selection from among products which comply with requirements including those standards, codes and regulations shall be at the Contractor's option.
 - e. Performance Requirements: Provide products which comply with the specific performances specified, and which are recommended by the manufacturer (in published product literature or by individual certification) for the application indicated. Overall performance of a product is implied where the product is specified with only certain performance requirements.
 - f. Prescriptive Requirements: Provide products which have been produced in accordance with prescriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations during the manufacturing process.
3. Visual Matching: Where matching with an established sample is required, final judgment of whether a product proposed by the Contractor matches the sample satisfactorily lies with the Architect. Where no product within the specified cost range is available for a satisfactory match that complies with requirements, comply with the provisions in the Contract Documents related to "Substitutions" and "Change Orders" for the selection of a matching product outside the established cost category or of a product not complying with requirements.
 4. Visual Selection: Except as otherwise indicated, where specified product requirements include "...as selected from manufacturer's standard colors, patterns, textures..." or words of similar effect, the selection of manufacturer and basic product (complying with the requirements) is at the option of the Contractor with the subsequent selection of color, pattern and texture to be by the Architect.
- B. Quality Assurance
1. Source Limitation: To the greatest extent possible for each unit of work, provide products, materials or equipment of a singular generic kind and from a single source.
 2. Compatibility of Options: Where more than one choice is available as options for Contractor's selection of a product or material, select an option which is compatible with other products and materials already selected. Total compatibility among options is not assured by limitations within the Contract Documents, but must be provided by the Contractor. Compatibility is a basic general requirement of product and material selections.
 3. Provide products and materials which are undamaged and unused at the time of installation, and which are complete with accessories, trim, finishes, safety guards and labels, maintenance instructions and other devices and details required for a complete installation and for the intended use and effect.
 4. Standard Products: Where available, provide standard products of types which have been produced and used previously and successfully in similar applications on other projects.
 5. Continued Availability: Where additional amounts of a product, by the nature of its application, are likely to be needed by the County at a later date for maintenance and repair or replacement work, provide a standard, domestically produced product which is likely to be available to the County at such later date.
 6. Warranties and Guarantees: Warranties are in several categories including those indicated in the General Requirements and in the Technical Specifications.
- C. Certification
1. Certification of compliance with specification performance standards and manufacturers' specifications and directions shall be furnished for any portion of the Work for which specific performance requirements and/or manufacturers' specifications are listed. The Contractor shall be responsible for securing two (2) copies of each certification as required and transmitting same to the Construction Manager.

2. Each item requiring certification shall be so noted and an affidavit must be filed singly to cover each specified material, installation, application and the like.
- D. Certification of Compatibility: If requested, the material and equipment manufacturers shall certify in writing that:
1. Other manufacturers' materials and/or equipment coming in contact with their product are compatible with their product in every way and that the intended performance of the system in which their product is incorporated will not be affected as a result of such contact. Also, that a physical breakdown of their product by chemical reaction or otherwise will not occur as a result of such contact.
 2. The combination of products by one manufacturer to make up the manufacturer's specified system will contribute to the performance of the system as intended, and will remain operational, reliable and durable. The manufacturer will be the source of routine maintenance and replacement parts.
- E. Nameplates: Except as otherwise indicated for required approval labels, and operating data, do not permanently attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on the exterior of the Work.
1. Labels: Locate required labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface which, in occupied spaces, is not conspicuous.
 2. Equipment Nameplates: Provide permanent nameplate on each item of service-connected or power operated equipment. Indicate manufacturer, product name, model number, serial number, capacity, speed, ratings and similar essential operating data. Locate nameplates on an easily accessed surface which, in occupied spaces, is not conspicuous.
- F. Reuse of Existing Material
1. Except where specified or approved in writing, materials and equipment removed from an existing structure shall not be used in the Work.
 2. Where use of existing materials and/or equipment is specified or approved in writing, use special care in removing, handling, storing and reinstallation to assure proper function of same in the completed Work.

4. CONSIDERATION OF SUBSTITUTIONS

- A. The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to Contract Documents, where requested by the County or the Architect, are "changes" and not "substitutions." The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute "substitutions", nor do they constitute a basis for change orders, except as provided for in the Contract Documents. Otherwise, the Contractor's requests for changes in products, materials and methods of construction required by the Contract Documents are considered requests for "substitutions", and are subject to the requirements herein.
- B. Substitutions for a specified product will be considered only if the specified product is not obtainable, or if delivery date of all such specified products is such that the scheduled date of Substantial Completion of the Work will be delayed if the specified product remains a requirement. The latter cause shall only be considered if the Construction Manager is notified of this condition within thirty (30) days of the Notice to Proceed for the Contract, or if after order has been placed, circumstances beyond the Contractor's control, such as labor disputes affecting manufacture or delivery of product cause such a delay. Under no circumstances will a substitution be allowed for reasons of potential delay due to Contractor's failure to execute timely purchase orders with the vendor or subcontractor, or due to Contractor's failure to submit product data or shop drawings in adequate time to allow for review and possible re-submittal prior to the required delivery date.
- C. Qualifications: Substitutions will only be considered for the reasons noted above, based upon the Contractor's representation that by submitting any Request for Substitution, the Contractor:

1. has researched the proposed substitution and has determined that it is equivalent to or superior in all respects to that specified.
 2. confirms that the same warranties or bonds apply for the substitution as for the specified product, material, system and/or construction method.
 3. has determined by its best judgment and experience that the proposed substitution is either necessary or in the County's best interest.
 4. will coordinate the installation of any accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all respects.
 5. waives claims for additional costs caused by the substitution which may subsequently become apparent.
 6. has submitted complete cost data which includes all related costs under its Contract.
- D. Disqualifications: No consideration will be given to proposed substitutions when:
1. They are indicated or implied on shop drawing submittals without having been formally requested in accord with provisions specified herein.
 2. A major revision in the Work is required in order that their use may be accommodated.
 3. They materially alter the design concept including color or function originally intended by the specified product.

5. SUBMITTAL PROCEDURES ON SUBSTITUTIONS

- A. Substitution Request Form: The attached form must be filled out in its entirety and submitted in addition to the submittal information and data noted below. Submit a separate Substitution Request Form for each proposed substitution.
- B. Submittals: Submit three (3) copies of each Substitution Request Form and of each of the following related support items:
1. Identify product for which substitution is proposed by description, brand name and catalog number, giving specification section number where specified.
 2. Identify in similar manner the proposed substitution and include the manufacturer's name, address and telephone number.
 3. Itemize differences between product specified and proposed substitution, including but not limited to physical, color, function and guarantee considerations.
 4. Itemize changes in adjacent work occasioned by proposed substitutions.
 5. Accompany request with test data from independent laboratory substantiating quality and performance of proposed substitution.
 6. Attach manufacturer's complete instructions on storage, handling and installation.
 7. Provide list of three projects giving names, addresses and phone numbers of owners, general contractors, and architects where proposed product has been used.
 8. State proposed change to the Contract Sum and proposed change to the Contract Time if substitution is accepted and confirmed by Change Order. If the proposed substitution involves a change to the Contract Sum, any change in cost of adjacent or related Work shall be included also.

9. State the number of days (not less than 15) during which the substitution as submitted is subjected to acceptance.
10. Include any cost savings to the County which might result from this substitution.

6. ACCEPTANCE OR REJECTION

- A. The Architect and/or the Construction Manager have the authority to reject any substitution submittals due to incompleteness or for other good reason.
- B. The Architect will be the sole judge of the acceptability of the proposed substitution.
- C. Only the Architect, with the County's approval, will have the authority to change the specified standards of quality. However, neither this authority to act under this provision, or any decision made in good faith either to exercise or not to exercise this authority, shall give rise to any duty or responsibility of the Architect to the Contractor, subcontractor of any tier, any or their agents or employees or other persons performing the Work or offering to perform the Work.
- D. The Construction Manager will attain a prompt review from the Architect of the Request for Substitution which complies with the above provisions.
- E. If no exceptions are taken, approval will be granted in writing. If the substitution represents a change to the Contract Documents, the substitution will be confirmed by Change Order.
- F. If accepted, the Contractor explicitly assumes all liability for the fit and function of all surrounding assemblies, and all interfacing devices.
- G. If rejected, the Contractor will be promptly notified, and the Contractor shall proceed with the Work in accordance with the Contract Documents.

**END OF SECTION 01 630, PRODUCTS & SUBSTITUTIONS
follows Substitution Request Form (two pages) attached**

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SUBSTITUTION REQUEST FORM

A. **For Use Only After Contract Award**

(For use by Architect)

- Accepted
- Accepted as Noted
- Not Accepted
- Received Too Late

From: _____

To: Vincent Pope + Associates, Inc.

Project: _____ **Contract No.** _____

We hereby submit for your consideration the following proposed substitution in lieu of the specified item for the above-named project:

Proposed Substitution:

Specified Item: _____

Reference Drawing No(s).

Reference Specification Section/Paragraph

1. Attach complete information and technical data on any changes to the program, drawings, specifications, or other Contract Documents which the proposed substitution will necessitate for its proper incorporation.
2. Accompany this request with all samples and substantiating data necessary to prove equal quality and performance levels of the proposed substitution to those of the specified item. Clearly mark manufacturer's literature to highlight the indicated equality in performance.
3. Respond to each of the following questions (use additional sheets if necessary):

A. What is the quality level of the proposed substitution versus that of the specified item?

B. What are significant variations between the proposed substitution and the specified item?

C. What affect(s) would the proposed substitution have on the operation and maintenance of the completed facility?

SUBSTITUTION REQUEST FORM (continued)
For Use Only After Contract Award

D. Are manufacturer's warranties for the proposed substitution and the specified item the same?
Yes ____ No ____

If no, explain: _____

E. What effect would the proposed substitution have on other trades?

F. How would the proposed substitution affect the project schedule?

G. What are accurate comparative cost figures between the proposed substitution and the specified item?

H. What reason(s) justifies this request for a substitution?

The undersigned states and certifies that the function, appearance, and quality of the proposed substitution are equivalent or superior to those of the specified item and assumes the liability for the provision of equal performance of same as a minimum. THIS FORM MUST BE SIGNED.

SIGNATURE: _____ DATE: _____

NAME (type or print): _____

COMPANY: _____

ADDRESS: _____

TELEPHONE: _____

NOTE: Signature shall be by a person having authority to legally bind his/her firm to the above terms. Failure to provide a legally binding signature will result in the retraction of any approval of this proposed substitution.

SECTION 01 680 – EQUIPMENT & SYSTEMS INSTRUCTION

1. GENERAL

- A. Furnish all labor, materials, tools, equipment and services for the cleaning up or preparation of all equipment which is required in conjunction with the instruction work to be performed for County personnel.
- B. Coordinate additional instruction of County's personnel for any and all items of work of all trades that are incomplete at the time initial instruction sessions are scheduled.
- C. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation, and provide instructions upon the functions of that installation.
- D. Provide instruction for all equipment and systems for which operating and maintenance data is required. See General Requirements Section 01 730 for individual details of the operations and maintenance data requirements.
- E. Instruction sessions may be combined to some extent between several pieces of similar equipment within the same training session, but only if that combination is defined in the Contractor's instruction program submittal and approved by the Construction Manager.
- F. One instruction session for each major type of equipment will be required. The Contractor shall anticipate that up to ten (10) County employees will participate in any particular instruction session, and shall be prepared to provide the required number of manuals and tools for each session.
- G. The Contractor shall complete all instruction sessions in an acceptable manner prior to its request to receive a Certificate of Substantial Completion.

2. QUALITY ASSURANCE

- A. Instructors for all sessions shall be member(s) of the installers' staff and authorized representative(s) of component, assembly, or system manufacturer(s). Refer to individual sections of the Technical Specifications for additional detailed requirements necessary to provide adequate instruction for specific systems or pieces of equipment.

3. PRESENTATION OF SUBMITTALS

- A. No later than ninety (90) days prior to scheduled Substantial Completion of the Work, the Contractor shall submit a list of proposed instruction sessions for the entire Project. This list shall be organized by Specification Section and its contents will be subject to the approval of the Construction Manager.
- B. After approval of the content of the required instruction program, submit course outlines for each of the approved instruction sessions. Outlines shall be organized by Specification Section, and their contents will also be subject to the approval of the County.
- C. After approval of the program content, the Contractor shall submit planned course schedules for each of the approved instruction sessions which are to be organized by Specification Section, and the scheduled dates will be subject to the approval of the Construction Manager and representatives of the County.
- D. All instruction courses will be planned and scheduled such that the County's participants will utilize copies of the Project Operations and Maintenance Manuals which will have been previously provided. These copies are in addition to the quantities which will have been provided to the County, through the Construction Manager, under General Requirements Section 01 730. The use of draft copies of these manuals will be acceptable only with the prior written approval of the Construction Manager.
- E. Submit a separate instruction request/report for each system or type of equipment, subject to the County's approval of availability of personnel.

1. Submit request/report (form attached) with preliminary information indicated, to the Construction Manager at least two (2) weeks prior to first instruction period.
2. After each instruction session, submit three (3) copies of the completed report to the Construction Manager.

4. PREPARATION

- A. Do not begin instructions until component, assembly or system has been tested as specified and is in satisfactory operating condition.
- B. Prior to instruction sessions, assemble instructional aids, tools, test equipment and any necessary copies of approved Operations and Maintenance Manuals. If the Operations and Maintenance Manuals have not been approved prior to this time, supply draft copies for use in the training courses.

5. INSTRUCTION

- A. Provide all instruction as required to ensure understanding of all operating and maintenance procedures by the County's designated personnel.
- B. Instruct County's personnel in operation and maintenance of equipment and systems. Provide all necessary instruction to satisfaction of County.
- C. Explain use of Operating and Maintenance Manuals.
- D. Tour building areas involved and identify:
 1. Maintenance points and access.
- E. Control locations and equipment.
- F. Explain operating sequences:
 1. Identify location and show operation of switches, valves, etc., used to start, stop and adjust systems.
 2. Explain use of flow diagrams, operating sequences, diagrams, etc.
 3. Demonstrate operation through complete cycle(s) and full range of operation in all modes, including testing and adjusting relevant to operation.
- G. Explain use of control equipment, including temperature settings, switch modes, available adjustments, reading of gauges, and functions that must be serviced only by authorized factory representative.
- H. Explain trouble shooting procedures:
 1. Demonstrate commonly occurring problems.
 2. Note procedures which must be performed by factory personnel.
- I. Explain maintenance procedures and requirements:
 1. Point out items requiring periodic maintenance.
 2. Demonstrate typical preventive maintenance procedures and recommend typical maintenance intervals.
 3. Demonstrate other commonly occurring maintenance procedures not part of preventive maintenance program.
 4. Identify maintenance materials to be used.

- J. Furnish all tools and/or test equipment required for proper instruction of the County's personnel. Tools and/or test equipment shall be distributed in "sets" with each two participants having a "set" to work with and retain upon completion of the instruction. Each participant shall sign for their tools at the start of the instruction session, and copies of the assignment documents shall be provided to the Construction Manager by the Contractor.
- K. Refer to commissioning requirements specified in Section 01 750.

END OF SECTION 01 680, EQUIPMENT & SYSTEMS INSTRUCTION

Equipment and Systems Instruction Report (one page) attached

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EQUIPMENT AND SYSTEMS INSTRUCTION REPORT

PROJECT: _____

SYSTEM OR EQUIPMENT: _____

CONTRACTOR NAME _____ CONTRACT NO. _____

SPECIFICATION SECTION _____

NOTE: The Contractor's Representative must maintain and complete this report during instruction.

PRELIMINARY INFORMATION

To be completed by the Contractor:

A. Proposed dates for instruction period: From _____ to _____

Name of Representative Instructor: _____

Approximate number of hours of training required: _____

To be completed by the County:

County's Designated Personnel to receive instruction: (Identify supervisor, if required).

6) _____

7) _____

8) _____

9) _____

10) _____

Training Session Location: _____

RECORD INFORMATION

Instructor's Signature: _____ Date Instruction Completed: _____

Construction Manager's Signature: _____

County's Signature: _____

SPECIAL CONSIDERATIONS / NOTES:

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SECTION 01 700 – PROJECT CLOSEOUT

1. GENERAL REQUIREMENTS

- A. Comply with requirements for administrative procedures stated in this and other sections of the Project Manual in closing out the Work. Closeout procedures are summarized in this Section.
- B. Contract requirements shall be met when construction activities have successfully produced, in order, completion of these three closeout stages:
 - 1. Substantial Completion
 - 2. Final Completion
 - 3. Final Payment
- C. The Contractor shall provide all written notices and supporting documentation as described in Paragraphs 2 and 3 below when requesting Substantial Completion and Final Completion, respectively. Partial submittals of the required documents shall not represent a valid request, and the County, Architect, and Construction Manager shall not be liable for any delays in the Substantial and Final Completion dates arising there from.

2. SUBSTANTIAL COMPLETION

- A. Reference the *Owner-Contractor Agreement*, Article 9, regarding Substantial Completion.
- B. Prerequisite - the commissioning, described Section 01 750 must be complete, except for functional testing and controls training, prior to Substantial Completion, unless approved in writing by the Owner's Project Manager.
- C. When the Work is substantially complete, the Contractor shall submit to the Construction Manager:
 - 1. A written notice that the Work, or designated portion thereof, is substantially complete.
 - 2. An original Certificate of Occupancy for the Project.
 - 3. A list of items to be completed or corrected (hereinafter referred to as a "Punch List").
 - 4. A request for a Substantial Completion inspection on a date acceptable to the Architect and the Construction Manager.
 - 5. Project record documents, operation & maintenance manuals, warranties, and certificates for review and approval.
- D. Within a reasonable time after receipt of such notice, the Architect, the Construction Manager, the Contractor, and the County will make a joint inspection to determine the status of completion. County representatives for this inspection shall include, but not be limited to, the user department(s) and the Department of Personnel, Workers Compensation & Office Services Division. The Punch List submitted by the Contractor will be reviewed in detail during the inspection, with items added or deleted to indicate Work to be corrected or completed.
- E. After completion of the joint inspection described in Paragraph 2.C above, the Construction Manager will consolidate all Punch List comments and transmit them to the Fulton County General Services Department (FCGSD) Within a reasonable amount of time after receipt of such consolidated Punch List, (FCGSD) shall conduct its own inspection, to include, but not be limited to, the installation and operation of all mechanical, electrical, plumbing, and other building systems. The consolidated Punch List will be reviewed in detail during the inspection, with items added or deleted to indicate Work to be corrected or completed.
- F. The County, the Architect, and/or the Construction Manager reserve the right to issue a revised Punch List based on the inspections described in 2.C and 2.D above. The Construction Manager will reproduce and

distribute copies of any revised Punch List to the Contractor and see that the items requiring correction or completion are given prompt attention by the Contractor. Depending on the number and type of items on the Punch List, the Construction Manager may withhold the issuance of the Certificate of Substantial Completion until corrections required by said Punch List are made or all parties are satisfied that they will be made.

- G. Should the Architect and/or the Construction Manager determine that the Work is not substantially complete:
 - 1. The Construction Manager will promptly notify the Contractor in writing, on behalf of the Architect, giving the reasons therefore.
 - 2. The Contractor shall remedy the deficiencies in the Work, and then send a second written notice of Substantial Completion to the Construction Manager.
- H. Paragraphs 2.B through 2.D will be repeated.
- I. Should it become necessary to perform more than one (1) reinspection due to the inaccurate claims of the status of completion made by the Contractor, the Construction Manager may deduct the costs of such reinspections from the final payment, including but not limited to costs incurred by the Construction Manager and the Architect, and costs incurred by the Owner for payment of compensation to the Construction Manager and the Architect, for services performed for the reinspection(s). Also refer to General Requirements Section 01 400, *Quality Control*.
- J. When the Architect and the Construction Manager concur that the Work is substantially complete, the Construction Manager will:
 - 1. Prepare a Certificate of Substantial Completion accompanied by the Contractor's Punch List of items to be completed or corrected, as verified and amended by the Architect, the Construction Manager, and the County.
 - a. Contract responsibilities are not altered by inclusion or omission of required Work for the Punch List.
 - b. The Construction Manager will coordinate with both the County and the Contractor to establish each parties' responsibilities with respect to security, maintenance, heat, utilities, damage to the Work, and insurance, all of which shall be clearly delineated on the Certificate of Substantial Completion.
 - 2. Sign the Certificate of Substantial Completion and submit it to the County, the Architect, and the Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

3. FINAL COMPLETION

- A. Reference the *Owner-Contractor Agreement*, Article 9, regarding Final Completion.
- B. Prerequisites –
 - 1. All TAB work and the commissioning of Section 01 750 must be complete prior to Final Completion, unless approved in writing by the Owner's Project Manager. Exceptions to this are the planned control system training performed after occupancy and any required seasonal or approved deferred testing. This includes for all systems, but is not limited to:
 - a. Completed and signed start-up and prefunctional checklist documentation
 - b. Requested trend log data
 - c. Submission of final approved TAB report
 - d. Completion of all functional testing
 - e. Required training of Owner personnel completed and approved
 - f. Submission of the approved O&M manuals
 - g. All identified deficiencies have been corrected or are approved by the Owner to be exceptions from this milestone

2. The Owner's Project Manager will determine the date of Final Completion after reviewing the Commissioning Agent's recommendation.
3. Commissioning activities are non-compensable and cannot be a cause for delay claims.
- C. To attain Final Completion, the Contractor shall complete the activities pertaining to Substantial Completion Certificate and complete work on all Punch List items. Only then shall a written request to the Construction Manager for final inspection be submitted.
- D. When the Work is complete, the Contractor shall submit to the Construction Manager written certification that:
 1. The Contract Documents have been complied with in their entirety.
 2. The Work has been inspected for compliance with Contract Documents.
 3. The Work has been completed in accordance with Contract Documents.
 4. The Work is completed and ready for final inspection.
- E. The Construction Manager, Architect, Contractor and County will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- F. Should the Architect and/or Construction Manager determine that the Work is incomplete or defective:
 1. The Construction Manager will promptly notify the Contractor in writing, listing the incomplete or defective Work.
 2. The Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the Construction Manager that the Work is complete.
- G. Paragraphs 3.B through 3.D will be repeated.
- H. Should it become necessary to perform more than one (1) reinspection due to failure of the Work to comply with the claims of status of completion made by the Contractor, the Construction Manager may deduct the costs of such reinspections from the final payment, including but not limited to costs incurred by the Construction Manager and the Architect, and costs incurred by the Owner for payment of compensation to the Construction Manager and the Architect, for services performed for the reinspection(s). Also refer to General Requirements Section 01 400, *Quality Control*.
- I. When the Architect and the Construction Manager find that the Work is acceptable under the Contract Documents, the Contractor will be requested to make a final closeout submittal.

4. CONTRACTOR'S CLOSEOUT SUBMITTALS

The Contractor shall provide to the Construction Manager the following documents in the quantity of one original and one copy unless otherwise noted. Note that with the exception of Subparagraphs 4.G, 4.H, 4.J, and 4.K below, submittal for approval shall have already been made prior to Substantial Completion. Submittal under this Paragraph would be for a final submittal should revisions or additional copies be required of previously submitted documentation.

- A. Evidence of Compliance with all requirements of governing authorities:
 1. Certificate(s) of Occupancy
 2. Certificates of Inspection, for Mechanical, Electrical, Plumbing, Fire Protection, and others as may be required.
- B. Project Record Documents: Refer to Section 01 720 of the General Requirements.

- C. Operation & Maintenance Manuals: Refer to Section 01 730 of the General Requirements.
- D. Subcontractor List: A complete listing of all subcontractors and their suppliers, indicating business addresses, telephone numbers, contact names, and items supplied by each.
- E. Manufacturer List: A listing of manufacturers of major materials, equipment and systems installed in the Work, and local contact addresses and phone numbers.
- F. Warranties: Refer to Section 01 740 of the General Requirements, and individual sections of the Technical Specifications.
- G. Payment of Debts and Claims and Consent of Surety: The Contractor shall submit adequate evidence that the Contractor has paid all obligations to date arising out of the Contract using AIA Document G706. Contractor shall also submit AIA Document G707, indicating written consent of its Surety to final payment.
- H. Release of Claims and Liens: The Contractor and each subcontractor shall also submit AIA Document G706A, indicating that the releases for waivers submitted are complete to the best of its knowledge and information.
- I. Final Approvals and Certificates:
 - 1. Plans and Certificates approved by the Fulton County Development Services Department which were maintained at the jobsite shall be amended to show construction changes and resubmitted as required by law.
 - 2. Contractors requiring filing shall complete all Fulton County inspections and permits records before Application for Final Payment. Submit all approvals and certificates required by the Specifications, Drawings and applicable codes and regulations of all relevant departments or agencies of Fulton County, State of Georgia, and local authority having jurisdiction.
- J. Shop Drawings, Manufacturer's Literature and Test Data (one copy only): The Contractor shall submit through the Construction Manager to the County, before final acceptance, all reviewed shop drawings (with all corrections noted), plus sets of all approved catalog cuts, equipment manuals, etc. All materials shall be indexed by Specification section. This submittal shall include a list of each room and its paint manufacturers and/or wall covering number for the County's use.
- K. Keys and Maintenance Materials: All keys, maintenance kits or stock, replacement parts or materials, spare construction materials, and equipment required under the Contract Documents shall be delivered or made available to the County. Also refer to Section 01 760 of the General Requirements.
- L. No partial submittals of the above items are to be made to the Construction Manager. All items of each category are to be collected by the Contractor and delivered at one time to the Construction Manager, together with a letter of transmittal listing all items. Where items are to be delivered to the County's representative, the Contractor shall include a copy of the transmittal letter listing all enclosures, signed by the County's representative acknowledging receipt.

END OF SECTION 01 700, PROJECT CLOSEOUT

SECTION 01 710 – FINAL CLEANING

1. RELATED WORK SPECIFIED ELSEWHERE

- A. Periodic clean-up during construction - See General Requirements Section 01 500 for additional details of these requirements.
- B. Refer to appropriate sections of the Technical Specifications for special cleaning instructions for specific work. Lacking such specific instructions, provide final cleaning on all delivered materials and equipment as specified herein.

2. PRODUCTS

- A. The Contractor is to use only cleaning materials as recommended by manufacturer of surface to be cleaned.
- B. The Contractor is to use cleaning materials only on surfaces as recommended by the manufacturer of the cleaning material.

3. EXECUTION

- A. At the completion of the Work, the Contractor will remove all trash and debris and clean all surfaces associated with his work, and leave the project ready for occupancy by the County.
- B. Experienced workmen or professional cleaners only are to be employed for final cleaning.
- C. Paved surfaces are to be broom clean. Other porous surfaces are to be raked clean. All stone and non-porous surfaces shall be wiped clean.
- D. All surfaces shall have all stains removed.
- E. Electrical work, including lighting fixtures, is to be thoroughly cleaned.
- F. Prior to acceptance of any area of the project by the County, the Contractor is to notify the Construction Manager as each area becomes ready for inspection. The final clean-up will be inspected by the Construction Manager with the Architect and the County as required.
- G. The Construction Manager will notify the Contractor in writing if any clean-up is unacceptable. If the Contractor fails to comply after receiving written notice from the Construction Manager, the Construction Manager will perform whatever corrective action is necessary, with the resultant costs to be borne by the Contractor.
- H. The Contractor will maintain cleaning services until the Project or portion thereof is accepted by County.

END OF SECTION 01 710, FINAL CLEANING

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SECTION 01 720 – PROJECT RECORD DOCUMENTS

1. GENERAL

- A. Definition: Record Documents are defined to include those documents or copies relating directly to performance of the Work. Record Documents show changes in Work in relation to way in which Work was shown and specified by the original Contract Documents, and show additional information of value to County's records, but not indicated by the original Contract Documents. Record Documents include marked-up copies of Construction Drawings, Specifications, Field Orders and Change Orders, reviewed copies of Shop Drawings, Product Data and Samples, a final product list, test records, field records for variable and concealed conditions such as excavations and foundations, and miscellaneous record information on Work which is otherwise recorded only schematically or not at all. Certain portions of the Contract Documents may indicate specific Record Document requirements which extend the requirements of this Section.
- B. Throughout progress of the Work, maintain and continually update an accurate record of changes in the Contract Documents.
- C. Provide access to all Record Documents for the County's, Architect's, and Construction Manager's reference and review throughout the progress of the Work.
- D. As a condition of Substantial Completion of the Work, the Contractor shall deliver Record Documents to the Construction Manager as provided below.

2. MAINTENANCE OF DOCUMENTS

- A. One copy of current Record Documents shall be maintained at the Contractor's jobsite office at all times.
- B. Delegate responsibility for maintenance of Record Documents to one person.
- C. Provide files and racks for suitable storage of documents, and file all documents and samples in a neat and orderly manner.
- D. Protect Record Documents from loss in a secure location. Maintain documents in a clean, dry, legible condition, and in good order. Record Documents are not to be used for construction purposes.

3. RECORDING OF CHANGES AND OTHER PERTINENT INFORMATION

- A. Record all changes and other pertinent information concurrently with construction progress.
- B. Accuracy of Records: Coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other documents where such entry is required to show change. The accuracy of records shall be such that future searches for maintenance or analysis purposes may reasonably rely on information obtained from the Record Documents.
- C. Do not permanently conceal any of the Work until changes or other pertinent information has been recorded on the appropriate Record Documents with dimensions from a permanent reference point.
- D. Drawings:
 - 1. Mark the drawing that is most capable of showing actual physical condition, fully and accurately.
 - 2. Where Shop Drawings are marked up, mark cross reference on Contract Drawings at corresponding location.
 - 3. Mark with erasable colored pencil, using separate colors where feasible to distinguish between changes for different categories of Work at same general location.

4. Mark the location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 5. Indicate all changes of dimension and detail, whether a field change or a directed change. Note Change Order number, Request for Information number, and/or similar identification associated with the initiation of each specific change.
 6. Provide Contractor's construction details which may not have been shown on the original Contract Documents.
- E. Specifications:
1. Legibly mark each Section of the Technical Specifications with the manufacturer, trade name, catalog number, serial number and supplier of each product and item of equipment actually installed in the construction.
 2. Indicate all field changes and directed changes. Note Change Order number, Request for Information number, and/or similar identification associated with the initiation of each specific change.
- F. Shop Drawings, Product Data and Samples: Maintain as Record Documents. Legibly annotate any changes made after review(s).
- G. Label each Record Document "Project Record" in neat, large letters. This label shall appear in the same location on every record drawing.

4. SUBMITTAL OF RECORD DOCUMENTS

- A. With its request for Substantial Completion of the Work, the Contractor shall furnish one marked-up print set of all Record Drawings and Specifications for review by the Construction Manager.
- B. Submittals will be reviewed for adequacy only and returned with comments, if any, to the Contractor.
- C. The Contractor shall incorporate all review comments into the Record Documents.
- D. After incorporation of review comments in the Record Documents, the Contractor shall submit the following as a final submittal:
 1. Drawings: one (1) mylar reproducible set (full-size, reverse reading, 3 mil thick) and three print sets of final marked-up drawings.
 2. Specifications: two (2) sets of final marked-up specifications.
 3. Shop Drawings, Product Data and Samples: one (1) copy each, except those related to the irrigation system, which shall be two (2) copies.
 4. Test records, executed Change Orders, field orders, requests for information, supplemental instructions, and other pertinent documentation: two (2) copies each.
- E. The final submittal shall include a transmittal letter containing the date, Project name and number, Contractor's name and address, title and number of each Record Document, certification that each document as submitted is complete and accurate, and the signature of the Contractor or of its authorized representative.
- F. All revisions to and final submittal of Record Documents shall be completed to the acceptance of the Construction Manager and the County prior to Final Completion of the Work and final payment.

END OF SECTION 01 720, PROJECT RECORD DOCUMENTS

SECTION 01 730 – OPERATING & MAINTENANCE DATA

1. GENERAL REQUIREMENTS

- A. Refer to individual sections of the Technical Specifications for specific requirements for instructions, maintenance manuals, and operating data, to be submitted by the Contractor in order to provide the County with all necessary documentation to adequately maintain and service materials, systems and equipment for the Project.
- B. The Contractor shall compile all such specified instructions, maintenance manuals and operating data as specified under the appropriate Technical Specification sections, and submit as described below in comprehensive sets of Operation and Maintenance Manuals.
- C. Coordinate the compiling and submittal of Operation and Maintenance Manuals with instructions to the County for equipment and systems, as described in General Requirements Section 01 680, *Equipment & Systems Instruction*. All complete Operation and Maintenance Manuals shall be submitted prior to the Contractor's request to receive a Certificate of Substantial Completion.

2. SUBMITTAL REQUIREMENTS

- A. Develop a sequential program for the development of the Operation and Maintenance Manuals. This program shall provide a step-by-step review of the development of the manuals. The following is an abbreviation of the required sequence of development of the manuals.
 - 1. Submittal of the Table of Contents
 - 2. Submittal of draft sections for County's, Architect's and Construction Manager's review
 - 3. Submittal of list of proposed attachments and appendices
 - 4. Submittal of initial draft of complete manual
 - 5. Submittal of final copies of all manuals with approved contents
- B. After all approvals have been obtained, submit to the Construction Manager four (4) sets of bound, clear and complete instructions for maintenance of materials, finishes, machinery and other items to ensure proper care and reasonable life expectancy thereof.
- C. Print or type, in orderly sequence, the required information for each item:
 - 1. Data shall include recommendations for inspection procedures, frequency of maintenance in cleaning, lubricating, type of lubricant, replacement items such as filters, product source locations, and servicing agencies and their phone numbers and additional data, if any, as specified in more detail elsewhere in the specifications.
 - 2. Include data for all finishes, whether painted, coated, fabric, polished and satin finish metals, glass, natural finishes on wood, natural stone, manufactured stone and various masonry finishes to the extent that such finishes occur on the project.
 - 3. For machinery, provide maintenance manuals and include complete parts lists showing the source(s) of genuine replacement parts (with current list prices indicated for same if requested by the County).
- D. Bind each set of data in a manageable number of 8 ½" by 11" sturdy three-ring binders, indexed and clearly labeled by Specification Section and item description. Each set shall be indexed and tabbed for the completed manual regardless of its completeness at the time of its submittal.
 - 1. Additional data will be added behind its tabbed location as received by the Construction Manager. Include an index for the completed set in each binder. Mark identification on both front and spine of each binder.

- E. Where the complexity of machinery is such that regular maintenance by a specialty service company is normal, or may be required by law, give notice thereof to the County in writing.

END OF SECTION 01 730, OPERATING & MAINTENANCE DATA

SECTION 01 740 – WARRANTIES

1. GENERAL

- A. Unless additional maintenance or performance warranties are required, all the Work shall be warranted by the Contractor for one year after the date of Substantial Completion of the Contract.
- B. Project warranties submitted by the Contractor do not reduce the County's warranty rights provided under State laws and regulations.
- C. Where products, materials, equipment, or systems are not properly performing or operating, the warranty shall not be considered in effect until corrective work is provided and the items are properly performing or operating.
- D. Warranties shall not include replaceable items such as light bulbs or cleaning materials, or damage by wear, vandalism or unusual climatic phenomenon, except water and air leaks caused by such phenomena.
- E. Warranties shall be signed by representatives that are expressly authorized to bind the Contractor to the warranties' terms and conditions. This requirement shall also apply to signatures on warranties of subcontractors, installers, manufacturers, and other entities engaged by the Contractor which are required by the Contract Documents.

2. DEFINITIONS

- A. Warranties on the Work are in several categories, including those of the Owner-Contractor Agreement, and including (but not necessarily limited to) the following specific categories related to individual units of Work specified in Division 2 through 17 of the Technical Specifications:
 - 1. Special Project Warranty (Guarantee): A warranty specifically written and signed by the Contractor for a defined portion of the Work; and, where required, countersigned by a subcontractor, installer, manufacturer and/or other entity engaged by the Contractor.
 - 2. Specified Product Warranty: A warranty which is required by the Contract Documents, to be provided for a manufactured product incorporated into the Work; regardless of whether the manufacturer has published a similar warranty without regard for specific incorporation of product into the Work, or has written and executed a special project warranty as a direct result of Contract Document requirements.

The Contractor shall issue four (4) copies of a special product warranty if required by the Technical Specifications. Examples of items which will require a special product warranty include roofing, waterproofing, certain insulation, caulking, wood and automatic doors, carpet and certain equipment.
 - 3. Coincidental Product Warranty: A warranty which is not specifically required by Contract Documents (other than as specified in this Section), but which is available on a product incorporated into the Work, by virtue of the fact that manufacturer of product has published a warranty in connection with purchases and uses of product without regard for specific applications except as otherwise limited by terms of warranty.
- B. Refer to the individual sections of the Technical Specifications for the determination of portions of the Work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).

3. SCOPE OF WARRANTIES

- A. Scope: The Contractor shall submit to the Construction Manager for transmittal to the Architect, upon completion of all the Work under the Contract, its written warranty made out to the County and in a form satisfactory to the Architect and the County, warranting all of the Work under the Contract to be free from faulty materials and improper workmanship, and warranting the Work against injury in the proper and usual use thereof. Under the warranty, the Contractor shall replace Work as may be found by the County to be improper or imperfect and to make good all damage caused to other work or materials by the imperfection or removal and replacement of the imperfect Work.
- B. Time Limit / Individual Warranties: A specific warranty of the Contractor may cover a longer period than that stated above where so stipulated in the Contract Documents. Warranties under service policies and warranties for individual pieces of equipment shall be assigned and delivered to County prior to the date of Final Acceptance, but said individual warranties shall in no way modify or shorten the one year overall warranty to be provided by the Contractor.
- C. Extended Warranties: Certain extended warranties by the Contractor or subcontractors, or maintenance contracts which are longer than one year's duration, may be required by the Contract Documents. At the completion of the Work, all such warranties or maintenance contracts covering materials, workmanship, maintenance, or other items as specified, shall be forwarded in duplicate to the Architect through the Construction Manager, together with a letter addressed to the County giving a summary of each said warranty as follows:
1. Character of Work covered by warranty
 2. Name of subcontractor furnishing warranty
 3. Period of warranty
 4. Conditions of warranty
- D. General Limitations: It is recognized that specific warranties are intended primarily to protect County against failure of the Work to perform as required, and against deficient, defective and faulty materials and workmanship, regardless of sources. Except as otherwise indicated, specific warranties do not cover failures in the Work which result from:
1. unusual and abnormal phenomena of the elements,
 2. the County's misuse, maltreatment or improper maintenance of the Work,
 3. vandalism after the time of Substantial Completion, or
 4. insurrection or acts of aggression, including war.
- E. Cost: Contractor warranties shall provide for the correction of work performed without additional charge. Any additional expense or damage resulting from imperfect work or the removal or replacement of imperfect work shall also be covered by said Contractor warranties.

4. CONTRACTOR OBLIGATIONS

- A. Related Damages and Losses: The Contractor shall be responsible for the correction of warranted Work which has failed. The Contractor shall remove and replace other Work which has been damaged as a result of such failure, or which must be removed and replaced to provide access for correction of warranted Work.
1. Consequential Damages: Except as otherwise indicated or required by governing regulations, special project warranties and product warranties are not extended to cover damage to building contents (other than Work of the Contractor) which occurs as a result of failure of warranted Work.

- B. Reinstatement of Warranty Period: Except as otherwise indicated, when Work covered by a special project warranty or product warranty has failed and has been corrected by replacement or restoration, reinstate warranty by written endorsement for a period of time equal to original warranty period of time, starting on date of acceptance of replaced or restored Work.
- C. Replacement Cost, Obligations: Except as otherwise indicated, costs of replacing or restoring failing warranted units or products is the Contractor's obligation, without regard for whether the County has already benefited from use through a portion of anticipated useful service lives.
- D. Contractor's Procurement Obligations: Do not purchase, subcontract for, or allow others to purchase or subcontract for materials or units of work for the Project where a special project warranty, specified product warranty, certification or similar commitment is required, until it has been determined that entities required to countersign such commitments are willing to do so.
- E. Rejection of Warranties: The County reserves the right, at the time of Substantial Completion or thereafter, to reject coincidental product warranties submitted by the Contractor, which in the opinion of the County tend to detract from or confuse interpretation of the requirements of the Contract Documents.

5. TRANSFER OF WARRANTIES TO OWNER

- A. Format: The warranties shall cover all the Work done under this Contract. All Contractor warranties shall bear the endorsement of the Construction Manager in writing, as per the attached Format of Transfer Of Warranties To Owner.

END OF SECTION 01 740, WARRANTIES

Format Of Transfer Of Warranties To Owner (one page) to follow:

FORMAT FOR THE TRANSFER OF WARRANTIES TO OWNER

TO: Fulton County Board of Commissioners
c/o: Fulton County Construction Manager
Re: (Work Covered in Warranty)

Project: _____

Name of Contractor: _____

Address of Contractor: _____

Dear County's Representative,

The undersigned warrants to the County that he will be responsible for all faulty or defective materials, equipment and workmanship, in the Work or portion thereof as referenced above, and that he will remedy any defects due thereto and pay for all damage to other work resulting thereof which shall appear within a period of _____ () year(s) from the date of Substantial Completion, as defined in the Contract Documents.

(Add additional conditions of warranty as noted in various technical sections of the Specifications.)

During the warranty period, upon written notice from County, the undersigned shall proceed with due diligence at the undersigned's sole expense to remove and replace properly any defective materials and equipment or perform any labor necessary to correct any such defect in the above. In case that the undersigned fails to remedy such defects, then the County may furnish such materials and equipment or labor as are necessary to correct the work, and the undersigned agrees to reimburse the County for any expense therefore promptly and fully.

Signed: _____** Date: _____

Type/Print Name: _____

Witness: _____**

Construction Manager endorsement of the above-noted warranty:

Signed: _____ Date: _____

** Signatures must be notarized.

SECTION 01 760 – SPARE PARTS & MAINTENANCE MATERIALS

1. GENERAL

- A. The Contractor shall furnish all labor, materials, tools, equipment and services for the provision of spare parts and maintenance materials as required in conjunction with all of the Work performed, as indicated or as required, in accordance with the provisions of the Contract Documents.
- B. Refer to the individual sections of the Technical Specifications for items of Work required.
 - 1. Spare parts shall be as specified in the Technical Specifications, or if not specifically specified, as adequate to fulfill one year's usage of such parts.
 - 2. Maintenance materials ("attic stock") shall be as specified in the Technical Specifications.

2. PACKAGING AND LABELING

- A. Package all parts and materials in sturdy boxes suitable in size to accommodate the quantity of items being packaged.
- B. All boxes shall have a single, standardized label which shall provide locations to write or type all necessary information. This label shall include the Project name, and shall be large enough so as to be easily read from a distance of several feet. The following information shall be included on each label:
 - 1. Manufacturer's name, part or trade name and stock number.
 - 2. The piece of equipment or finish for which the part or material is to be used.
 - 3. Name, address and phone number of the closest supplier.

3. DELIVERY

- A. Spare parts and maintenance materials shall be submitted directly to the County, with a letter of transmittal which shall itemize all items being submitted, and which shall be signed by an representative of the County as acknowledgement of receipt.
- B. Delivery of all parts and materials shall take place at a single time, unless previous approval is obtained from the Construction Manager. The time and location(s) of delivery shall be as determined by the County.
- C. A copy of all signed letters of transmittal shall be provided to the Construction Manager.
- D. The Contractor shall be responsible for the safe storage of all parts and materials until the designated time of inventory and acceptance by the County.

END OF SECTION 01 760, SPARE PARTS & MAINTENANCE MATERIALS

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SECTION 01 800 – CONTRACTOR SAFETY & LOSS PREVENTION PROGRAM

It is the policy of Fulton County to establish a comprehensive safety and health process for all Capital Projects implemented by Fulton County.

The goals of this comprehensive safety and health process are as follows:

- To prevent injury to workers on the Construction site, and prevention of injury to the general public.
- To implement safety and health processes as critical elements in the complete design and build process.
- To establish a proactive safety and health process that complies with all laws, regulations, consensus standards, and good management practices.

Fulton County requirements for safety and health processes are to be included in project design, in the invitation to bid, in bid award, and project meetings. The Contractor is required to implement these requirements, and develop a management system to ensure compliance following the safety and health process outlined in this document.

The Contractor will be obligated to implement, adhere to, and enforce this Policy. The safety and health of the Contractor's employees, Sub-Contractor employees and the general public are the sole responsibility of the Contractor. The County may use and direct designated Representatives to implement and enforce this policy. **Failure of the Contractor to comply with this policy or any Safety related obligations may be grounds for contract termination.**

Fulton County's designated Representative will periodically inspect all Fulton County construction projects to identify safety hazards. The Contractor will be responsible for abating the identified issues in a timely manner, and submitting written description of corrective action within 48 hours to Fulton County designated Representatives. Failure to bring timely resolution to the issues may result in work stoppage at the Contractor's expense.

Prior to commencing work under this contract, Contractor's Project Manager and Project Superintendent shall attend a Pre-Construction Meeting and Safety Pre-Planning meeting to address safety issues/requirements.

1.0 NOT USED

2.0 REFERENCES

- 1.1 Occupational Safety and Health Regulations (OSHA) 29CFR1910 and 29CFR1926
- 1.2 Environmental Protection Agency Regulations (EPA) 40CFR
- 1.3 Fulton County Safety and Health Requirements
- 1.4 Georgia Department of Transportation Regulations and Requirements
- 1.5 US Department of Transportation Requirements
- 1.6 Manual of Uniform Traffic Control Devices for Streets and Highways (ANSI D6.1)
- 1.7 Georgia Department of Natural Resources Environmental Protection Division Regulations

Safety rules and regulations will be followed using federal, state or local regulations in force. Should a Contractor's rule be in use which is more stringent, the most stringent rule or regulation will be enforced by the Contractor, Sub-Contractor's and Fulton County designated Safety Representative(s).

3.0 RESPONSIBILITY

The Contractor receiving the bid has the ultimate responsibility for the safety and health of all employees on the project, plus the general public, and complying with all governmental regulations and requirements (OSHA, EPA, DOT, state, local). Nothing contained herein shall relieve the Contractor of such responsibility or liability.

4.0 PROCEDURE

- 4.1 The Contractor must implement a written safety and health prevention process and program following the guidelines contained in this document. This program must be accepted by Fulton County or its Representatives prior to Notice to Proceed.
- 4.2 The Contractor is responsible for providing all necessary safety supplies and personal protective equipment required to protect its employees, Sub-Contractor employees, and the general public.
- 4.3 The Contractor shall make available certified First-aid services, First-aid supplies, and provisions for medical care for all employees at the construction site prior to beginning work on site.
- 4.4 The Contractor shall maintain a competent person at the construction site at all times with at least an OSHA 10-hour certification. Said person shall have the knowledge to recognize hazards or potential hazards and has the authority to correct such hazards.
- 4.5 The status of project safety shall be included in the Contractor's agenda for Progress Meetings.

5.0 DRUG AND ALCOHOL POLICY

The Contractor must implement a drug and alcohol policy in the Project safety Program in order to maintain a safe and efficient work environment. This policy must include the following elements.

1. Written policy that prohibits the use, transportation, sale and possession of these materials.
2. Disciplinary action plan for violations.
3. Any treatment or reinstatement/reemployment options.
4. Drug and alcohol testing schedule that includes pre-employment, periodic for safety sensitive or critical jobs, and for cause.

Note: AGC, ABC and/or Fulton County programs may be used as guidance documents.

6.0 OTHER CONTROLLED ITEMS

The Contractor is required to include in the Project Safety Program a prohibition against the use, possession, concealment, transportation, promotion, or sale of the following controlled items:

1. Firearms, weapons, and ammunition.
2. Switchblades
3. Unauthorized explosives including fireworks
4. Stolen property or contraband
5. Controlled chemicals or chemicals recognized as being able to be used for improper purposes.

7.0 EMERGENCY PROCEDURES/GUIDELINES

- 7.1 The Contractor is required to establish site specific emergency procedures in the Project Safety Program to manage emergencies that may occur at any time in the following categories:
 1. Fire
 2. Employee injury
 3. Pedestrian injury due to work activity of any kind
 4. Property damage and damage to various utilities (i.e., electrical, gas, sewerage, water, telephone or public roadways)
 5. Public demonstrations
 6. Bomb threats
 7. Flood, Wind, Lightening, Hail
 8. Terrorists Threats
 9. Work place violence
- 7.2 These Emergency Procedures will be made part of the Contractor's Project Safety Program submittal and shall include but not be limited to the following elements:

1. A list of emergency phone numbers posted at the job site, along with information to be transmitted in such emergencies.
2. An incident command structure defining duties and responsibilities
3. A system to train supervisors and employees on this emergency plan
4. Procedures on how to handle emergencies including access to the site by emergency responders, accounting for workers, and securing the area.
5. Procedures for media releases. These releases must be coordinated through the Fulton County Information and Public Affairs Office in coordination with the County's designated Representative.
6. A plan that addresses serious incidents that includes notification to Fulton County, Fulton County's designated Representative immediately after the incident.
7. A review and updating frequency that includes forwarding a copy to Fulton County and the County's designated Representative.

8.0 INCIDENT INVESTIGATION AND REPORTING

- 8.1 The Contractor is responsible for reporting all injuries or incidents on the project site to the County's designated Representative within (1) business day. Incidents resulting in a fatality, property loss or involvement with the general public must be reported immediately to Fulton County's designated Representative and the investigation of the incident coordinated with Fulton County Safety staff.
- 8.2 The Contractor will maintain a log of all injuries or incidents that occur on the job site. This log will be current and available for review.
- 8.3 For any incidents such as fires, explosions, fatalities, etc., the Contractor must notify Fulton County's designated Representative immediately and must coordinate any releases to the news media through the County's designated Representative and the County's Information and Public Affairs Office.
- 8.4 If a work-related injury should occur, the Contractor shall perform a thorough investigation of the incident and document the information.
- 8.5 A written incident investigation report containing the following information as a minimum must be forwarded to the Fulton County's designated Representative within 24 hours of the incident.
 1. Company Name
 2. Location
 3. Date and Time of incident
 4. Description of incident
 5. Names of all parties involved and all witnesses
 6. Corrective action(s) taken to prevent recurrence
 7. If the incident involves injury or illness, the following information must be provided:
 - a) A medical description of the injury or illness
 - b) OSHA recordability status i.e. first aid, medical treatment, lost time, days of restricted work.
 - c) If the public is involved, information about treatment and treatment location.
 8. Any pictures, site drawings, etc. if they assist in describing the incident.

If the investigation cannot be completed in 24 hours, a preliminary report marked as such shall be forwarded and the report completed and forwarded as soon as possible.

9.0 JOB SAFETY ANALYSIS

- 9.1 The Contractor must implement a procedure to conduct a written job safety analysis or job hazard analysis for all project work tasks prior to beginning each task. Reference Appendix A.
- 9.2 The job safety analysis should follow National Safety Council, AGC, or other recognized guidelines and address all safety and health hazards for the work, identify personal protective and other safety equipment required, identify potential hazards to the general public if applicable, and identify any safety equipment, training, or controls that must be implemented prior to starting the work.

9.3 The Contractor must maintain a file for all job safety analysis forms, which is accessible for review.

10.0 SAFETY AND HEALTH COMPLIANCE AUDITING

10.1 Self Auditing Requirements

10.1.1 The Contractor must implement a procedure to assure that written safety and health audits or inspections are conducted at least biweekly.

10.1.2 Each written safety audit must be filed on the site and a copy forwarded to Fulton County designated Representative.

10.2 INSPECTIONS BY REGULATORY AGENCIES

10.2.1 The Contractor must notify the Fulton County designated Representative whenever an OSHA compliance officer, health inspector, or EPA or Georgia Environmental Protection Division Representative arrives at the project site to conduct an inspection.

10.2.2 The Contractor is required to forward a copy of all regulatory citations, notice of violations, or similar for this project to Fulton County's designated Representative.

10.2.3 These records will be reviewed with Fulton County designated Representative and included in the Construction Project files.

10.3 SAFETY INSPECTION AND AUDIT FOLLOW UP

10.3.1 Every safety audit or regulatory inspection conducted per the requirements above may be reviewed by the Fulton County designated Representative. This review may identify serious and repeat safety items, look at trends, identify risks and potential losses, and site safety and loss prevention activities.

10.3.2 After this review the findings may identify areas needing improvement.

10.3.3 A copy of the audit and any areas identified as needing improvement will be forwarded to the Contractor's senior management.

10.3.4 For findings that indicate serious concerns about site safety, the areas identified as needing improvement and the overall performance may be reviewed Fulton County's designated Representative. A written action plan to address the Contractor's performance issues may be developed.

10.3.5 Fulton County or designated Representative may meet the Contractor's senior management to discuss the findings, contract requirements, and their plans to address the findings.

10.3.6 The number and frequency of safety audits and site visits may be increased until improvements are noted.

11.0 SAFETY MEETINGS

11.1 The Contractor will conduct weekly safety meetings with all Contractor and Sub-Contractor employees on the site.

11.2 The Contractor will keep safety-meeting records that include meeting topic(s), outline of items discussed, and attendance and sign in sheet. At this meeting any incidents or audit findings and corrective actions from the previous week will be discussed.

11.3 The Contractor will maintain a job site file that contains copies of the safety meeting records.

12.0 TRAINING, INSPECTION AND CERTIFICATION

12.1 Employee Training

- 12.1.1 The Contractor must be able to show when requested the required safety training for all Contractor and Sub-Contractor employees and competent persons working on the site including any required craft training.
- 12.1.2 The Contractor must be able to show when requested that all employees operating mobile equipment or cranes have met or exceeded training and licensing requirements.
- 12.1.3 The Contractor must be able to show when requested that all scaffolds are erected under the direction of a competent scaffold builder, that all users are properly trained, and that the scaffold is inspected daily.
- 12.1.4 The Contractor shall ensure that each employee is properly trained in the recognition and avoidance of unsafe conditions and the regulations applicable to his or her work environment to control or eliminate any hazards or other exposure to illness or injury.
- 12.1.5 If Contractor or Sub-Contractor employs anyone who cannot effectively communicate using the English language, a translator must be maintained on site who can relay instructions, questions, or concerns in a manner that the non-English and English-speaking employees will understand. The identification of this translator shall be provided to Fulton County's designated Representative.
- 12.1.6 Contractor shall orient all supervision and employees concerning safety requirements before working on the project site.

12.2 Equipment Certification and Inspection

- 12.2.1 The Contractor must be able to document that all cranes and mobile equipment used on the job site have current inspections and certifications.
- 12.2.2 The Contractor must assure that required daily and weekly equipment inspections are performed and documented in writing per governmental regulations and the requirements of this policy.
- 12.2.3 The Contractor must maintain a job site file for these required inspections and certifications.
- 12.2.4 Equipment identified as having safety problems or not meeting standards or codes shall be tagged as defective and shall not be used until those identified items have been corrected.
- 12.2.5 Contractor shall maintain, and have available for viewing, safety inspection reports for ladder, electrical cords, scaffolds, and trenches/excavations.

13.0 SAFETY AND HEALTH PROGRAM ELEMENTS

Note: Based on the project work activities and scope of work, some program elements may be not applicable to the project work and therefore do not have to be implemented. Elements marked with an asterisk are applicable to all Projects.

13.1 Fire Prevention Program*

The Contractor is required to submit a temporary fire protection plan to be in effect for the duration of the contract. This plan must be submitted as part of the Contractor's Safety Program submittal. It must include provisions for fire protection systems and equipment, as identified in OSHA Safety and Health for Construction 1926, Sub-Part F, Fire Protection and Prevention.

13.2 Hazard Communication (HAZCOM)*

The Contractor shall have a written HAZCOM Program. The program shall meet OSHA 1926 Requirements and provide for training so that all employees will be able to:

- Understand the program and identify hazardous chemicals with which they work.
- Understand product-warning labels.

- Have MSDSs for all potentially hazardous materials brought onto, used on, or stored at the job site.
- Know the physical location of the Material Safety Data Sheets (MSDS).

13.3 Personal Protective Equipment(PPE)*

All Contractor and Sub-Contractor employees and other site visitors will be required to wear the PPE necessary to accomplish the work in a safe manner. PPE required will vary from job to job and must be based on a written hazard assessment. A list of PPE that is required is identified below:

- Hard Hats shall be worn at all times on all projects
- Hearing Protection for operations that create noise in excess of 85 dBA is required.
- Contractor shall provide eye or face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.
- Work boots or work shoes made of leather shall be required. No open toed shoes or canvas shoes are allowed
- Shirts with sleeves at least 4 inches long are required. Tank tops and mesh shirt are not allowed.
- Full Body Safety Harnesses with shock absorbing lanyards for fall protection are required.
- Full body and chemical splash protection is required when handling hazardous chemicals.
- Respirators are required when employees maybe exposed to dust and/or chemicals in excess of the OSHA permissible exposure limits.
- Long pants are required.

13.4 Confined Space Entry

If the project work involves permit required confined spaces, a permit required confined space entry program that meets OSHA requirements must be established. This program must include but is not limited to the following elements.

- Confined Space Identification
- Environmental Testing
- Rescue
- Communication with employees in the confined space
- Employee Training
- Permit System for entry

13.5 Excavations

If the Contractor or Sub-Contractor must make a cut, cavity, trench or depression in an earth surface formed by earth removal, the work must comply with the OSHA Regulations on trenching and excavations. A competent person must be assigned for each excavation. Requirements include but are not limited to

- Employee Training
- Daily inspections
- Soil testing
- Protective or support systems.

13.7 Electrical Tools, Equipment, and Systems*

- The Contractor and each Sub-Contractor must implement Assured Grounding Program or use Ground Fault Circuit Interrupter (GFCI) devices on all electrical tools and extension cords.
- All electrical work must be performed in accordance with the National Electrical Code (NEC) and OSHA.
- All electrical tools and extension cords must be in good repair and the Contractor must establish a written inspection program for all electrical tools. The frequency of inspection shall be at least monthly.

13.8 Lockout/Tagout Procedure

The Contractor will be required to implement a written Lockout/Tag procedure that meets OSHA requirements if their work requires energy isolation. Program elements include but are not limited to the following:

- Energy isolation lists for each piece of equipment
- Employee training
- Individually keyed locks and danger tags
- Written Procedure that assigns responsibilities

13.9 Fall Protection*

Contractor shall provide an approved fall protection system for all employees working at an elevation of 6 feet or higher on this project, including scaffolding work and steel erection. Employees will be responsible for utilizing the fall protection 100% of the time. Sub-Contractors will be responsible for ascertaining their employees' compliance with this requirement. The plan must address the following items:

- Only full body harnesses with shock absorbing lanyards and double locking hooks shall be use.
- Falls should be limited to less than 6 feet such than employee can neither fall more than 6 feet nor contact any lower level.
- Fall protection systems must be planned into the job and must be designed to handle loads and forces expected. The project goal is 100% fall protection.
- Employee training and enforcement of these requirements are mandatory to assure an effective program.

13.10 Scaffolding*

All scaffolds and work platforms shall be constructed to meet the requirements of OSHA 1926.451 and ANSI A10.8. Some program elements include but are not limited to

- User training for all employees who may use scaffolds
- Scaffolding is to be designed and erected by competent person(s) following manufacturer's guidelines. Employees must use fall protection when erecting scaffolding.
- Daily inspection by competent person. Must implement daily tag system to document inspection.
- Must have engineering approval for scaffolds above 100 feet in height.
- Must be able to document competent person credentials.
- Scaffolds must have proper egress (ladder/stairs) and should have guardrails, complete deck, toe boards and netting if anything can fall on people below. If guardrails or decking is not complete, fall protection must be used.

13.11 Cranes And Other Lifting Devices

- Trained and experienced operators shall operate Cranes in accordance with the applicable OSHA and ANSI/ASME.
- The Contractor is responsible for ensuring that the crane is properly sized for the job and that all required inspections and maintenance required by OSHA and ANSI/ASME standards have been conducted.
- All cranes should have anti-two block devices installed and operational. Cranes lifting employees in personnel baskets must have an anti-two block device to stop the crane if this condition occurs (positive acting).
- Tag lines are required to secure materials while being moved or handled by cranes.
- All cranes working in the vicinity of overhead power lines shall be grounded and be equipped with proximity guards.
- A lift plan must be submitted for all lifts that exceed 20,000 pounds or 75% of the crane's lift capacity. This plan must be reviewed and approved by the Contractor.
- Slings, hooks, and other lifting devices must be inspected on regular basis and stored properly.

13.12 Use Of Personnel Baskets

- Personnel baskets should only be used as the last practical means after documenting that all other means are unacceptable.
- The personnel basket must be manufactured, tested, and used in accordance with OSHA 1926.550. The crane lifting the basket must also meet OSHA requirements.

13.13 Personal Lifts With Articulating Booms (Jlg) And Scissors Lifts

- Operators must be trained in the safe operation of the lift including daily inspection procedures prior to use.
- Operators of JLG lifts must wear a full body harness with shock absorbing lanyard and be tied off while the lift is operation. Operators in a scissors lift must use fall protection anytime the guardrail system removed or altered.

13.14 Ladders*

- Ladders are acceptable means of access when used in compliance with OSHA 1926.1053.
- Ladders must be in good repair, have safety feet and be inspected.
- Extension ladders must be either held by an employee on the ground or tied off at the top.
- Homemade ladders not meeting OSHA requirements should not be used.
- Non-conducting ladders are required for electrical work.
- Fall protection is encouraged for employees working on ladders especially if they will be leaning and turning in their work activities.

13.15 Tools And Equipment*

All tools and equipment used on the project must be in a safe operating condition, with all guards in place, and must meet or exceed all governmental regulations (OSHA, EPA, DOT, etc.). Tools and equipment must be maintained, inspected, tested, and used in accordance with OSHA regulations.

13.16 Compressed Gas Cylinders*

- Compressed gas cylinders must be used, stored, and transported in accordance with OSHA requirements, DOT requirements, and Compressed Gas Association standards.
- Fuel and oxygen cylinders must be store separately or separated by a ½ hour rated firewall.
- Compressed gas cylinders are not allowed inside confined spaces.

13.17 Welding, Burning, And Cutting*

- The Contractor's program must meet or exceed OSHA and NFPA requirements.
- All flammables must be removed from work area and a fire watch posted in area until 30 minutes after the job is completed.
- At a minimum a 10 LB ABC rated fire extinguisher must be available in the immediate work area.
- Regulators must be in good working order and must have anti-flash back and check valves.
- Welding shields and burning goggles must be used.

13.18 Sanitation And Housekeeping*

- The project site shall have an adequate number of portable toilets and hand washing facilities.
- The project site must establish a housekeeping plan that includes daily site clean up and trash and debris removal.

13.19 Hearing Conservation*

The Contractor must establish a hearing conservation program that meets or exceeds OSHA requirements. Minimum program elements include audiometric testing, noise monitoring, use of hearing protectors, and employee training.

13.20 Respiratory Protection

The Contractor must implement a respiratory protection program that meets or exceeds OSHA requirements. Minimum program elements include risk based respirator selection, medical surveillance, employee training, respirator fit testing, and written operating procedures.

14.0 SPECIALIZED SAFETY PROGRAM ELEMENTS

If required by the project scope of work and specific work site or activities, specialized programs listed below shall be included in the Contractor's Safety Program submittal. The Contractor is required to implement the required programs and assure that they meet or exceed all contractual, regulatory and Fulton County's requirements applicable. Details for specific program elements may be included in the contract documents.

- 14.1 Asbestos Removal
- 14.2 Lead Based Paint Removal
- 14.3 Exposure Assessment and Employee Monitoring (Industrial Hygiene)
- 14.4 Hazardous Waste Operations and Training
- 14.5 Overhead Power Lines
- 14.6 Locating underground utilities
- 14.7 Dust Control
- 14.8 Guarding for floor holes and roof openings
- 14.9 Heavy Equipment, Truck and Earth Moving Equipment requirements
- 14.10 Environmental Requirements

15.0 ROAD AND TRANSPORTATION SAFETY REQUIREMENTS

The Contractor shall implement the following into its safety program whether required by the contract or any other authority having jurisdiction if required to perform the work and maintain vehicular and pedestrian traffic safety:

- 15.1 Barricades and Cones
- 15.2 Traffic and Warning Signs
- 15.3 Traffic control devices
- 15.4 Equipment and materials storage
- 15.5 Reflective Clothing and other personal protective equipment
- 15.6 Excavation and road hole protection

- 15.7 Erosion protection
- 15.8 Trained flag persons

16.0 ADDITIONAL REQUIREMENTS TO PROTECT THE GENERAL PUBLIC

Based on the Contractor's scope of work and specific work activities or location the Contractor may be required to implement the following into its safety program to protect the general public:

- 16.1 Fencing and other measures for site security
- 16.2 Warning, direction and no trespassing signs
- 16.3 Alternate public walk ways
- 16.4 Protection of the public from over head and other construction hazards
- 16.5 Site Traffic Control
- 16.6 Barricading off hazardous areas and open pits and holes

Appendix A Job Safety Analysis Worksheet Example and Information

Job Safety Analysis/ Job Pre-Planning Worksheet

Job Name and #:		Completed By:	
Date:		Phase/Operation:	
Task	Hazard	Control	

PRE-OPERATIONAL PLANNING
FACT FINDING GUIDE - GL

I. Evaluate present conditions at job site to determine items that could lead to liability claims during work and after completion of the project.

A. PRESENT OCCUPANCY OR USE OF THE SITE

- ~ Demolition to be done?
- ~ Structures will remain (condition)?

B. HISTORY OF THE SITE

- ~ For what was the site used before?
- ~ Underground tanks?
- ~ Underground utilities?

C. GEOLOGY OF THE SITE

- ~ Rock to be blasted?
- ~ Water to be removed/diverted?
- ~ Fill needed? (where and how obtained?)
- ~ Excavation needed? (where and how disposed of?)

II. Evaluate controls needed in reference to site security and public protection.

A. FENCING NEEDED?

B. ACCESS/GATES

- ~ Can traffic be routed past office or checkpoint?
- ~ "Non-Vendor" visitors escorted?
- ~ Gate lockable after hours?
- ~ "Hard Hat" signs at entrance?
- ~ Dirt removal/tarpping area at exit?
- ~ Ready Mix chute wash area?

C. PEDESTRIANS

- ~ Sidewalk maintained outside fence?
- ~ Covered sidewalk needed?
- ~ Special access requirements for neighboring occupants?
- ~ Special after-hours considerations?

D. ENVIRONMENTAL

- ~ Dust control?
- ~ Silt control?
- ~ Mud control on streets?
- ~ Vibration control?

E. UTILITIES

- ~ Underground utilities located?
- ~ Overhead power lines in work area relocated, removed, or deenergized?
- ~ Temporary power service away from high traffic areas?

F. SUB-CONTRACTORS

- ~ Method to secure proof of adequate insurance coverage in place?
- ~ List of hazardous materials obtained?
- ~ List of hazardous materials provided?
- ~ Responsibilities established
- ~ Job site safety meetings
- ~ Materials delivery
- ~ Debris removal
- ~ Access to site
- ~ Weekly Sub-Contractors' meetings
- ~ Schedule of safety inspections
- ~ Emergency Procedures

G. **MATERIALS HANDLING**

- ~ Crane selection criteria established
- ~ Maximum weight to be handled
- ~ Maximum lifting height
- ~ Maximum horizontal reach needed
- ~ Amount of travel needed
- ~ Swing radius available
- ~ Set-up area available
- ~ Ground bearing capacity
- ~ Approximate frequency of lifts
- ~ Crane operations responsibilities established
- ~ Triangle or leasing company crane to be used?
- ~ Operator trained and experienced on specific machine?
- ~ Operator can accurately read and interpret machine load chart?
- ~ Critical lift identified (75% of net capacity)?
- ~ Machine fully inspected by a qualified outside agency?
- ~ Rigging hardware properly selected?
- ~ Inspecting and maintaining the crane per owner/manufacturer specifications?

III. **Start Up.**

A. **ELECTRICAL**

- ~ Temporary Power
- ~ Underground service possible?
- ~ Maintenance responsibilities established?
- ~ Main circuit panel barricaded?
- ~ Lighting planned?
- ~ Circuit Protection
- ~ Ground fault circuit interrupt protection?
- ~ Assured grounding conductor program?
- ~ Responsibilities established?

B. **FIRE PROTECTION**

- ~ ABC extinguishers adequately distributed?
- ~ Properly sized?
- ~ Maintenance of fire extinguishers?
- ~ Stand pipe/hydrant available? Adequate?
- ~ Housekeeping checks/inspections?

C. FALL PROTECTION

- ~ Critical Job Phases Identified?
- ~ Critical exposures identified by phase? (e.g. "Worker falls into basement excavation")
- ~ Scheduled start dates for critical phases?

- ~ General Fall Protection Procedures
- ~ Perimeters
- ~ Floor openings
- ~ Working deck
- ~ Work area access
- ~ Ladders
- ~ Elevator hatchways

D. PERSONAL PROTECTIVE EQUIPMENT

- ~ General
- ~ Hard hats
- ~ Work shoes
- ~ Specific by Task

E. HAZARD COMMUNICATION PROGRAM ESTABLISHED AND EMPLOYEES TRAINED

F. CONFINED SPACE ENTRY

- ~ Procedures established and task(s) identified requiring use of procedures?

G. TRENCHING

- ~ Procedures established and task(s) requiring procedures identified?

H. PHASE PRE-PLANNING

- ~ Job schedules established?
- ~ Agreed upon target dates for meeting?
- ~ Follow up system?

END OF CONTRACTOR SAFETY AND HEALTH MANAGEMENT PROCESS

SECTION 01 850 – LIST OF DRAWINGS

CONTRACT DRAWINGS

The following drawings are bound separately and are part of the Invitation to Bid (ITB) documents.

Dwg. No.	Drawing Title	Issue Date	Latest Rev. No.	Revision Date
G1	COVER SHEET	10/03/06		
E1	LEGEND, ABBREVIATIONS AND GENERAL NOTES	10/03/06		
E2	BENSON CENTER – ELECTRICAL PARTIAL FLOOR PLAN	10/03/06		
E3	BOWDEN CENTER – ELECTRICAL PARTIAL FLOOR PLAN	10/03/06		
E4	DARNELL CENTER – ELECTRICAL PARTIAL FLOOR PLAN	10/03/06		
E5	MILLS CENTER – ELECTRICAL PARTIAL FLOOR PLAN	10/03/06		
E6	MILLS CENTER – ELECTRICAL SITE PLAN	10/03/06		

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SECTION 02 230 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Protecting existing trees and vegetation to remain.
 - 2. Removing trees and other vegetation.
 - 3. Clearing and grubbing.
 - 4. Topsoil stripping.
 - 5. Removing above-grade site improvements.
 - 6. Disconnecting, capping or sealing, and abandoning site utilities in place.
 - 7. Disconnecting, capping or sealing, and removing site utilities.
- B. Related Sections include the following:
 - 1. Division 2 Section "Earthwork" for soil materials, excavating, backfilling, and site grading.

1.3 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

1.4 MATERIALS OWNERSHIP

- A. Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

1.5 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- B. Record drawings according to Division 1 Section "Project Closeout."

1. Identify and accurately locate capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing indicated removal and alteration work on property adjoining Owner's property will be obtained by Owner before award of Contract.
- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- D. Notify utility locator service for area where Project is located before site clearing.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Locate and clearly flag trees and vegetation to remain or to be relocated.
- D. Protect existing site improvements to remain from damage during construction.
 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TREE PROTECTION

- A. Erect and maintain a temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.
 - 1. Do not store construction materials, debris, or excavated material within drip line of remaining trees.
 - 2. Do not permit vehicles, equipment, or foot traffic within drip line of remaining trees.
- B. Do not excavate within drip line of trees, unless otherwise indicated.
- C. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
 - 1. Cover exposed roots with burlap and water regularly.
 - 2. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
 - 3. Coat cut faces of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
 - 4. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.
- D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.
 - 1. Employ a qualified arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
 - 2. Replace trees that cannot be repaired and restored to full-growth status, as determined by the qualified arborist.

3.3 UTILITIES

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing when requested by Contractor.
 - 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Architect's written permission.
- D. Excavate for and remove underground utilities indicated to be removed.

- E. Removal of underground utilities is included in Division 15 mechanical or Division 16 electrical Sections.

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 3. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 - 4. Use only hand methods for grubbing within drip line of remaining trees.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding 8-inch loose depth, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Strip surface soil of unsuitable topsoil, including trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Limit height of topsoil stockpiles to 72 inches.
 - 2. Do not stockpile topsoil within drip line of remaining trees.
 - 3. Dispose of excess topsoil as specified for waste material disposal.
 - 4. Stockpile surplus topsoil and allow for respreading deeper topsoil.

3.6 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

3.7 DISPOSAL

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 02 230 – SITE CLEARING

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SECTION 02 300 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
 - 2. Drainage course for slabs-on-grade.
 - 3. Subsurface drainage backfill for walls and trenches.
 - 4. Excavating and backfilling trenches within building lines.
 - 5. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.
- B. Related Sections include the following:
 - 1. Division 2 Section "Site Clearing" for site stripping, grubbing, removing topsoil, and protecting trees to remain.
 - 2. Division 3 Section "Cast-in-Place Concrete" for granular course over vapor retarder.
 - 3. Division 16 Sections for excavating and backfilling buried mechanical and electrical utilities and buried utility structures.

1.3 DEFINITIONS

- A. Backfill: Soil materials used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Layer placed between the subbase course and asphalt paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations.

1. Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material 3/4 cu. yd. or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2 inches .

I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

J. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.

K. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

L. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Each type of plastic warning tape.
2. Drainage fabric.
3. Separation fabric.

1.5 QUALITY ASSURANCE

A. Preexcavation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.6 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.
3. Contact utility-locator service for area where Project is located before excavating.

- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Backfill and Fill: Satisfactory soil materials.
- E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- F. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- H. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- I. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- J. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems.
- B. Drainage Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
1. Grab Tensile Strength: 110 lbf ; ASTM D 4632.
 2. Tear Strength: 40 lbf; ASTM D 4533.
 3. Puncture Resistance: 50 lbf; ASTM D 4833.
 4. Water Flow Rate: 150 gpm per sq. ft.; ASTM D 4491.
 5. Apparent Opening Size: No. 50; ASTM D 4751.
- C. Separation Fabric: Woven geotextile, specifically manufactured for use as a separation geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
1. Grab Tensile Strength: 200 lbf; ASTM D 4632.
 2. Tear Strength: 75 lbf; ASTM D 4533.
 3. Puncture Resistance: 90 lbf; ASTM D 4833.
 4. Water Flow Rate: 4 gpm per sq. ft.; ASTM D 4491.
 5. Apparent Opening Size: No. 30; ASTM D 4751.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
 - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Pile Foundations: Stop excavations from 6 to 12 inches above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
 - 3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
 - B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
 1. Clearance: 12 inches on each side of pipe or conduit.
 2. Clearance: As indicated.
 - C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 1. For pipes and conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
 2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
 3. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
 - D. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.
 1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- 3.8 APPROVAL OF SUBGRADE
- A. Notify Architect when excavations have reached required subgrade.
 - B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
 1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
 - D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.
- 3.9 UNAUTHORIZED EXCAVATION
- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 2. Surveying locations of underground utilities for record documents.
 3. Inspecting and testing underground utilities.
 4. Removing concrete formwork.
 5. Removing trash and debris.
 6. Removing temporary shoring and bracing, and sheeting.
 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.12 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.
- C. Provide 4-inch-thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.
- D. Place and compact initial backfill of subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
 1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- E. Coordinate backfilling with utilities testing.
- F. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.
- G. Place and compact final backfill of satisfactory soil material to final subgrade.

- H. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 FILL

- A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- C. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material.
 - 3. Under steps and ramps, use engineered fill.
 - 4. Under building slabs, use engineered fill.
 - 5. Under footings and foundations, use engineered fill.

3.14 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
- D. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
 - 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 92 percent.
 - 3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.

3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1 inch.
 - 3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.17 SUBSURFACE DRAINAGE

- A. Drainage Piping: Drainage pipe is specified in Division 2 Section "Subdrainage"
- B. Subsurface Drain: Place a layer of drainage fabric around perimeter of drainage trench as indicated. Place a 6-inch course of filter material on drainage fabric to support drainage pipe. Encase drainage pipe in a minimum of 12 inches of filter material and wrap in drainage fabric, overlapping sides and ends at least 6 inches.
 - 1. Compact each course of filter material to 95 percent of maximum dry unit weight according to ASTM D 698.
- C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade. Overlay drainage backfill with one layer of drainage fabric, overlapping sides and ends at least 6 inches.
 - 1. Compact each course of filter material to 95 percent of maximum dry density according to ASTM D 698.
 - 2. Place and compact impervious fill material over drainage backfill to final subgrade.

3.18 SUBBASE AND BASE COURSES

- A. Install separation fabric on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
- B. Under pavements and walks, place subbase course on separation fabric according to fabric manufacturer's written instructions and as follows.
- C. Under pavements and walks, place subbase course on prepared subgrade and as follows:
 - 1. Place base course material over subbase.

2. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
 3. Shape subbase and base to required crown elevations and cross-slope grades.
 4. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
 5. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.
- D. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.19 DRAINAGE COURSE

- A. Under slabs-on-grade, install drainage fabric on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends. Place drainage course on drainage fabric and as follows:
- B. Under slabs-on-grade, place drainage course on prepared subgrade and as follows:
1. Compact drainage course to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.
 2. When compacted thickness of drainage course is 6 inches or less, place materials in a single layer.
 3. When compacted thickness of drainage course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

3.20 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.

2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.21 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.
- B. Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02 300 – EARTHWORK

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SECTION 02 920—LAWNS AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Seeding.
 - 2. Sodding.
 - 3. Lawn renovation.
- B. Related Sections include the following:
 - 1. Division 2 Section "Site Clearing" for topsoil stripping and stockpiling.
 - 2. Division 2 Section "Earthwork" for excavation, filling and backfilling, and rough grading.

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- C. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

1. Certification of each seed mixture for turfgrass sod, identifying source, including name and telephone number of supplier.
- C. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.
- D. Qualification Data: For landscape Installer.
- E. Material Test Reports: For existing surface soil and imported topsoil.
- F. Planting Schedule: Indicating anticipated planting dates for each type of planting.
- G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of lawns during a calendar year. Submit before expiration of required maintenance periods.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
 1. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed: Deliver seed in original sealed, labeled, and undamaged containers.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

1.7 SCHEDULING

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Spring Planting: March 1-June 15
 - 2. Fall Planting: September 15-December 1
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

1.8 LAWN MAINTENANCE

- A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
 - 1. Seeded Lawns: 60 days from date of Substantial Completion.
 - a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.
 - 2. Sodded Lawns: 30 days from date of Substantial Completion.
- B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
 - 1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.
- C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches (100 mm).
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water lawn at a minimum rate of 1 inch per week.
- D. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 - 1. Mow grass 2 to 3 inches (50 to 75 mm) high.
- E. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
 - 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) to lawn area.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: State-certified seed of grass species, as follows:
- C. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
 - 1. Full Sun: Bermudagrass (*Cynodon dactylon*).
 - 2. Sun and Partial Shade: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*).
 - b. 30 percent chewings red fescue (*Festuca rubra* variety).
 - c. 10 percent perennial ryegrass (*Lolium perenne*).
 - d. 10 percent redtop (*Agrostis alba*).
 - 3. Shade: Proportioned by weight as follows:
 - a. 50 percent chewings red fescue (*Festuca rubra* variety).
 - b. 35 percent rough bluegrass (*Poa trivialis*).
 - c. 15 percent redtop (*Agrostis alba*).

2.2 TURFGRASS SOD

- A. Turfgrass Sod: Number 1 Quality/Premium, including limitations on thatch, weeds, diseases, nematodes, and insects, complying with TPI's "Specifications for Turfgrass Sod Materials" in its "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
- B. Turfgrass Species: Bermudagrass (*Cynodon dactylon*).

2.3 TOPSOIL

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 6 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.
 - 1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from agricultural land, bogs or marshes.

2.4 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
 - 1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 (3.35-mm) sieve and a maximum 10 percent passing through No. 40 (0.425-mm) sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.
- G. Sand: Clean, washed, natural or manufactured, free of toxic materials.
- H. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.5 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch (25-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.
 - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
- B. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.
- C. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.6 PLANTING ACCESSORIES

- A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.7 FERTILIZER

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.8 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic; free of plant-growth or germination inhibitors; with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

2.9 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.
- B. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding overspray.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 LAWN PREPARATION

- A. Limit lawn subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches (100 mm). Remove stones larger than 2 inches (50 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply fertilizer directly to subgrade before loosening.
 - 2. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 - 3. Spread planting soil mix to a depth of 4 inches (100 mm) but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 4 inches (100 mm) of subgrade. Spread remainder of planting soil mix.
 - b. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - 2. Loosen surface soil to a depth of at least of 6 inches (150 mm). Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches (100 mm) of soil. Till soil to a homogeneous mixture of fine texture.
 - a. Apply fertilizer directly to surface soil before loosening.
 - 3. Remove stones larger than 2 inches (50 mm) in any dimension and sticks, roots, trash, and other extraneous matter.
 - 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.
- E. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- F. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 1. Do not use wet seed or seed that is moldy or otherwise damaged.
- B. Sow seed at the rate prescribed by seed manufacturer.
- C. Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes exceeding 1:6 with erosion-control fiber mesh and 1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.
- E. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre (42 kg/92.9 sq. m) to form a continuous blanket 1-1/2 inches (38 mm) in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.
 - 1. Anchor straw mulch by crimping into topsoil with suitable mechanical equipment.
 - 2. Bond straw mulch by spraying with asphalt emulsion at the rate of 10 to 13 gal./1000 sq. ft. (38 to 49 L/92.9 sq. m). Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with nonasphaltic tackifier.
 - 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply mulch at a minimum rate of 1500-lb/acre (15.3-kg/92.9 sq. m) dry weight but not less than the rate required to obtain specified seed-sowing rate.
 - 3. Apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry application at a minimum rate of 500-lb/acre (5.1-kg/92.9 sq. m) dry weight but not less than the rate required to obtain specified seed-sowing rate. Apply slurry cover coat of fiber mulch at a rate of 1000 lb/acre (10.2 kg/92.9 sq. m).

3.6 SODDING

- A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across angle of slopes exceeding 1:3.
 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below sod.

3.7 LAWN RENOVATION

- A. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.
- B. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.
- C. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.
- D. Mow, dethatch, core aerate, and rake existing lawn.
- E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).
- H. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches (100 mm) of existing soil. Provide new planting soil to fill low spots and meet finish grades.
- I. Water newly planted areas and keep moist until new lawn is established.

3.8 SATISFACTORY LAWNS

- A. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).
- B. Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.
- C. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.9 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.
- C. Remove erosion-control measures after grass establishment period.

END OF SECTION 02 920 – LAWNS AND GRASSES

SECTION 02 930—EXTERIOR PLANTS

PART 1

A. GENERAL

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. This Section includes the following:

1. Trees.
2. Shrubs.
3. Ground cover.
4. Plants.
5. Edgings.

- B. Related Sections include the following:

1. Division 2 Section "Site Clearing" for protection of existing trees and planting, topsoil stripping and stockpiling, and site clearing.
2. Division 2 Section "Earthwork" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.

1.4 DEFINITIONS

- A. **Balled and Burlapped Stock:** Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 "American Standard for Nursery Stock" for type and size of tree or shrub required; wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.
- B. **Balled and Potted Stock:** Exterior plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 "American Standard for Nursery Stock" for type and size of exterior plant required.
- C. **Bare-Root Stock:** Exterior plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for kind and size of exterior plant required.
- D. **Container-Grown Stock:** Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of exterior plant required.

- E. Finish Grade: Elevation of finished surface of planting soil.
- F. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- G. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- H. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each of the following:
 - 1. 0.5 lb of mineral mulch for each color and texture of stone required, in labeled plastic bags.
 - 2. Edging materials and accessories, of manufacturer's standard size, to verify color selected.
- C. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:
 - 1. Manufacturer's certified analysis for standard products.
 - 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- D. Qualification Data: For landscape Installer.
- E. Material Test Reports: For existing surface soil and imported topsoil.
- F. Planting Schedule: Indicating anticipated planting dates for exterior plants.
- G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year. Submit before expiration of required maintenance periods.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.
 - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when exterior planting is in progress.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
 - 1. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.
- D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
 - 1. Selection of exterior plants purchased under allowances will be made by Landscape Architect, who will tag plants at their place of growth before they are prepared for transplanting.
- E. Tree and Shrub Measurements: Measure according to ANSI Z60.1 "American Standard for Nursery Stock" with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches (150 mm) above ground for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
- F. Observation: Landscape Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
 - 1. Notify Landscape Architect of sources of planting materials 28 days in advance of delivery to site.
- G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in General Requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver exterior plants alive and in good condition.
 - 1. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.
- B. Do not prune trees and shrubs before delivery, except as approved by Landscape Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.
- C. Handle planting stock by root ball.
- D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.

1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.
2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
3. Do not remove container-grown stock from containers before time of planting.
4. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.8 COORDINATION

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 1. Spring Planting: March 1-June 15
 2. Fall Planting: September 15-December 1
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.
- C. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns, unless otherwise acceptable to Landscape Architect.
 1. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

1.9 WARRANTY

- A. Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.
 1. Warranty Period for Trees and Shrubs: One year from date of final acceptance.
 2. Warranty Period for Ground Cover and Plants: One year from date of final acceptance.
 3. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
 4. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
 5. A limit of one replacement of each exterior plant will be required, except for losses or replacements due to failure to comply with requirements.

1.10 MAINTENANCE

- A. Trees and Shrubs: Maintain for the following maintenance period by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Restore or replace damaged tree wrappings.
 1. Maintenance Period: 12 months from date of Final Acceptance.
- B. Ground Cover and Plants: Maintain for the following maintenance period by watering, weeding, fertilizing, and other operations as required to establish healthy, viable plantings:

1. Maintenance Period: 12 months from date of Final Acceptance.

PART 2 - PRODUCTS

2.1 TREE AND SHRUB MATERIAL

- A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.
- C. Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.
- D. If formal arrangements or consecutive order of trees or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.

2.2 SHADE AND FLOWERING TREES

- A. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required.
 1. Provide balled and burlapped trees.
 2. Branching Height: One-third to one-half of tree height.
- B. Small Spreading Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:
 1. Stem Form: Single stem, Multistem, clump, with two or more main stems or Multistem, shrub, with multiple stems.
 2. Provide balled and burlapped or container-grown trees.
- C. Multistem Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:
 1. Stem Form: Clump.
 2. Provide balled and burlapped or container-grown trees.

2.3 DECIDUOUS SHRUBS

- A. Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape, and height of shrub.
 1. Provide balled and burlapped or container-grown trees.

2.4 CONIFEROUS EVERGREENS

- A. Form and Size: Normal-quality, well-balanced, coniferous evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.

2.5 BROADLEAF EVERGREENS

- A. Form and Size: Normal-quality, well-balanced, broadleaf evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.

- 1. Provide balled and burlapped trees.

2.6 GROUND COVER PLANTS

- A. Ground Cover: Provide ground cover established and well rooted in pots or similar containers, and complying with ANSI Z60.1.

2.7 PLANTS

- A. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

2.8 TOPSOIL

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1 inch (25 mm) or larger in any dimension and other extraneous materials harmful to plant growth.

- 1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from agricultural land, bogs or marshes.

2.9 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:

- 1. Provide lime in form of dolomitic limestone.

- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 (3.35-mm) sieve and a maximum 10 percent passing through No. 40 (0.425-mm) sieve.

- C. Sand: Clean, washed, natural or manufactured, free of toxic materials.

2.10 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch (13-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.
 - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
- B. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.
- C. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
- D. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.11 FERTILIZER

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.12 MULCHES

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
 - 1. Type: Shredded hardwood, Ground or shredded bark, and/or pine straw as indicated in drawings.
- B. Mineral Mulch: Hard, durable stone, washed free of loam, sand, clay, and other foreign substances, of following type, size range, and color:
 - 1. Type: Rounded riverbed gravel or smooth-faced stone.
 - 2. Size Range: 2-1/2 inches (38 mm) maximum, 3/4 inch (19 mm) minimum.
 - 3. Color: Readily available natural gravel color range.

2.13 STAKES AND GUYS

- A. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2 by 2 inches (50 by 50 mm) by length indicated, pointed at one end.

- B. Guy and Tie Fabric: Arbor tie or approved equal.

2.14 PLANTING SOIL MIX

- A. Planting Soil Mix: Mix topsoil with the following soil amendments and fertilizers in the following quantities:
 - 1. 4% by volume organic compost.
 - 2. Slow-Release Fertilizer as recommended by soil test.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual tree and shrub locations and areas for multiple exterior plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before planting. Make minor adjustments as required.
- D. Lay out exterior plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

3.3 PLANTING BED ESTABLISHMENT

- A. Loosen subgrade of planting beds to a minimum depth of 8 inches (200 mm). Remove stones larger than 1-1/2 inches (38 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
- B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
- C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.4 TREE AND SHRUB EXCAVATION

- A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
 - 1. Excavate approximately three times as wide as ball diameter for balled and burlapped stock.
 - 2. Excavate at least 12 inches (300 mm) wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
- B. Subsoil removed from excavations shall be used as backfill.
- C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
 - 1. Hardpan Layer: Drill 6-inch- (150-mm-) diameter holes into free-draining strata or to a depth of 10 feet (3 m), whichever is less, and backfill with free-draining material.
- D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE AND SHRUB PLANTING

- A. Set balled and burlapped stock plumb and in center of pit or trench with top of root ball 1/2 inch (25 mm) above adjacent finish grades.
 - 1. Remove burlap, rope ties, and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
 - 2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.
- B. Set container-grown stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.
 - 1. Carefully remove root ball from container without damaging root ball or plant.
 - 2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.
- C. Set and support bare-root stock in center of pit or trench with root collar or trunk flare flush with adjacent finish grade. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling, and maintain plumb while working backfill around roots and placing layers above roots. Tamp final layer of backfill. Remove injured roots by cutting cleanly; do not break.

- D. Organic Mulching: Apply 3-inch (75-mm) average thickness of organic mulch. Do not place mulch within 3 inches (75 mm) of trunks or stems.

3.6 TREE AND SHRUB PRUNING

- A. Prune, thin, and shape trees and shrubs as directed by Landscape Architect or Arborist.
- B. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.

3.7 GUYING AND STAKING

- A. Guying and Staking: Guy and stake trees exceeding 14 feet (4.2 m) in height and more than 3 inches (75 mm) in caliper, unless otherwise indicated. Securely attach no fewer than 3 guys to stakes 30 inches (760 mm) long, driven to grade.
 - 1. For trees more than 6 inches (150 mm) in caliper, anchor guys to pressure-preservative-treated deadmen 8 inches (200 mm) in diameter and 48 inches (1200 mm) long buried at least 36 inches (900 mm) below grade. Provide turnbuckles for each guy wire and tighten securely.
 - 2. Attach flags to each guy wire, 30 inches (760 mm) above finish grade.
 - 3. Paint turnbuckles with luminescent white paint.

3.8 GROUND COVER AND PLANT PLANTING

- A. Set out and space ground cover and plants as indicated in drawings.
- B. Dig holes large enough to allow spreading of roots, and backfill with planting soil.
- C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.9 PLANTING BED MULCHING

- A. Mulch backfilled surfaces of planting beds and other areas indicated.
 - 1. Organic Mulch: Apply 3-inch (75-mm) average thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.
 - 2. Mineral Mulch: Apply 3-inch (75-mm) average thickness of mineral mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

3.10 CLEANUP AND PROTECTION

- A. During exterior planting, keep adjacent pavings and construction clean and work area in an orderly condition.
- B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

3.11 DISPOSAL

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 02 930 – EXTERIOR PLANTS

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SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.
- B. Related Sections include the following:
 - 1. Division 2 Section "Earthwork" for drainage fill under slabs-on-grade.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mix water to be withheld for later addition at Project site.
- C. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Cementitious materials and aggregates.
 - 2. Form materials and form-release agents.
 - 3. Steel reinforcement and reinforcement accessories.
 - 4. Fiber reinforcement.
 - 5. Admixtures.
 - 6. Waterstops.
 - 7. Curing materials.
 - 8. Floor and slab treatments.
 - 9. Bonding agents.
 - 10. Adhesives.
 - 11. Vapor retarders.
 - 12. Joint-filler strips.
 - 13. Repair materials.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- D. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
 - 1. ACI 301, "Specification for Structural Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- C. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of the exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes not larger than 1 inch in diameter in concrete surface.
 - 3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

2.3 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
- B. Joint Dowel Bars: Plain-steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.

2.4 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I or III.
 - 1. Fly Ash: ASTM C 618, Class C or F.
- B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
 - 1. Class: Moderate weathering region, but not less than 3M.
 - 2. Nominal Maximum Aggregate Size: 1 inch (25 mm).
- C. Water: Potable and complying with ASTM C 94.

2.5 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.
- G. Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Catexol 1000CL; Axim Concrete Technologies.
 - b. MCI 2000 or MCI 2005; Cortec Corporation.
 - c. DCI or DCI-S; W. R. Grace & Co., Construction Products Div.
 - d. Rheocrete 222+; Master Builders, Inc.
 - e. FerroGard-901; Sika Corporation.

2.6 VAPOR RETARDERS

- A. Vapor Retarder: ASTM E 1745, Class C, of one of the following materials; or polyethylene sheet, ASTM D 4397, not less than 10 mils thick:

1. Nonwoven, polyester-reinforced, polyethylene coated sheet; 10 mils thick.

2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

2.8 RELATED MATERIALS

- A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
 1. Type II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.
 2. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
 3. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.9 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
 1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
 2. Proportion lightweight structural concrete according to ACI 211.2 and ACI 301.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.
- C. Slab-on-Grade: Proportion normal-weight concrete mix as follows:
 1. Compressive Strength (28 Days): 2500 psi.
 2. Maximum Slump: 5 inches.
- D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 1. Fly Ash: 25 percent.
 2. Combined Fly Ash and Pozzolan: 25 percent.
 3. Ground Granulated Blast-Furnace Slag: 50 percent.

4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
- E. Maximum Water-Cementitious Materials Ratio: 0.50 for concrete required to have low water permeability.
- F. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 2 to 4 percent, unless otherwise indicated.
- G. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
 1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
 2. Use corrosion-inhibiting admixture in concrete mixes where indicated.

2.10 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.11 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.
 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least one and one-half minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
 1. Class A, 1/8 inch.
 2. Class B, 1/4 inch.
 3. Class C, 1/2 inch.
 4. Class D, 1 inch.

- D. Construct forms tight enough to prevent loss of concrete mortar.
 - E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
 - 1. Do not use rust-stained steel form-facing material.
 - F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
 - G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
 - H. Chamfer exterior corners and edges of permanently exposed concrete.
 - I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
 - J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
 - K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
 - L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- 3.2 EMBEDDED ITEMS
- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor bolts, accurately located, to elevations required.
 - 2. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 3. Install dovetail anchor slots in concrete structures as indicated.
- 3.3 REMOVING AND REUSING FORMS
- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
 - B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:
 - 1. 28-day design compressive strength.
 - 2. At least 70 percent of 28-day design compressive strength.

3. Determine compressive strength of in-place concrete by testing representative field- or laboratory-cured test specimens according to ACI 301.
 4. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.
- 3.4 VAPOR RETARDERS
- A. Vapor Retarder: Place, protect, and repair vapor-retarder sheets according to ASTM E 1643 and manufacturer's written instructions.
- B. Fine-Graded Granular Material: Cover vapor retarder with fine-graded granular material, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch. Retain paragraph above if using fine-graded granular material. Retain paragraph below if using granular fill.
- C. Granular Fill: Cover vapor retarder with granular fill, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch.
1. Place and compact a 1/2-inch thick layer of fine-graded granular material over granular fill.
- 3.5 STEEL REINFORCEMENT
- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.
- G. Zinc-Coated Reinforcement: Use galvanized steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.
- 3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
- D. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
 - 1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
 - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Maintain reinforcement in position on chairs during concrete placement.
 - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 4. Slope surfaces uniformly to drains where required.
 - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- G. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 - 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.
 - 1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.
- B. Rubbed Finish: Apply the following to smooth-formed finished concrete:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
 - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.10 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If

removing forms before end of curing period, continue curing by one or a combination of the following methods:

- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.11 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

4. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- D. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- E. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- C. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

END OF SECTION 03 300 – CAST-IN-PLACE CONCRETE

SECTION 16 010 – BASIC ELECTRICAL REQUIREMENTS

GENERAL

1.0 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this and the other sections of Division 16.

1.1 SUMMARY

- A. This Section includes general administrative and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 1:

- 1. Submittals.
- 2. Coordination drawings.
- 3. Record documents.
- 4. Maintenance manuals.
- 5. Rough-ins.
- 6. Electrical installations.
- 7. Cutting and patching.

- B. Related Sections: The following sections contain requirements that relate to this section:

- 1. Division 16 Section "BASIC ELECTRICAL MATERIALS AND METHODS," for materials and methods common to the remainder of Division 16, plus general related specifications including:
 - a. Access to electrical installations.
 - b. Excavation for electrical installations within the building boundaries and from building to utility connections.

1.2 SUBMITTALS

- A. General: Follow the procedures specified in Division 1 Section "Shop Drawings, Product Data and Samples."
- B. Increase, by the quantity listed below, the number of electrical related shop drawings, product data, and samples submitted, to allow for required distribution plus one copies of each submittal required, which will be retained by the Electrical Consulting Engineer.
 - 1. Shop Drawings - Initial Submittal: 1 additional blue- or black-line prints.
 - 2. Shop Drawings - Final Submittal: 1 additional blue- or black-line prints.
 - 3. Product Data: 1 additional copy of each item.
- C. Additional copies may be required by individual sections of these Specifications.

1.3 COORDINATION DRAWINGS

- A. Prepare coordination drawings to a scale of 1/4"=1'-0" or larger; detailing major elements, components, and systems of electrical equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the Work, including (but not necessarily limited to) the following:
1. Indicate the proposed locations of major raceway systems, equipment, and materials. Include the following:
 - a. Clearances for servicing equipment, including space for equipment disassembly required for periodic maintenance.
 - b. Exterior wall and foundation penetrations.
 - c. Fire-rated wall and floor penetrations.
 - d. Equipment connections and support details.
 - e. Sizes and location of required concrete pads and bases.
 2. Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.

1.4 RECORD DOCUMENTS

- A. Prepare record documents in accordance with the requirements in Division 1 Section "PROJECT CLOSEOUT" And "PROJECT RECORD DOCUMENTS." In addition to the requirements specified in Division 1, indicate installed conditions for:
1. Major raceway systems, size and location, for both exterior and interior; locations of control devices; distribution and branch electrical circuitry; and fuse and circuit breaker size and arrangements.
 2. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
 3. Approved substitutions, Contract Modifications, and actual equipment and materials installed.

1.5 MAINTENANCE MANUALS

- A. Prepare maintenance manuals in accordance with Division 1 Section "OPERATING & MAINTENANCE DATA" and "PROJECT CLOSEOUT." In addition to the requirements specified in Division 1, include the following information for equipment items:
1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 2. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

PART 2. PRODUCTS

2.0 (Not Applicable)

PART 3. EXECUTION

3.0 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment specifications in Division 16 for rough-in requirements.

3.1 ELECTRICAL INSTALLATIONS

- A. General: Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment. Comply with the following requirements:
 - 1. Coordinate electrical systems, equipment, and materials installation with other building components.
 - 2. Verify all dimensions by field measurements.
 - 3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.
 - 4. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
 - 5. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
 - 6. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect/Engineer.
 - 7. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
 - 8. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
 - 9. Install access panel or doors where units are concealed behind finished surfaces. Access panels and doors are specified in this section.

10. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

3.2 CUTTING AND PATCHING

- A. General: Perform cutting and patching in accordance with Division 1 Section "CUTTING, CORING AND PATCHING." In addition to the requirements specified in Division 1, the following requirements apply:
 1. Perform cutting, fitting, and patching of electrical equipment and materials required to:
 - a. Uncover Work to provide for installation of ill-timed Work.
 - b. Remove and replace defective Work.
 - c. Remove and replace Work not conforming to requirements of the Contract Documents.
 - d. Remove samples of installed Work as specified for testing.
 - e. Install equipment and materials in existing structures.
 - f. Upon written instructions from the Architect, uncover and restore Work to provide for Architect observation of concealed Work.

END OF SECTION 16 010 BASIC ELECTRICAL REQUIREMENTS

SECTION 16 050 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Supporting devices for electrical components.
 - 2. Electrical identification.
 - 3. Concrete equipment bases.
 - 4. Electrical demolition.
 - 5. Cutting and patching for electrical construction.
 - 6. Touchup painting.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. FMC: Flexible metal conduit.
- C. IMC: Intermediate metal conduit.
- D. LFMC: Liquidtight flexible metal conduit.
- E. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

- A. Product Data: For Generator Sets, Automatic Transfer Switches.
- B. Shop Drawings: Dimensioned plans and sections or elevation layouts of generator sets and automatic transfer switches.
- C. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

1.6 COORDINATION

- A. Coordinate chases, slots, inserts, sleeves, and openings with general construction work and arrange in building structure during progress of construction to facilitate the electrical installations that follow.
 - 1. Set inserts and sleeves in poured-in-place concrete, masonry work, and other structural components as they are constructed.
- B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.
- C. Coordinate electrical service connections to components furnished by utility companies.
 - 1. Coordinate installation and connection of exterior underground and overhead utilities and services, including provision for electricity-metering components.
 - 2. Comply with requirements of authorities having jurisdiction and of utility company providing electrical power and other services.
- D. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.
- E. Where electrical identification markings and devices will be concealed by acoustical ceilings and similar finishes, coordinate installation of these items before ceiling installation.

PART 2 - PRODUCTS

2.1 SUPPORTING DEVICES

- A. Material: Cold-formed steel, with corrosion-resistant coating acceptable to authorities having jurisdiction.
- B. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.
- C. Slotted-Steel Channel Supports: Flange edges turned toward web, and 9/16-inch- diameter slotted holes at a maximum of 2 inches o.c., in webs.
- D. Slotted-Steel Channel Supports: Comply with Division 5 Section "Metal Fabrications" for slotted channel framing.
 - 1. Channel Thickness: Selected to suit structural loading.
 - 2. Fittings and Accessories: Products of the same manufacturer as channel supports.
- E. Nonmetallic Channel and Angle Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- diameter holes at a maximum of 8 inches o.c., in at least one surface.
 - 1. Fittings and Accessories: Products of the same manufacturer as channels and angles.
 - 2. Fittings and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.
- F. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.
- G. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
- H. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for non-armored electrical cables in riser conduits. Plugs have number and

size of conductor gripping holes as required for individual risers. Body constructed of malleable-iron casting with hot-dip galvanized finish.

- I. Expansion Anchors: Carbon-steel wedge or sleeve type.
- J. Toggle Bolts: All-steel springhead type.
- K. Powder-Driven Threaded Studs: Heat-treated steel.

2.2 ELECTRICAL IDENTIFICATION

- A. Identification Devices: A single type of identification product for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.
- B. Raceway and Cable Labels: Comply with ANSI A13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway and cable size.
 - 1. Type: Pre-tensioned, wraparound plastic sleeves. Flexible, preprinted, color-coded, acrylic band sized to suit the diameter of the item it identifies.
 - 2. Type: Preprinted, flexible, self-adhesive, vinyl. Legend is over-laminated with a clear, weather- and chemical-resistant coating.
 - 3. Color: Black letters on orange background.
 - 4. Legend: Indicates voltage.
- C. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than 1 inch wide by 3 mils thick.
- D. Underground Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape with the following features:
 - 1. Not less than 6 inches wide by 4 mils thick.
 - 2. Compounded for permanent direct-burial service.
 - 3. Embedded continuous metallic strip or core.
 - 4. Printed legend that indicates type of underground line.
- E. Tape Markers for Wire: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.
- F. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
- G. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners 1/16-inch minimum thickness for signs up to 20 sq. in. and 1/8-inch minimum thickness for larger sizes. Engraved legend in black letters on white background.
- H. Interior Warning and Caution Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145. Preprinted, aluminum, baked-enamel-finish signs, punched or drilled for mechanical fasteners, with colors, legend, and size appropriate to the application.
- I. Exterior Warning and Caution Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145. Weather-resistant, non-fading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing, with colors, legend, and size appropriate to the application. 1/4-inch grommets in corners for mounting.
- J. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.3 CONCRETE BASES

- A. Concrete Forms and Reinforcement Materials: As specified in Division 3 Section "Cast-in-Place Concrete."
- B. Concrete: 3000-psi 28-day compressive strength as specified in Division 3 Section "Cast-in-Place Concrete."

2.4 TOUCHUP PAINT

- A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.
- B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.1 ELECTRICAL EQUIPMENT INSTALLATION

- A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide the maximum possible headroom.
- B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.
- D. Right of Way: Give to raceways and piping systems installed at a required slope.

3.2 ELECTRICAL SUPPORTING DEVICE APPLICATION

- A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, U-channel system components.
- B. Dry Locations: Steel materials.
- C. Support Clamps for PVC Raceways: Click-type clamp system.
- D. Selection of Supports: Comply with manufacturer's written instructions.
- E. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of 200-lb design load.

3.3 SUPPORT INSTALLATION

- A. Install support devices to securely and permanently fasten and support electrical components.
- B. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.
- C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.

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- D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.
 - E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.
 - F. Install 1/4-inch diameter or larger threaded steel hanger rods, unless otherwise indicated.
 - G. Spring-steel fasteners specifically designed for supporting single conduits or tubing may be used instead of malleable-iron hangers for 1-1/2-inch and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings and for fastening raceways to slotted channel and angle supports.
 - H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.
 - I. Simultaneously install vertical conductor supports with conductors.
 - J. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers. If bar hangers are used, attach bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches from the box.
 - K. Install metal channel racks for mounting cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.
 - L. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.
 - M. Securely fasten electrical items and their supports to the building structure, unless otherwise indicated. Perform fastening according to the following unless other fastening methods are indicated:
 - 1. Wood: Fasten with wood screws or screw-type nails.
 - 2. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
 - 3. New Concrete: Concrete inserts with machine screws and bolts.
 - 4. Existing Concrete: Expansion bolts.
 - 5. Instead of expansion bolts, threaded studs driven by a powder charge and provided with lock washers may be used in existing concrete.
 - 6. Steel: Welded threaded studs or spring-tension clamps on steel.
 - a. Field Welding: Comply with AWS D1.1.
 - 7. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or other items.
 - 8. Light Steel: Sheet-metal screws.
 - 9. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.
- 3.4 IDENTIFICATION MATERIALS AND DEVICES
- A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.
 - B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.

- C. Self-Adhesive Identification Products: Clean surfaces before applying.
- D. Identify raceways and cables with color banding as follows:
 - 1. Bands: Pretensioned, snap-around, colored plastic sleeves or colored adhesive marking tape. Make each color band 2 inches wide, completely encircling conduit, and place adjacent bands of two-color markings in contact, side by side.
 - 2. Band Locations: At changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
 - 3. Colors: As follows:
 - a. Fire Alarm System: Red.
 - b. Security System: Blue and yellow.
 - c. Telecommunication System: Green and yellow.
- E. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.
- F. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate 6 to 8 inches below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches, overall, use a single line marker.
- G. Color-code 208/120-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:
 - 1. Phase A: Black.
 - 2. Phase B: Red.
 - 3. Phase C: Blue.
 - 4. Neutral: White.
 - 5. Ground: Green.
- H. Install warning, caution, and instruction signs where required to comply with 29 CFR, Chapter XVII, Part 1910.145, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.
- I. Install engraved-laminated emergency-operating signs with white letters on red background with minimum 3/8-inch high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

3.5 UTILITY COMPANY ELECTRICITY-METERING EQUIPMENT

- A. Install equipment according to utility company's written requirements. Provide grounding and empty conduits as required by utility company.

3.6 FIRESTOPPING

- A. Apply firestopping to cable and raceway penetrations of fire-rated floor and wall assemblies to maintain fire-resistance rating of the assembly. Firestopping materials and installation requirements are specified in Division 7 Section "Firestopping."

3.7 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated, but not less than 4 inches larger, in both directions, than supported unit. Follow supported equipment manufacturer's anchorage recommendations and setting templates for anchor-bolt and tie locations, unless otherwise indicated. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 3 Section "Cast-in-Place Concrete."

3.8 DEMOLITION

- A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.
- B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.
- C. Abandoned Work: Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.
- D. Remove demolished material from Project site.
- E. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

3.9 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.
- B. Repair and refinish disturbed finish materials and other surfaces to match adjacent undisturbed surfaces. Install new fireproofing where existing firestopping has been disturbed. Repair and refinish materials and other surfaces by skilled mechanics of trades involved.

3.10 FIELD QUALITY CONTROL

- A. Inspect installed components for damage and faulty work, including the following:
 - 1. Raceways.
 - 2. Building wire and connectors.
 - 3. Supporting devices for electrical components.
 - 4. Electrical identification.
 - 5. Electricity-metering components.
 - 6. Concrete bases.
 - 7. Electrical demolition.
 - 8. Cutting and patching for electrical construction.
 - 9. Touchup painting.

3.11 REFINISHING AND TOUCHUP PAINTING

- A. Refinish and touch up paint. Paint materials and application requirements are specified in Division 9 Section "Painting."
 - 1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.

2. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.
3. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
4. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.12 CLEANING AND PROTECTION

- A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.
- B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION 16050

SECTION 16 060 - GROUNDING AND BONDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Data: For the following:
 - 1. Ground rods.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
- D. Field Test Reports: Submit written test reports to include the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR 1910.7 or a member company of the International Electrical Testing Association and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association to supervise on-site testing specified in Part 3.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - 1. Comply with UL 467.
- C. Comply with NFPA 70; for overhead-line construction and medium-voltage underground construction, comply with IEEE C2.
- D. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Grounding Conductors, Cables, Connectors, and Rods:
 - a. Apache Grounding/Erico Inc.
 - b. Boggs, Inc.
 - c. Chance/Hubbell.
 - d. Copperweld Corp.
 - e. Dossert Corp.
 - f. Erico Inc.; Electrical Products Group.
 - g. Framatome Connectors/Burndy Electrical.
 - h. Galvan Industries, Inc.
 - i. Harger Lightning Protection, Inc.
 - j. Hastings Fiber Glass Products, Inc.
 - k. Heary Brothers Lightning Protection Co.
 - l. Ideal Industries, Inc.
 - m. ILSCO.
 - n. Kearney/Cooper Power Systems.
 - o. Korn's: C. C. Korn's Co.; Division of Robroy Industries.
 - p. Lightning Master Corp.
 - q. Lyncole XIT Grounding.
 - r. O-Z/Gedney Co.; a business of the EGS Electrical Group.
 - s. Raco, Inc.; Division of Hubbell.
 - t. Robbins Lightning, Inc.
 - u. Salisbury: W. H. Salisbury & Co.
 - v. Superior Grounding Systems, Inc.
 - w. Thomas & Betts, Electrical.

2.2 GROUNDING CONDUCTORS

- A. For insulated conductors, comply with Division 16 Section "Conductors and Cables."
- B. Material: Copper-clad aluminum, and copper.
- C. Equipment Grounding Conductors: Insulated with green-colored insulation.
- D. Grounding Electrode Conductors: Stranded cable.
- E. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.
- F. Bare Copper Conductors: Comply with the following:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Assembly of Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
- G. Copper Bonding Conductors: As follows:
 - 1. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG copper conductor, 1/4 inch in diameter.
 - 2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.

3. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
4. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.3 CONNECTOR PRODUCTS

- A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.
- B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.
- C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.

2.4 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel.
 1. Size: 3/4 by 120 inches in diameter.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.
- B. In raceways, use insulated equipment grounding conductors.
- C. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells.
- D. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.
- E. Underground Grounding Conductors: Use copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade or bury 12 inches above duct bank when installed as part of the duct bank.

3.2 EQUIPMENT GROUNDING CONDUCTORS

- A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.
- B. Install equipment grounding conductors in all feeders and circuits.
- C. Install insulated equipment grounding conductor with circuit conductors for the following items, in addition to those required by NEC:
 1. Feeders and branch circuits.
 2. Three-phase motor and appliance branch circuits.

3.3 INSTALLATION

- A. Ground Rods: Install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes.
 - 1. Drive ground rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.
 - 2. Interconnect ground rods with grounding electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make connections without exposing steel or damaging copper coating.
- B. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- C. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.
- D. Metal Water Service Pipe: Provide insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes by grounding clamp connectors. Where a dielectric main water fitting is installed, connect grounding conductor to street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
- E. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding clamp connectors.
- F. Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fans, blowers, electric heaters, and air cleaners. Use braided-type bonding straps.

3.4 CONNECTIONS

- A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
 - 2. Make connections with clean, bare metal at points of contact.
 - 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
 - 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
- D. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing.

Bond electrically noncontinuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.

- E. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
- G. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.5 FIELD QUALITY CONTROL

- A. Testing: Perform the following field quality-control testing:
 - 1. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.
 - 2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells. Measure ground resistance not less than two full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests, by the fall-of-potential method according to IEEE 81.
 - 3. Provide drawings locating each ground rod and ground rod assembly and other grounding electrodes, identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
 - a. Equipment Rated 500 kVA and Less: 10 ohms.
 - b. Equipment Rated 500 to 1000 kVA: 5 ohms.
 - c. Equipment Rated More Than 1000 kVA: 3 ohms.
 - d. Substations and Pad-Mounted Switching Equipment: 5 ohms.
 - e. Manhole Grounds: 10 ohms.
 - 4. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

3.6 GRADING AND PLANTING

- A. Restore surface features, including vegetation, at areas disturbed by Work of this Section. Reestablish original grades, unless otherwise indicated. If sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, cable laying, and other activities to their original condition. Include application of topsoil, fertilizer, lime, seed, sod, sprig, and mulch. Comply with Division 2 Section "Landscaping." Maintain restored surfaces. Restore disturbed paving as indicated.

END OF SECTION 16060 GROUNDING AND BONDING

SECTION 16 120 - CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

1.3 SUBMITTALS

- A. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: In addition to requirements specified in Division 1 Section "Quality Control," an independent testing agency shall meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907; or shall be a full-member company of the InterNational Electrical Testing Association.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.
- B. Listing and Labeling: Provide wires and cables specified in this Section that are listed and labeled.
 - 1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
 - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.
- C. Comply with NFPA 70.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wires and cables according to NEMA WC 26.

1.6 COORDINATION

- A. Coordinate layout and installation of cables with other installations.

- B. Revise locations and elevations from those indicated, as required to suit field conditions and as approved by Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Wires and Cables:
 - a. Alcan Aluminum Corporation; Alcan Cable Div.
 - b. American Insulated Wire Corp.; Leviton Manufacturing Co.
 - c. BICC Brand-Rex Company.
 - d. Carol Cable Co., Inc.
 - e. Senator Wire & Cable Company.
 - f. Southwire Company.
 - 2. Connectors for Wires and Cables:
 - a. AMP Incorporated.
 - b. General Signal; O-Z/Gedney Unit.
 - c. Monogram Co.; AFC.
 - d. Square D Co.; Anderson.
 - e. 3M Company; Electrical Products Division.

2.2 BUILDING WIRES AND CABLES

- A. UL-listed building wires and cables with conductor material, insulation type, cable construction, and rating as specified in Part 3 "Wire and Insulation Applications" Article.
- B. Rubber Insulation Material: Comply with NEMA WC 3.
- C. Thermoplastic Insulation Material: Comply with NEMA WC 5.
- D. Cross-Linked Polyethylene Insulation Material: Comply with NEMA WC 7.
- E. Ethylene Propylene Rubber Insulation Material: Comply with NEMA WC 8.
- F. Conductor Material: Copper.
- G. Stranding: Solid conductor for No. 10 AWG and smaller; stranded conductor for larger than No. 10 AWG.

2.3 CONNECTORS AND SPLICES

- A. UL-listed, factory-fabricated wiring connectors of size, ampacity rating, material, type, and class for application and service indicated. Comply with Project's installation requirements and as specified in Part 3 "Wire and Insulation Applications" Article.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine raceways and building finishes that will carry wires and cables for compliance with requirements for installation tolerances and other conditions affecting performance of wires and cables. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 WIRE AND INSULATION APPLICATIONS

- A. Service Entrance: Type RHW or THWN, in raceway.
- B. Feeders: Type THHN/THWN, in raceway.
- C. Class 1 Control Circuits: Type THHN/THWN, in raceway.
- D. Class 2 Control Circuits: Power-limited tray cable, in cable tray.

3.3 INSTALLATION

- A. Install wires and cables as indicated, according to manufacturer's written instructions and NECA's "Standard of Installation."
- B. Remove existing wires from raceway before pulling in new wires and cables.
- C. Pull Conductors: Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables, parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Division 16 Section "Basic Electrical Materials and Methods."
- G. Identify wires and cables according to Division 16 Section "Basic Electrical Materials and Methods."

3.4 CONNECTIONS

- A. Conductor Splices: Keep to minimum.

- B. Install splices and tapes that possess equivalent or better mechanical strength and insulation ratings than conductors being spliced.
- C. Use splice and tap connectors compatible with conductor material.
- D. Use oxide inhibitor in each splice and tap connector for aluminum conductors.
- E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.5 FIELD QUALITY CONTROL

- A. Testing: On installation of wires and cables and before electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
 - 1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.
- B. Correct malfunctioning conductors and cables at Project site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units and retest.

END OF SECTION 16 120 WIRES AND CABLES

SECTION 16 130 - RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

- 1. Raceways include the following:

- a. RMC.
 - b. IMC.
 - c. PVC externally coated, rigid steel conduits.
 - d. PVC externally coated, IMC.
 - e. EMT.
 - f. FMC.
 - g. LFMC.
 - h. LFNC.
 - i. RNC.
 - j. ENT.
 - k. Wireways.
 - l. Surface raceways.

- 2. Boxes, enclosures, and cabinets include the following:

- a. Device boxes.
 - b. Floor boxes.
 - c. Outlet boxes.
 - d. Pull and junction boxes.
 - e. Cabinets and hinged-cover enclosures.

- B. Related Sections include the following:

- 1. Division 16 Section "Basic Electrical Materials and Methods" for raceways and box supports.
 - 2. Division 16 Section "Wiring Devices" for devices installed in boxes and for floor-box service fittings.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. ENT: Electrical nonmetallic tubing.
- C. FMC: Flexible metal conduit.
- D. IMC: Intermediate metal conduit.
- E. LFMC: Liquidtight flexible metal conduit.

- F. LFNC: Liquidtight flexible nonmetallic conduit.
- G. RMC: Rigid metal conduit.
- H. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: Include layout drawings showing components and wiring for nonstandard boxes, enclosures, and cabinets.

1.5 QUALITY ASSURANCE

- A. Listing and Labeling: Provide raceways and boxes specified in this Section that are listed and labeled.
 - 1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
 - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.
- B. Comply with NECA's "Standard of Installation."
- C. Comply with NFPA 70.

1.6 COORDINATION

- A. Coordinate layout and installation of raceways and boxes with other construction elements to ensure adequate headroom, working clearance, and access.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Metal Conduit and Tubing:
 - a. Alflex Corp.
 - b. Anamet, Inc.; Anaconda Metal Hose.
 - c. Anixter Brothers, Inc.
 - d. Carol Cable Co., Inc.
 - e. Cole-Flex Corp.
 - f. Electri-Flex Co.
 - g. Flexcon, Inc.; Coleman Cable Systems, Inc.
 - h. Grinnell Co.; Allied Tube and Conduit Div.
 - i. Monogram Co.; AFC.
 - j. Spiraduct, Inc.

- k. Triangle PWC, Inc.
 - l. Wheatland Tube Co.
2. Nonmetallic Conduit and Tubing:
- a. Anamet, Inc.; Anaconda Metal Hose.
 - b. Arnco Corp.
 - c. Breeze-Illinois, Inc.
 - d. Cantex Industries; Harsco Corp.
 - e. Certainteed Corp.; Pipe & Plastics Group.
 - f. Cole-Flex Corp.
 - g. Condux International; Electrical Products.
 - h. Electri-Flex Co.
 - i. George-Ingraham Corp.
 - j. Hubbell, Inc.; Raco, Inc.
 - k. Lamson & Sessions; Carlon Electrical Products.
 - l. R&G Sloan Manufacturing Co., Inc.
 - m. Spiraduct, Inc.
 - n. Thomas & Betts Corp.
3. Conduit Bodies and Fittings:
- a. American Electric; Construction Materials Group.
 - b. Crouse-Hinds; Div. of Cooper Industries.
 - c. Emerson Electric Co.; Appleton Electric Co.
 - d. Hubbell, Inc.; Killark Electric Manufacturing Co.
 - e. Lamson & Sessions; Carlon Electrical Products.
 - f. O-Z/Gedney; Unit of General Signal.
 - g. Scott Fetzer Co.; Adalet-PLM.
 - h. Spring City Electrical Manufacturing Co.
4. Metal Wireways:
- a. Hoffman Engineering Co.
 - b. Keystone/Rees, Inc.
 - c. Square D Co.
5. Nonmetallic Wireways:
- a. Hoffman Engineering Co.
 - b. Lamson & Sessions; Carlon Electrical Products.
6. Surface Metal Raceways:
- a. Airey-Thompson Co., Inc.; A-T Power Systems.
 - b. American Electric; Construction Materials Group.
 - c. Butler Manufacturing Co.; Walker Division.
 - d. Wiremold Co. (The); Electrical Sales Division.
7. Surface Nonmetallic Raceways:
- a. Anixter Brothers, Inc.
 - b. Butler Manufacturing Co.; Walker Division.
 - c. Hubbell, Inc.; Wiring Device Division.
 - d. JBC Enterprises, Inc.; Enduro Fiberglass Systems.
 - e. Lamson & Sessions; Carlon Electrical Products.
 - f. Panduit Corp.
 - g. Thermotools Co.
 - h. United Telecom; Premier Telecom Products, Inc.

- i. Wiremold Co. (The); Electrical Sales Division.
8. Boxes, Enclosures, and Cabinets:
- a. American Electric; FL Industries.
 - b. Butler Manufacturing Co.; Walker Division.
 - c. Crouse-Hinds; Div. of Cooper Industries.
 - d. Electric Panelboard Co., Inc.
 - e. Erickson Electrical Equipment Co.
 - f. Hoffman Engineering Co.; Federal-Hoffman, Inc.
 - g. Hubbell Inc.; Killark Electric Manufacturing Co.
 - h. Hubbell Inc.; Raco, Inc.
 - i. Lamson & Sessions; Carlon Electrical Products.
 - j. O-Z/Gedney; Unit of General Signal.
 - k. Parker Electrical Manufacturing Co.
 - l. Robroy Industries, Inc.; Electrical Division.
 - m. Scott Fetzer Co.; Adalet-PLM.
 - n. Spring City Electrical Manufacturing Co.
 - o. Thomas & Betts Corp.
 - p. Woodhead Industries, Inc.; Daniel Woodhead Co.

2.2 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Rigid Aluminum Conduit: ANSI C80.5.
- C. IMC: ANSI C80.6.
- D. Plastic-Coated Steel Conduit and Fittings: NEMA RN 1.
- E. Plastic-Coated IMC and Fittings: NEMA RN 1.
- F. EMT and Fittings: ANSI C80.3.
 - 1. Fittings: Set-screw or compression type.
 - 2. Fittings: Set-screw type.
 - 3. Fittings: Compression type.
- G. FMC: Aluminum.
- H. FMC: Zinc-coated steel.
- I. LFMC: Flexible steel conduit with PVC jacket.
- J. Fittings: NEMA FB 1; compatible with conduit/tubing materials.

2.3 NONMETALLIC CONDUIT AND TUBING

- A. ENT: NEMA TC 13.
- B. RNC: NEMA TC 2, Schedule 40 or 80 PVC.
- C. ENT and RNC Fittings: NEMA TC 3; match to conduit or conduit/tubing type and material.
- D. LFNC: UL 1660.

2.4 METAL WIREWAYS

- A. Material: Sheet metal sized and shaped as indicated.
- B. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- C. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.
- D. Wireway Covers: As indicated
- E. Finish: Manufacturer's standard enamel finish.

2.5 NONMETALLIC WIREWAYS

- A. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections using plastic fasteners.
- B. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- C. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

2.6 SURFACE RACEWAYS

- A. Surface Metal Raceways: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating.
- B. Surface Nonmetallic Raceways: 2-piece construction, manufactured of rigid PVC compound with matte texture and manufacturer's standard color.
- C. Types, sizes, and channels as indicated and required for each application, with fittings that match and mate with raceways.

2.7 OUTLET AND DEVICE BOXES

- A. Sheet Metal Boxes: NEMA OS 1.
- B. Cast-Metal Boxes: NEMA FB 1, Type FD, cast box with gasketed cover.
- C. Nonmetallic Boxes: NEMA OS 2.

2.8 FLOOR BOXES

- A. Floor Boxes: Nonmetallic, nonadjustable, round.

2.9 PULL AND JUNCTION BOXES

- A. Small Sheet Metal Boxes: NEMA OS 1.

- B. Cast-Metal Boxes: NEMA FB 1, cast aluminum with gasketed cover.

2.10 ENCLOSURES AND CABINETS

- A. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 - 2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.
- B. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage, and include accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive raceways, boxes, enclosures, and cabinets for compliance with installation tolerances and other conditions affecting performance of raceway installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 WIRING METHODS

- A. Outdoors: Use the following wiring methods:
 - 1. Exposed: Rigid steel or IMC.
 - 2. Concealed: Rigid steel or IMC.
 - 3. Underground, Single Run: RNC.
 - 4. Underground, Grouped: RNC.
 - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 6. Boxes and Enclosures: NEMA 250, Type 3R or Type 4.
- B. Indoors: Use the following wiring methods:
 - 1. Exposed: EMT or RNC.
 - 2. Concealed: EMT, ENT, or RNC.
 - 3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC; except in wet or damp locations, use LFMC.
 - 4. Damp or Wet Locations: Rigid steel conduit.
 - 5. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
 - a. Damp or Wet Locations: NEMA 250, Type 4, stainless steel.

3.3 INSTALLATION

- A. Install raceways, boxes, enclosures, and cabinets as indicated, according to manufacturer's written instructions.
- B. Minimum Raceway Size: 3/4-inch trade size.

- C. Conceal conduit and EMT, unless otherwise indicated, within finished walls, ceilings, and floors.
- D. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- E. Install raceways level and square and at proper elevations. Provide adequate headroom.
- F. Complete raceway installation before starting conductor installation.
- G. Support raceways as specified in Division 16 Section "Basic Electrical Materials and Methods."
- H. Use temporary closures to prevent foreign matter from entering raceways.
- I. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portion of bends is not visible above the finished slab.
- J. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and straight legs of offsets parallel, unless otherwise indicated.
- K. Use raceway fittings compatible with raceways and suitable for use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings, unless otherwise indicated.
- L. Run concealed raceways, with a minimum of bends, in the shortest practical distance considering the type of building construction and obstructions, unless otherwise indicated.
- M. Raceways Embedded in Slabs: Install in middle third of slab thickness where practical, and leave at least 1-inch concrete cover.
 - 1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
 - 2. Space raceways laterally to prevent voids in concrete.
 - 3. Run conduit larger than 1-inch trade size (DN27) parallel to or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
 - 4. Transition from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above floor.
- N. Install exposed raceways parallel to or at right angles to nearby surfaces or structural members, and follow the surface contours as much as practical.
 - 1. Run parallel or banked raceways together, on common supports where practical.
 - 2. Make bends in parallel or banked runs from same centerline to make bends parallel. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- O. Join raceways with fittings designed and approved for the purpose and make joints tight.
 - 1. Make raceway terminations tight. Use bonding bushings or wedges at connections subject to vibration. Use bonding jumpers where joints cannot be made tight.
 - 2. Use insulating bushings to protect conductors.
- P. Tighten set screws of threadless fittings with suitable tools.
- Q. Terminations: Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against the box. Where terminations are not secure with 1 locknut, use 2 locknuts: 1 inside and 1 outside the box.
- R. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align raceways so the coupling is square to the box and tighten the chase nipple so no threads are exposed.

- S. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of the pull wire.
- T. Telephone and Signal System Raceways, 2-Inch Trade Size and Smaller: In addition to the above requirements, install raceways in maximum lengths of 150 feet and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.
- U. Install raceway sealing fittings according to manufacturer's written instructions. Locate fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
 - 1. Where conduits pass from warm to cold locations, such as the boundaries of refrigerated spaces.
 - 2. Where otherwise required by NFPA 70.
- V. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches above the floor. Install screwdriver-operated, threaded flush plugs flush with floor for future equipment connections.
- W. Flexible Connections: Use maximum of 6 feet of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use liquidtight flexible conduit in wet or damp locations. Install separate ground conductor across flexible connections.
- X. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in a nonmetallic sleeve.
- Y. Do not install aluminum conduits embedded in or in contact with concrete.
- Z. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.
- AA. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying the raceways to receptacle or fixture ground terminals.
 - 1. Select each surface raceway outlet box, to which a lighting fixture is attached, of sufficient diameter to provide a seat for the fixture canopy.
 - 2. Where a surface raceway is used to supply a fluorescent lighting fixture having central-stem suspension with a backplate and a canopy (with or without extension ring), no separate outlet box is required.
 - 3. Provide surface metal raceway outlet box, and the backplate and canopy, at the feed-in location of each fluorescent lighting fixture having end-stem suspension.
 - 4. Where a surface metal raceway extension is made from an existing outlet box on which a lighting fixture is installed, no additional surface-mounted outlet box is required. Provide a backplate slightly smaller than the fixture canopy.
- BB. Set floor boxes level and adjust to finished floor surface.
- CC. Install hinged-cover enclosures and cabinets plumb. Support at each corner.

3.4 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure coatings, finishes, and cabinets are without damage or deterioration at the time of Substantial Completion.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.5 CLEANING

- A. On completion of installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches, and abrasions.

END OF SECTION 16130

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SECTION 16 231 – ENGINE/GENERATOR SET

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section shall consist of providing a packaged electrical system and associated controls with all required accessories as specified and shown on the plans. The equipment supplier must be the authorized distributor for each component of the products specified herein.
- B. The work includes the furnishing of all labor, materials, equipment, test, and training to provide a complete and workable power system, including the generator set and generator set controls, and the transfer switch and transfer switch controls, and installation as shown on the plans, drawings, and specifications herein.
- C. Related Sections include the following:

- 1. Division 16 Section “Automatic Transfer Switches”

1.3 CODES AND STANDARDS

- A. The generator set shall conform to the requirements of the following codes and standards:
 - 1. CSA C22.2, No. 14 – M91 Industrial Control Equipment.
 - 2. EN50082-2, Electromagnetic Compatibility – Generic Immunity Requirements, Part 2: Industrial.
 - 3. EN55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
 - 4. IEC8528 part 4. Control Systems for Generator Sets
 - 5. IEC Std 801.2, 801.3, and 801.5 for susceptibility, conducted, and radiated electromagnetic emissions.
 - 6. IEEE446 – Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
 - 7. Mil Std 461D –1993. Military Standard, Electromagnetic Interference Characteristics.
 - 8. Mil Std 462D - 1993. Military Standard, Measurement of Electromagnetic Interference Characteristics.
 - 9. NFPA70 – National Electrical Code. Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
 - 10. NFPA99 – Essential Electrical Systems for Health Care Facilities

11. NFPA110 – Emergency and Standby Power Systems. The generator set shall meet all requirements for Level 1 systems. Level 1 prototype tests required by this standard shall have been performed on a complete and functional unit, component level type tests will not substitute for this requirement.
12. UL2200. The generator set shall be listed to UL2200 or submit to an independent third party certification process to verify compliance as installed

1.4 SUBMITTALS

- A. Product Data: The submittal shall include prototype test certification and specification sheets showing all standard and optional accessories to be supplied, schematic wiring diagrams, dimension drawings, and interconnection diagrams identifying by terminal number, each required interconnection between the generator set, the transfer switch, and the remote annunciator panel if it is included elsewhere in these specifications.
- B. Shop Drawings:
 1. Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:
 - a. Enclosure types and details for types other than NEMA 250, Type 1.
 - b. Current and voltage ratings.
 - c. Short-circuit current rating.
 - d. UL listing for series rating of installed devices.
 - e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 2. Wiring Diagrams: Power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
- C. Qualification Data: Submit data for testing agencies indicating that they comply with qualifications specified in "Quality Assurance" Article.
- D. Warranty
 1. A one year warranty for the generator set shall be included to guarantee against defective material and workmanship in accordance with the manufacturer's published warranty from date of start-up. Optional warranties shall be available upon request.
- E. Maintenance
 1. The generator set manufacturer and its distributor shall maintain a 24-hour parts and service organization. This organization shall be regularly engaged in a maintenance contract program to perform preventive maintenance and service on equipment similar to that specified. A service agreement shall be available and shall include system operation under simulated operating conditions, adjustment to the generator set, transfer switch, and switchgear controls as required, and certification in the owner's maintenance log of repairs made and proper functioning of all systems.

1.5 TESTING

- A. To assure that the equipment has been designed and built to the highest reliability and quality standards, the manufacturer and/or local representative shall be responsible for three separate tests: design prototype tests, final production tests, and site tests.
1. Design Prototype Tests: Components of the emergency system such as the engine/generator set, transfer switch, and accessories shall not be subjected to prototype tests since the tests are potentially damaging. Rather, similar design prototypes and preproduction models shall be subject to the following tests.
 2. Maximum power (kW).
 3. Maximum motor starting (kVA) at 35% instantaneous voltage dip.
 4. Alternator temperature rise by embedded thermocouple and/or by resistance method per NEMA MG1-32.40.
 5. Governor speed regulation under steady-state and transient conditions.
 6. Voltage regulation and generator transient response.
 7. Harmonic analysis, voltage waveform deviation, and telephone influence factor.
 8. Three-phase short circuit tests.
 9. Alternator cooling air flow.
 10. Torsional analysis to verify that the generator set is free of harmful torsional stresses.
 11. Endurance testing.
- B. Production Tests
1. Final Production Tests: Each generator set shall be tested under varying loads with guards and exhaust system in place. Tests shall include:
 2. Single-step load pickup.
 3. Transient and steady—state governing.
 4. Safety shutdown device testing.
 5. Voltage regulation.
 6. Rated Power @ 0.8 PF
 7. Maximum Power.
 8. Upon request, arrangements to either witness this test will be made, or a certified test record will be sent prior to shipment.
- C. Site Tests
1. Site Tests: An installation check, start-up, and building load test shall be performed by the manufacturer's local representative. The engineer, regular operators, and the maintenance staff shall be notified of the time and date of the site test. The tests shall include:
 2. Fuel, lubricating oil, and antifreeze shall be checked for conformity to the manufacturer's recommendations, under the environmental conditions present and expected.

3. Accessories that normally function while the set is standing by shall be checked prior to cranking the engine. These shall include: block heaters, battery charger, alternator strip heaters, remote annunciator, etc.
4. Start-up under test mode to check for exhaust leaks, path of exhaust gases outside the building, cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage and frequency, and phase rotation.
5. Automatic start-up by means of simulated power outage to test remote-automatic starting, transfer of the load, and automatic shutdown. Prior to this test, all transfer switch timers shall be adjusted for proper system coordination. Engine coolant temperature, oil pressure, and battery charge level along with generator set voltage, amperes, and frequency shall be monitored throughout the test. An external load bank shall be connected to the system if sufficient building load is unavailable to load the generator set to the nameplate kW rating.
6. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:
 1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
 2. Altitude: Not exceeding 6600 feet.

1.7 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Kohler
 - b. Caterpillar
 - c. Generac

2.2 GENERATOR SET

- A. For the Benson and Bowden Centers:
 1. The generator set shall provide 320 kW, 400 kVA when operating at 277/480 volts, .8 power factor. The generator set shall be capable of this rating while operating in an ambient condition of 104°F (40°C) and 4921 feet above sea level.

2. The generator set shall be capable of starting motor loads of 1800 kVA inrush, with a maximum voltage dip of 35%.
- B. For the Mills and Darnell Centers:
1. The generator set shall provide 800 kW, 1000 kVA when operating at 277/480 volts, .8 power factor. The generator set shall be capable of this rating while operating in an ambient condition of 104°F (40°C) and 4921 feet above sea level.
 2. The generator set shall be capable of starting motor loads of 3500 kVA inrush, with a maximum voltage dip of 35%.
- C. Vibration isolators shall be provided between the base and the floor.
- 2.3 ENGINE
- A. The engine shall be equipped with the following:
1. An electronic isochronous governor capable of +0.25% steady-state frequency regulation.
 2. 24 Volt positive engagement solenoid shift-starting motor.
 3. 30-Ampere minimum automatic battery charging alternator with solid-state voltage regulation.
 4. Positive displacement, full pressure lubrication oil pump, cartridge oil filters, dipstick, and oil drain.
 5. Dry-type replaceable air cleaner elements for normal applications.
 6. Engine-driven or electric fuel transfer pump capable of lifting fuel 0 feet, fuel filters, and electric solenoid fuel shut-off valve.
- B. The turbocharged engine shall be fueled with No. 2 diesel
- C. The engine shall have a minimum of 12 cylinders, and be liquid-cooled by a unit-mounted radiator, blower fan, water pump, and thermostats. This system shall properly cool the engine with up to 0.5 inches H₂O static pressure on the fan in an ambient temperature up to 122F/50C.
- D. The engine shall be EPA certified
- 2.4 ALTERNATOR
- A. The alternator shall be salient-pole, brushless, 12-lead reconnectable, self-ventilated of drip-proof construction with amortisseur rotor windings and skewed stator for smooth voltage waveform. The insulation shall meet the NEMA standard (MG1-33.40) for Class H and be insulated with epoxy varnish to be fungus resistant per MIL 1-24092. Temperature rise of the rotor and stator shall be limited to 130°C. The excitation system shall be of brushless construction controlled by a solid-state voltage regulator capable of maintaining voltage within +/- 2% at any constant load from 0% to 100% of rating. The regulator must be isolated to prevent tracking when connected to SCR loads, and provide individual adjustments for voltage range, stability and volts-per-hertz operations; and be protected from the environment by conformal coating.
- B. The generator set shall meet the transient performance requirements of ISO 8528-5, level G-3.
- C. The alternator excitation shall be of a permanent magnet exciter design.
- D. The generator shall be inherently capable of sustaining at least 250% of rated current for at least 10 seconds under a 3-phase symmetrical short circuit without the addition of separate current support devices.

- E. The alternator having a single maintenance-free bearing, shall be directly connected to the flywheel housing with a semi-flexible coupling between the rotor and the flywheel.

2.5 CONTROLLER

- A. Set-mounted controller capable of facing right, left, or rear, shall be vibration isolated on the alternator enclosure. The controller shall be capable of being remote-mounted. The microprocessor control board shall be moisture proof and capable of operation from -40°C to 85°C. Relays will only be acceptable in high-current circuits.

- B. Circuitry shall be of plug-in design for quick replacement. Controller shall be equipped to accept a plug-in device capable of allowing maintenance personnel to test controller performance without operating the engine. The controller shall include the following features:

1. Fused DC circuit.
2. Complete 2-wire start/stop control, which shall operate on closure of a remote contact.
3. Speed sensing and a second independent starter motor disengagement systems shall protect against starter engagement with a moving flywheel. Battery charging alternator voltage will not be acceptable for this purpose.
4. The starting system shall be designed for restarting in the event of a false engine start, by permitting the engine to completely stop and then re-engage the starter.
5. Cranking cycler with 15-second ON and OFF cranking periods.
6. Overcrank protection designed to open the cranking circuit after 75 seconds if the engine fails to start.
7. Circuitry to shut down the engine when signal for high coolant temperature, low oil pressure, or overspeed are received.
8. Engine cooldown timer factory set at 5 minutes to permit unloaded running of the standby set after transfer of the load to normal.
9. 3-position (Automatic-OFF-TEST) selector switch. In the TEST position, the engine shall start and run regardless of the position of the remote starting contacts. In the Automatic position, the engine shall start when contacts in the remote control circuit close and stop 5 minutes after those contacts open. In the OFF position, the engine shall not start even though the remote start contacts close. This position shall also provide for immediate shutdown in case of an emergency. Reset of any fault shall also be accomplished by putting the switch to the OFF position.
10. Alarm horn with silencer switch per NFPA 110.

- C. Standard indicating lights to signal the following shall be included:

1. Not-in-Auto (flashing red)
2. Overcrank (red)
3. Emergency Stop (red)
4. High Engine Temperature (red)
5. Overspeed (red)

6. Low Oil Pressure (red)
 7. Battery Charger Malfunction (red)
 8. Low Battery Voltage (red)
 9. Low Fuel (red)
 10. Auxiliary Prealarm (yellow)
 11. Auxiliary Fault (red)
 12. System Ready (green)
- D. Test button for indicating lights.
- E. Terminals shall be provided for each indicating light above, plus additional terminals for common fault and common prealarm.
- 2.6 INSTRUMENT PANEL
- A. The instrument panel shall include the following:
1. Dual range voltmeter 3 1/2-inch, +/- 2% accuracy
 2. Dual range ammeter 3 1/2-inch, +/- 2% accuracy.
 3. Voltmeter-ammeter phase selector switch.
 4. Lights to indicate high or low meter scale.
 5. Direct reading pointer-type frequency meter 3 1/2-inch, 0.5% accuracy, 45 to 65 Hz scale.
 6. Panel-illuminating lights.
 7. Battery charging voltmeter.
 8. Coolant temperature gauge.
 9. Oil pressure gauge.
 10. Running-time meter.
 11. Voltage-adjust rheostat
- 2.7 ACCESSORIES
- A. A 80% rated line circuit breaker of 1600 amperes, 1600 amps sensor, 600 volt rated, molded case type, generator mounted.
- B. 12-volt lead-antimony battery(ies) capable of delivering the manufacturer's recommended minimum cold-cranking Amps required at 0°F, per SAE Standard J-537, shall be supplied.
- C. 6-Ampere automatic float and equalize battery charger with +/- 1% constant voltage regulation from no load to full load over +/-10% AC input line variation, current limited during engine cranking and short circuit conditions, temperature compensated for ambient temperatures from -40°C to +60°C, 5% accurate voltmeter and ammeter, fused, reverse polarity and transient protected.

2.8 Remote Serial Annunciator

A. Annunciator must meet the following specifications:

1. Operating temperature range: -20° to 70°C (-4° to 158°F)
2. Storage temperature range: -40° to 85°C (-40° to 185°F)
3. Humidity range: 5-95% noncondensing
4. Enclosure: NEMA 2
5. Power supply: 12- or 24-VDC
6. Power draw: 200 mA

B. Standards:

1. NFPA 110, Level 1
2. NFPA 99
3. UL 508 Recognized
4. CE Directive (Voltage and EMC)
5. EN61000-4-4 Fast Transient Immunity

C. Hardware Requirements

1. Front panel--
 - a. Up to (24) Light-emitting diode (LED) indicators for shutdowns, warnings (pre-alarms), and status
 - b. Up to (19) Light-emitting diode (LED) indicators, an audible horn, an alarm silence button, and a lamp test button required by NFPA 110, Level 1.
 - c. LEDs must be activated to indicate: shutdowns, warnings (pre-alarms), or status
 - d. Must have a minimum of (3) LED colors to define function
 - e. Must have LEDs with blinking functions to indicate status
 - f. LEDs required to activate for the following shutdown and/or warning conditions:
 - 1) Overcrank
 - 2) Low Coolant Temperature
 - 3) High Engine Temperature
 - 4) Low Oil Pressure
 - 5) Overspeed
 - 6) Emergency Stop

- 7) Low Fuel
 - 8) Low Coolant Level
 - 9) Not-In-Auto
 - 10) High Battery Voltage
 - 11) Low Battery Voltage
 - 12) Battery Charger Failure
 - 13) Common Fault
- g. LEDs required to activate upon the following status conditions:
- 1) Lamp test
 - 2) Alarm silence
 - 3) System ready
 - 4) Generator running
 - 5) Communications
 - 6) EPS Supplying Load
- h. Up to (3) user-defined inputs shall each activate an LED and an audible horn for shutdowns, warnings, or status conditions.
- i. Annunciator shall have removable text inserts for assigning user-defined inputs, assigning generator identification, and replacement.
- j. Front panel of annunciator shall be a sealed membrane and shall be capable of both surface-mounting and flush-mounting.
2. Network Communication
- a. Provide an RS-485 connection at the annunciator from the generator controller. Maximum distance shall be 1220 m (4000 ft.) from the generator controller to the furthest annunciator.
 - b. No other external wiring required, except power, to activate the LEDs and horn.
 - c. Provide up to (4) annunciators per generator. Multiple annunciators shall communicate via RS-485 serial bus.

2.9 DOUBLE WALL SECONDARY CONTAINMENT SUB BASE FUEL TANK

- A. A sub base fuel tank used in conjunction with a diesel powered generator set of 1280 kW rating will contain 2000 gallons of fuel.
- B. The sub base fuel system is listed under UL 142, sub section entitled Special Purpose Tanks EFVT category, and will bear their mark of UL Approval according to their particular classification.
- C. The above ground steel secondary containment rectangular tank for use as a sub base for diesel generators is manufactured and intended to be installed in accordance with the Flammable and

Combustible Liquids Code—NFPA 30, the Standard for Installation and Use of Stationary Combustible Engine and Gas Turbines—NFPA 37, and Emergency and Standby Power Systems—NFPA 110.

D. Construction:

1. Primary Tank
 - a. It will be rectangular in shape and constructed in clam shell fashion to ensure maximum structural integrity and allow the use of a full throat fillet weld.
2. Steel Channel Support System
 - a. Reinforced steel box channel for generator support, with a load rating of 5,000 lbs. per gen set mounting hole location. Full height gussets at either end of channel and at gen set mounting holes shall be utilized.
3. Exterior Finish
 - a. The exterior coating has been tested to withstand continuous salt spray testing at 100 percent exposure for 244 hours to a 5 percent salt solution at 92-97° F. The coating has been subjected to full exposure humidity testing to 100 percent humidity at 100° F for 24 hours. Tests are to be conducted in accordance with The American Standard Testing Methods Society.
4. Venting:
 - a. Normal venting shall be sized in accordance with the American Petroleum Institute Standard No 2000, Venting Atmospheric and Low Pressure Storage Tanks not less than 1-1/4" (3 cm.) nominal inside diameter. A 1 -1/4" atmospheric mushroom cap shall be furnished and the installing contractor shall pipe above the highest fill point as a minimum
5. Emergency Venting
 - a. The emergency vent opening shall be sized to accommodate the total capacity of both normal and emergency venting and shall be not less than that derived from NFPA 30, table 2-8, and based on the wetted surface area of the tank. The wetted area of the tank shall be calculated on the basis of 100 percent of the primary tank. A zinc plated emergency pressure relief vent cap shall be furnished for the primary tank. The vent is spring-pressure operated: opening pressure is 0.5/psig and full opening pressure is 2.5 psig. Limits are stamp marked on top of each vent. The emergency relief vent is sized to accommodate the total venting capacity of both normal and emergency vents.
6. Fuel Fill:
 - a. There shall be a 2" NPT opening within the primary tank with an 8" raised fill pipe and lockable manual fill cap.
7. Fuel Level:
 - a. A direct reading, UL listed, magnetic fuel level gauge with a hermetically-sealed vacuum tested dial shall be provided to eliminate fogging.
8. Low Fuel Level Switch
 - a. Consists of a 50 watt float switch for remote or local annunciation of a (50% standard) low fuel level condition.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation shall be in strict accordance with manufacturer's instructions and other standards that form a part of this specification. Provide labor, tools, equipment and other necessities for erection and installation of the equipment.
- B. Installation shall be in accordance with manufacturer's instructions. Furnish a competent and experienced erecting engineer to directly supervise unloading, moving, and erection of equipment. Provide labor, tools, and equipment, for erection and installation of the equipment.
- C. Install engine generator set on a concrete foundation as indicated. Install vibration isolators to isolate vibrations from the engine generator set to the foundation. The engine generator bed plate shall be mounted on eight vibration pads as recommended by the engine generator manufacturer. In the event the bed plate is not uniformly supported by the pads, shim between the bed plate and the pad to ensure proper support. The engine generator shall be anchored to the concrete pad at all four corners of the skid through the factory drilled holes in the skid plate. A factory representative will be made available for initial fluid additions and start-up.
- D. Provide devices to support equipment, not supported on concrete foundations, in the indicated position. Fabricate the required supports of structural steel sections, plates, or rods; and arrange to provide rigid and sturdy support. Provide connections and fasteners required between equipment supports and building structures.
- E. Provide anchor bolts and sleeves for equipment installed on concrete foundations or concrete bases. Anchor bolts and sleeves shall be type, size, and metallurgy recommended by the manufacturer of equipment. Placement of anchor bolts and sleeves for the engine-generator unit shall be in strict accordance with details provided by the manufacturer of the engine.
- F. Before assembly or installation, thoroughly clean equipment. Remove temporary protective coatings and foreign materials. After erection of equipment, clean external surfaces. Remove oil, grease, dirt, and foreign material. Touch up shop paint as necessary.
- G. Align rotating equipment in accordance with manufacturer's recommendations. Align equipment, except the engine-generator unit. Then align the subbase factory-mounted engine-generator unit. After alignment, drill, ream, and fasten items of equipment in place on baseplates using tapered dowel pins so that permanent alignment will be maintained. Accomplish finite leveling of the engine-generator unit with shims. Make external connections and install piping, before equipment is placed in operation.
- H. Grouting
 - 1. Engine-generator unit: Provide epoxy resin compound mixture of the type recommended by the engine manufacturer for grouting the engine rails, generator sole plate, and outboard bearing support. Mix and apply grout in accordance with instructions provided by the grout manufacturer.
 - 2. Other equipment: Grout equipment bedplates or bases on the foundations with a nonshrink Portland cement grout. Grout shall have a minimum thickness of one inch. Mix grout in accordance with the manufacturer's instructions and apply in a manner to ensure complete filling of spaces between the foundation and equipment baseplates.
- I. During the period of installation, inform operators as to placement and assembly of equipment. After equipment is ready to be placed in service, fully instruct plant operators in operation and maintenance of the equipment.
- J. Piping

1. Fabricate, assemble, weld, solder, braze and visually examine piping to ensure that piping work conforms to ASME B31.1. Shop fabrication of piping 4 inches and larger is permitted. If shop fabrication is chosen, provide detailed fabrication drawings or isometrics and submit for approval before work is started. Field erect fabricated piping to provide a workable arrangement, with convenient access to valves and specialty items. Maintain adequate clearance between runs of piping to permit access around adjacent pipe for dismantling, repair, and maintenance of valves. Piping shall be straight, plumb, and run direct as possible. Locate groups of pipes parallel to each other, with adequate spacing. Do not install piping over electrical equipment. Piping shall be installed by competent and skilled workmen.
2. Paint identifying numbers on sections of prefabricated piping corresponding to identifying numbers shown on shop fabrication detail drawings.
3. Shop fabricate pipe in the largest sections practical for shipping and field assembly. After fabrication, remove loose scale, sand, weld spatter, cutting chips, and other foreign materials by mechanically driven cleaning tools or wire brush. Before shipment, apply one coat of paint to shop fabrications, valves, fittings, and flanges using painting materials of metallic pigment type free of asphalt or asphaltum base. Plug ends of piping and openings prior to shipment to plant site.
4. Preparing, bending and cleaning and welding of joints in piping shall conform to ASME B31.1. Welds shall be visually examined and meet acceptance standards of ASME B31.1.
5. Before placing in position, clean the inside of black steel pipe by rapping along its full length to loosen sand, mill scale, and other foreign matter. Pipe, 2-inch and larger, shall have a wire brush of a diameter larger than that of the inside of the pipe drawn through its entire length several times. Before final connections are made to apparatus, wash out interior of piping with water, except air, fuel, and lubricating oil lines. Blow out air, fuel, and lubricating oil lines with 80 to 100 psi dry air or nitrogen. Sterilize potable-water piping by means of liquid chlorine or lime in accordance with AWWA C651 before being placed in service.
6. Clean steel lubricating oil and fuel oil piping and pickle internally by chemical cleaning. Cleaning process shall remove grease, oil, dirt, mill scale, lacquer, and corrosion products. Clean piping either by circulating the cleaning solution through the completed piping systems or by soaking prefabricated piping sections in a tank of the solution. Provide and remove after use, pumps, temporary piping connections, tanks, heaters, and other equipment required to accomplish cleaning of piping. After completing cleaning, thoroughly flush, drain, and dry piping and take precautions to prevent rerusting before pipe is used. While cleaning, remove or isolate instrumentation, valves, and equipment in-stalled in the piping, which contain bronze or brass. Cleaning solution shall not come in contact with bronze or brass. Cleaning solution shall not be circulated through the engine, engine lubricating-oil sump, lubricating oil cooler, or pumps in the oil piping systems. Provide cleaning solution of the type recommended by a reputable chemical manufacturer for the specific purpose.
7. Provide for expansion of piping subject to temperature change by using compatible expansion joints, bends, ball joints, offsets, and loops in a manner that shall prohibit development of excessive stresses between anchor points or at equipment connections. Use bends, loops, and offsets wherever practical to prevent overstressing of piping systems due to thermal expansion and to provide adequate flexibility. A piping system may be cold sprung by an amount no greater than 50 percent of the total linear expansion to alleviate end thrusts and moments. Method of cold springing shall be as approved.
8. Use for changes in pipe size, except where taps are permitted. Use of bushings are prohibited. In horizontal mains containing liquids, use eccentric reducers.
9. Place where necessary to permit easy disconnection of piping and apparatus. Provide each connection having valves with screwed ends with a union.
10. Install in positions accessible for operation and repair. Install stems preferably in a vertical position with handwheels or operators on top, or install in a horizontal position. Do not install

- handwheels on stop valves below the valve. Install globe valves with flow direction from below the disk.
11. Make piping connections to equipment shown and provide reducers, increasers, unions, valves, and strainers required to make a complete installation. Make connections to equipment with unions or flanged joints. Valves shall be the same size as the piping in which installed.
 12. Joints
 - a. Flanged joints: Face pipe flanges true to line and clean before assembly. Gasket faces shall be free of burrs or bruises. Make up flanged joints prior to completing the last weld in connecting piping. Coat bolt threads with a mixture of equal parts of graphite and boiled linseed oil or with an approved commercial coating.
 - b. Screwed joints: Use graphite pipe-joint compound conforming to MIL-T-5544; apply to male threads only. Red or white lead and zinc compound conforming to MIL-T-22361 may be used, except lead compounds are prohibited in potable water lines. Piping shall be free of fins and burrs. Ream pipe ends or file out to size of bore; remove chips.
 13. Provide where pipes and tubing pass through masonry or concrete wall. Provide galvanized steel pipe sleeves in outside walls above grade. Space between pipe, tubing, or insulation and the sleeve shall be not less than 1/4 inch. Hold sleeves securely in proper position and location before and during construction. Sleeves shall be of sufficient length to pass through entire thickness of walls. Firmly pack space between the pipe or tubing and the sleeve with oakum and caulk on both ends of the sleeve with elastic cement.
 14. Slope piping to permit complete drainage. Install drain valves at low points in piping. Drain valves shall be 1/2 inch gate valves for pipe lines smaller than 3 and 3/4 inch gate valves for lines 3 inches and larger, except where specific sizes are shown. Drain valves shall be of the same class as the piping drained. Install vent valves at high points in piping. Vent valves shall be 1/2 inch globe valves.
 15. Flashing for pipes passing through exterior walls above ground and through roof shall conform to de-tails as indicated.
 16. Anchor and support piping in a manner such that expansion and contraction shall take place in the desired direction. Prevent vibration by use of vibration dampers and prevent undue strains on equipment served. Hangers used for support of piping of 2 inch nominal pipe size and larger shall be the type permitting adequate adjustment after installation while still supporting the load. Use wall brackets where pipes are adjacent to walls or to other vertical surfaces which may be used for sup-ports. Provide supports to adequately carry weight of lines and to maintain proper alignment. Provide inserts and sleeves for supports in concrete where necessary, and in new construction place before concrete is poured. Provide insulated piping with a pipe-covering protection saddle at each support. Provide auxiliary structural steel members, other than building structural steel, required for supporting or anchoring piping and accessories. Provide longitudinal and lateral seismic sway bracing to restrain piping when subjected to the lateral forces generated by the seismic zone involved. In accordance with procedures approved by the Engineer, drill holes, provide bolting materials, and perform welding to fasten auxiliary structural steel to building steel. Provide pipe guides and anchors of approved type at points where necessary to keep pipes in accurate alignment, to direct expansion movement, and to prevent buckling and swaying and undue strain. Provide pipe guides for alignment of pipe connected to free, unanchored end of each expansion joint. Support pipe rollers in concrete trenches by manufactured preformed steel hanger units. Hanger units, supports, hangers, inserts, rollers, and similar items shall be hot-dipped galvanized after fabrication. Space pipe supports to provide adequate support.

K. Electrical Equipment

1. The Contractor shall install automatic transfer/bypass isolation switch, breakers, distribution panels, and control cabinets, as required, in the electrical room in accordance with manufacturer's instructions and recommendations, the applicable paragraphs of Division 16 Section "Automatic Transfer Switches" and drawings. The Contractor shall run all conduits, and wiring between the entrance switch, automatic transfer/bypass isolation switch, generator control cabinet, distribution panel(s), starting batteries, and other equipment in accordance with the installation drawings. The Contractor shall identify all switches and cabinets with nameplate per specification on the front of each item of equipment with the function, voltage, and phase of the piece of equipment.

L. Engine Exhaust System

1. The Contractor shall install the exhaust silencer (muffler) on the engine generator set. The silencer shall be covered with minimum of 1-1/2 inch pipe insulation, calcium silicate thermal insulation, wrapped with 6 ounce fiberglass cloth and cover with the same type and thickness of thermal insulation. The insulation shall be wrapped in an aluminum jacket. Insulation shall be held in place with two stainless steel bands per section. Insulation shall terminate at the wall and flexible connection with insulating cement neatly troweled on a bevel and finished with canvas. Engine generator exhaust flexible connection shall not be insulated.
2. The engine exhaust pipe furnished and installed by the Contractor shall be stainless steel with flanges as required to accommodate the threaded flanged couplings furnished with the exhaust silencer and flexible metal exhaust pipe. The exhaust pipe shall be run through the wall of the building. Metal plates or a metal sleeve shall be installed where the exhaust pipe passes through the wall of the building. Where metal plates are used, a layer or layers of fabric wrapped calcium silicate shall be placed between the plates and the wall. The exhaust pipe exterior wall penetration shall be waterproofed.
3. Hangers shall be spaced in no case more than 4 feet apart on straight runs of pipe and not more than 12 inches from any change in direction of the exhaust pipe.
4. Engine generator exhaust pipe supports consisting of threaded rods suspended from the building frame shall be fabricated in a manner recommended by the manufacturer of the roof decking. The exhaust pipe shall be suspended from rods by split ring with adjustable turnbuckle pipe clamps. The pipe hangers shall fit snugly around the insulation. Protect insulation at suspension points by a sheet metal protection shield, 12 inches minimum length by one-half the circumference of the insulation.
5. The flexible section of pipe shall be installed by the Contractor between the rigid exhaust pipe and the engine generator.

M. ENGINE COOLING SYSTEM

1. Contractor shall furnish and install flexible duct connection at the engine generator radiator discharge as shown on drawings. Duct connection shall be air tight. Fabricate from fluoroelastomer (FRM) synthetic rubber capable of withstanding temperatures up to 400°F. Provide a minimum of 1/2 inch slack in the connections and a minimum distance of six inches between the edges of equipment and duct-work. Carefully align ductwork with equipment opening and securely fasten flexible connection to the engine generator and ductwork using draw bands.

N. PAINTING

1. The Contractor shall retouch damaged painted surfaces after field installation and testing. Retouching shall be done with the exact color and type of paint used by the manufacturer. Other field painting is specified under Section 09900, "Paints and Coatings."

3.2 FIELD QUALITY CONTROL

- A. Perform and report on field tests and trial operations, and conduct field inspections. Provide labor, calibration and approved test equipment, and incidentals required for the tests. The Owner will witness field tests and trial operations and will conduct final field inspections. Give the Owner 21 days notice of the dates and times scheduled for tests, trial operations, and inspections which require the presence of the Owner. The manufacturer will perform start-up and testing. Deficiencies found shall be rectified and work affected by such deficiencies shall be completely retested.
- B. Test piping systems after lines have been cleaned and before applying insulation covering. Test piping systems at a pressure of 1.5 times the design working pressure, and in no case less than 100 psig. Hydrostatically test piping, except for air, oil, and gas, using water not exceeding 100 degrees F. Test air, oil, and gas lines with clean, dry air. For air lines operating at pressure greater than 100 psig, test at the design working pressure. In all tests, remove gages, traps, and other apparatus which may be damaged by the test pressure or valve off before the tests are made. Install a calibrated test pressure gage in the system to observe loss in pressure. Brush joints in piping systems tested with air with a soapy water solution to check for leaks. Maintain the required test pressure for a sufficient length of time to enable inspection of joints and connections. Rectify defects which develop during testing, and retest piping systems until they show no defect or weakness and are tight.
- C. Place into operation equipment provided and installed. Make necessary adjustments to equipment to ensure proper operation as instructed by the manufacturers of the equipment. Lubricate equipment prior to operation in accordance with the manufacturer's instructions. Dry out motors before operation as required developing and maintaining proper and constant insulation resistance. Upon approval by the Owner, operate engine-generator units under the supervision of the supervising erector at varying loads throughout the load range for a sufficient time to demonstrate that operation is proper and that pressures and temperatures are normal and within the specified limits. Operate engines as specified in paragraph entitled "Engine-Generator Units Acceptance Tests" for a period of time sufficient to ensure that the units are ready to carry the test loads without damage to engine parts. During this preliminary operation, check the operation and ensure the proper functioning of auxiliary equipment furnished under this contract. Make necessary adjustments to place auxiliary equipment in operating condition.
- D. Test procedures, inspections, and sampling shall be as specified and noted below.
1. Phase relationship tests: Check connections to equipment for proper phase relationship. During such check, disconnect all devices which could be damaged by the application of voltage or reversed phase sequence.
 2. Control panel tests: Test and adjust meters and relays in accordance with the applicable referenced specifications. Test completed control panel by operation under simulated service conditions to ensure accuracy of wiring and proper functioning of equipment.
 3. Insulation resistance tests: Perform on cables and equipment as listed herein. Make tests with mo-tor-driven or rectified type insulation resistance testers having ranges of 500 volts dc. Disconnect solid-state and other equipment which may be damaged by such tests before tests are made. Tests shall measure insulation resistance from line to line and line to ground. Test cables after placement of cables and completion of terminations, but before connection to equipment.
- E. Engine-Generator Unit Acceptance Tests
1. When installation is complete and in operating condition, notify the Owner in writing that the engine-generator units and auxiliary equipment are ready for final field tests. The Owner will witness final acceptance tests. Conduct fuel consumption tests on the engine-generator units to determine compliance with the specification requirements. Perform such other tests as necessary to ensure that equipment is functioning properly. Tests shall include the following.
 - a. A test to determine engine-generator unit speed regulation under a gradual change from zero to full load.

- b. A test to determine engine-generator unit instantaneous speed change with 25 percent load on or off.
 - c. A test to ensure proper functioning of the overspeed trip.
 - d. An individual test of each pressure and temperature alarm switch.
2. Inspect auxiliary equipment including, but not limited to, pumps, compressors, fans, coolers, radiators, instruments, centrifuges, and special valves to ensure proper operation. Owner may require to field test the auxiliary equipment. Auxiliary equipment test shall be in accordance with the latest ASME and IEEE performance test codes, if applicable. If no code exists for the equipment to be tested, perform tests as prescribed by the Engineer or Owner. Perform generating unit tests in accordance with the provisions of the "Field Test Code," as set forth in DEMA SDGE requirements, except as modified herein. Provide appropriate temporary load bank for loading the generating unit under test. Perform operational tests of a minimum duration of 8 hours at varying loads to demonstrate satisfactory performance of automatic and parallel operations.
 3. If the specified performance is not met by these tests, make such adjustments and changes, as necessary, and conduct additional tests, as necessary to further check the performance of the equipment.
- F. In the event equipment fails to meet specified performance or fails to operate satisfactorily, the Owner shall have the right to operate the equipment until the defects have been corrected. Equipment proved to be faulty or inadequate for the service specified will be rejected, but the Owner shall have the right to operate the rejected equipment until such time as new equipment is provided by the Contractor to replace the equipment rejected. Final acceptance of the engine-generator set installation will not be given until the Contractor has successfully corrected and all defects attributed to his installation corrected after acceptance testing by the manufacturer.

END OF SECTION 16410, Engine/Generator Set

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SECTION 16 415 – AUTOMATIC TRANSFER SWITCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section shall consist of providing a packaged electrical system and associated controls with all required accessories as specified and shown on the plans. The equipment supplier must be the authorized distributor for each component of the products specified herein.
- B. The work includes the furnishing of all labor, materials, equipment, test, and training to provide a complete and workable power system, including the generator set and generator set controls, and the transfer switch and transfer switch controls, and installation as shown on the plans, drawings, and specifications herein.

1.3 CODES AND STANDARDS

- A. The ATS shall conform to the requirements of:
 - 1. UL 1008--Standard for Automatic Transfer Switches
 - 2. NFPA 70--National Electrical Code, including use in emergency and standby systems in accordance with Articles 517, 700
 - 3. NFPA 99--Essential Electrical Systems for Health Care Facilities
 - 4. NFPA 110--Standard for Emergency and Standby Power Systems
 - 5. IEEE Standard 446--Recommended Practice for Emergency and Standby Power Systems (Orange Book)
 - 6. IEEE Standard 241--Recommended Practice for Electric Power Systems in Commercial Buildings (Gray Book)
 - 7. NEMA Standard IC10 (formerly ICS 2-447) Automatic Transfer Switches.
 - 8. UL 508 – Standard for industrial Control Equipment
 - 9. EN61000-4-5 Surge Immunity Class 4 (voltage sensing and programmable inputs only)
 - 10. EN61000-4-4 Fast Transient Immunity Severity Level 4
 - 11. IEC Specifications for EMI/EMC Immunity as follows:
 - a. CISPR 1 Radiated Emissions
 - b. IEC 1000-4-2, Electrostatic Discharge
 - c. IEC 1000-4-3, Radiated Electromagnetic Fields
 - d. IEC 1000-4-4, Electrical Fast Transient (Bursts)

- e. IEC 1000-4-5, Surge Voltage
- f. IEC 1000-4-6, Conducted RF Disturbances
- g. IEC 1000-4-8, Magnetic Fields
- h. IEC 1000-4-11, Voltage Variations and Interruptions

1.4 SUBMITTALS

- A. The submittal shall include prototype test certification and specification sheets showing all standard and optional accessories to be supplied, schematic wiring diagrams, dimension drawings, and interconnection diagrams identifying by terminal number, each required interconnection between the generator set and the transfer switch if it is included elsewhere in these specifications.
- B. Shop Drawings:
 - 1. Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:
 - a. Enclosure types and details for types other than NEMA Type 1.
 - b. Current and voltage ratings.
 - c. Short-circuit current rating.
 - d. UL listing for series rating of installed devices.
 - e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 2. Wiring Diagrams: Power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
- C. Qualification Data: Submit data for testing agencies indicating that they comply with qualifications specified in "Quality Assurance" Article.
- D. Warranty
 - 1. A one year warranty for the Automatic Transfer Switches shall be included to guarantee against defective material and workmanship in accordance with the manufacturer's published warranty from date of start-up. Optional warranties shall be available upon request.
- E. Maintenance
 - 1. The automatic transfer switch manufacturer and its distributor shall maintain a 24-hour parts and service organization. This organization shall be regularly engaged in a maintenance contract program to perform preventive maintenance and service on equipment similar to that specified. A service agreement shall be available and shall include system operation under simulated operating conditions, adjustment to the generator set, transfer switch, and switchgear controls as required, and certification in the owner's maintenance log of repairs made and proper functioning of all systems.

1.5 TESTING

- A. Final Production Tests: Each transfer switch shall be tested under load with all guards in place. Tests shall include:
 - 1. The complete automatic transfer switch shall be tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency, and time delay settings are in compliance with the specification requirements.
 - 2. The complete automatic transfer switch shall be subjected to a dielectric strength test per NEMA Standard ICS 1-109.05.
 - 3. The control panel shall meet or exceed the voltage surge withstand capability in accordance with ANSI C37.90a-2978 and the impulse withstand voltage test in accordance with NEMA Standard ICS 1-109.
 - B. Upon request, arrangements to either witness this test will be made, or a certified test record will be sent prior to shipment.
- 1.6 PROJECT CONDITIONS
- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:
 - 1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
 - 2. Altitude: Not exceeding 6600 feet.
- 1.7 COORDINATION
- A. Coordinate layout and installation of switches, circuit breakers, and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Kohler
 - b. ASCO
 - c. Generac

2.2 ELECTRICAL REQUIREMENTS

- 1. Automatic transfer switches not intended for continuous duty or repetitive load transfer switching are not acceptable.
- 2. The automatic transfer switch shall be rated in amperes for total system transfer including control of motors, electric-discharge lamps, electric heating, and tungsten-filament lamp load. Switches shall be suitable for 30% tungsten-filament load.

3. The automatic transfer switch shall be rated to withstand the rms symmetrical short circuit current available at the automatic transfer switch terminals, with the type of overcurrent protection shown on the plans.

2.3 EQUIPMENT

A. For the Bowden and Benson Centers:

1. The transfer switch shall have the following characteristics:
 - a. 800 amp current rating
 - b. 3 Pole
 - c. 4 wire, 3 phase
 - d. 480 Volt-60Hz
 - e. Solid Neutral
 - f. The withstand and closing ratings with any overcurrent protective device shall be 42,000 Amps
2. The ATS shall be furnished in a NEMA 1 enclosure.
3. The switch shall be a 600 volt class.

B. For the Mills and Darnell Centers:

1. The transfer switch shall have the following characteristics:
 - a. 1200 amp current rating
 - b. 3 Pole
 - c. 4 wire, 3 phase
 - d. 480 Volt-60Hz
 - e. Solid Neutral
 - f. The withstand and closing ratings with any overcurrent protective device shall be 42,000 Amps
2. The ATS shall be furnished in a NEMA 1 enclosure.
3. The switch shall be a 600 volt class.

2.4 MECHANICAL REQUIREMENTS

1. All main contacts shall be of silver composition. The main contacts shall be protected by arcing contacts in sizes 400 amperes and above. The main contacts shall be of the blow-on configuration and of segmented construction in ratings 600 amperes and above.
2. All contacts, coils, springs, and control elements shall be conveniently removable from the front of the transfer switch without major disassembly or disconnection of power conductors.
3. The contact transfer time shall not exceed one-sixth of a second.
4. All moveable parts of the operating mechanism shall remain in positive mechanical contact with the main contacts during the transfer operation without the use of separate mechanical interlocks.
5. All contacts, coils, springs, and control elements shall be conveniently removable from the front of the transfer switch without major disassembly or disconnection of power conductors.
6. The neutral conductor shall be solidly connected as shown on the plans, a neutral conductor terminal plate with fully rated AL-CU pressure connectors shall be provided.

2.5 TRANSFER SWITCH CONTROL SYSTEM

1. The control module shall direct the operation of the transfer switch. The module's sensing and logic shall be a built-in microprocessor-based system for maximum reliability, minimum maintenance, and inherent digital communications capability. The control settings shall be stored in nonvolatile EEPROM. The module shall contain an integral battery-backed programmable clock and calendar. The control module shall have a keyed disconnect plug to enable the control module to be disconnected from the transfer mechanism for routine maintenance.
 2. The control module shall be mounted separately from the transfer mechanism unit for safety and ease of maintenance. Interfacing relays shall be industrial control grade plug-in type with dust cover.
 3. The control module shall include a user interface keypad with tactile feedback pushbuttons and light-emitting diode status indication. These features shall be user accessible when the enclosure door is closed:
 - a. Keypad pushbuttons:
 - 1) Start/end system test
 - 2) Set/end exercise
 - 3) End time delay
 - 4) Lamp test/service reset
 - b. Light-emitting diode status indicators:
 - 1) Contactor Position: Normal, Off, Emergency
 - 2) Source Available: Normal, Emergency
 - 3) Service required: immediate, maintenance
 - 4) Not in automatic mode
 - 5) Four stage time delay remaining
 - 6) Exercise: load, no load, set/disabled
 - 7) Test: load, no load
 - 8) Load control active: peak shave, load shed, pre/post-transfer signal
 - 9) In-phase monitor/Off delay active
- B. Outputs:
- a. Generator engine start gold flashed contact rated 2 amps @ 30 VDC/250VAC.
 - b. Pre-transfer load control, one normally open contact rated 10 amps @ 30 VDC/250 VAC
 - c. One Programmable output, factory-set to load bank control rated 2 amps @ 30 VDC/250 VAC.

2.6 Operation

- A. All phases of normal and all phases of emergency shall be monitored for over and under voltage and single phase of normal and emergency for over- and under-frequency. In addition, the controller shall use anti-single phasing protection that detects regenerative voltage (using the phase angle of the source) to determine a failed source condition.
- B. Voltage and frequency sensing:
 1. Undervoltage pick-up set at 90% of nominal voltage, adjustable 85% - 100% of nominal voltage.
 2. Undervoltage dropout set at 90% of pickup voltage, adjustable 75% - 98% of pickup voltage.

3. Overvoltage dropout set at 110% of nominal voltage, adjustable 105% - 135% of nominal voltage.
 4. Overvoltage pick-up set at 95% of dropout voltage, adjustable 85% - 100% of nominal voltage.
 5. Voltage dropout time set at 0.5 seconds adjustable 0.1 – 9.9 seconds.
 6. Voltage accuracy: 2%.
 7. Under frequency pick-up set at 90% of nominal frequency, adjustable 85% - 95% of nominal frequency.
 8. Under frequency dropout set at 99% of pick-up frequency, adjustable 95% - 99% of pick-up frequency.
 9. Over frequency dropout set at 101% of pick-up frequency, adjustable 101% - 105% of nominal frequency.
 10. Over frequency pick-up set at 110% of nominal frequency, adjustable 105% - 120% of nominal frequency.
 11. Frequency accuracy: 1%
- C. Time Delays:
1. Time delay for engine start to delay initiation of transfer for momentary source outages: Range 0-6 seconds. Factory set at 3 seconds.
 2. Time delay for transfer to standby: Range 0-60 minutes. Factory set at 1 second.
 3. Time delay for transfer back to normal: Range 0-60 minutes. Factory set at 15 minutes.
 4. Time delay for engine cool down: Range 0-60 minutes. Factory set at 0 minutes.
 5. Failure to acquire standby source: Range 0-60 minutes. Factory set at 1 minute.
 6. Pre-transfer to normal signal: Range 0-60 minutes. Factory set at 3 second.
 7. Pre-transfer to standby signal: Range 0-60 minutes. Factory set at 3 second.
 8. Post-transfer to normal signal: Range 0-60 minutes. Factory set at 0 minute.
 9. Post-transfer to standby signal: Range 0-60 minutes. Factory set at 0 minute.
- D. User terminals shall be available to connect a normally open contact that, when closed, signals the control module to start and transfer load to the engine-generator. Opening these contacts shall initiate a retransfer and engine cool down sequence. The load shall be transferred to an available utility source immediately if the generator source should fail.
- E. The following features shall be built into the control module logic. These features shall be enabled at the factory or in the field.
1. Phase rotation sensing programmable ABC or CBA.
 2. In-phase monitoring shall continuously monitor the contactor transfer times, source voltage, frequency and phase angle to provide a self-adjusting, zero crossing contactor transfer signal. A flashing LED on the user interface panel shall indicate active in-phase monitoring.

3. Plant Exerciser: Programmable seven-day or fourteen-day exerciser with user selectable load or no-load operation. An LED, on the user interface, shall indicate the type of exercise (load or no load). The time remaining on the exercise shall be indicated. The exercise time may be reset at any time with a single keystroke. The engine shall be allowed to run when the exercise period is terminated. The exerciser may be disabled for maintenance purposes. An amber LED shall flash on the user interface if the exerciser has been disabled. The exerciser shall have the capability of being programmed, using up to twenty-one (21) event for a calendar mode. The controller shall have provisions for disconnecting a load bank (during exercise) if there is a loss of normal power.

2.7 Monitoring, Programming and Communications:

- A. Industry standard RTU communication shall be available with network and setup connections. This monitor shall be provided with the following capabilities:
 1. Monitor controller data.
 2. Alter parameters.
 3. Starting and stopping the generator.
 4. Communications with third party developer.
 5. Communicate to the controller using a twisted pair of wire.
- B. Personal Computer Set-up/monitoring Software
 1. The controller must have the capability to communicate to a personal computer (IBM or compatible) running Windows 9X or Windows NT through an RS-232 communication format.
 2. The software shall be Windows® based
 3. The programming capability shall be password protected
- C. It shall be possible to start the generator and transfer the loads to the generator.
- D. Event monitoring shall be accessible using either a personal computer with the personal computer software link to view the following:
 1. Historical data (total and resettable)
 - a. Days in operation
 - b. Hours in standby
 - c. Hours not in preferred
 - d. Switch transfers
 - e. Failure to transfer
 - f. Transfers due to loss of preferred
 - g. Start up date
 - h. Last maintenance date
 - i. Switch transfer count since last maintenance

2. Transfer switch information
 - a. ATS serial number
 - b. Controller serial number
 - c. Contactor serial number
 - d. Load description
 - e. Location
 - f. Branch
 - g. Network connection ID
 - h. Baud rate
 - i. Parity bit
 3. System events (time and date stamped) of the last 100 events which include all failures of the sources, transfer switch and all functions of the controller and contactor:
 4. Line to line voltage
 5. System frequency
 6. Time delay active
 7. Time delay remaining
 8. System status
 9. Source available
 10. Contactor position
 11. Exerciser schedule, mode and time remaining on active exercise.
- E. Programmable features may be viewed, selected or adjusted as follows:
1. System voltage
 2. System frequency
 3. Single/three-phase operation
 4. Open/closed-transition operation
 5. ABC or CBA phase rotation
 6. In-phase monitor
 7. Commit/no commit transfer mode
 8. User defined password

- F. Programmable inputs shall be defined using either a personal computer with the personal computer software link:
1. End time delay input
 2. Inhibit transfer
 3. Low external battery fault
 4. Peak shave/area protection input
 5. Remote common fault
 6. Remote test
- G. Programmable outputs shall be defined using either a personal computer with the personal computer software link:
1. Auxiliary switch fault
 2. Common fault
 3. Contactor position
 4. Exercise active
 5. Failure to acquire standby source
 6. Failure to transfer fault
 7. Generator engine start
 8. Load bank control
 9. Loss of phase fault
 10. Low backup battery
 11. No in automatic mode
 12. Non-emergency transfer
 13. Over and undervoltage faults
 14. Over and under frequency faults
 15. Peak shave/area protection active
 16. Phase rotation error
 17. Software controlled relay outputs
 18. Source available
 19. Test active

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elements and surfaces to receive switch for compliance with installation tolerances and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

3.3 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section Basic Electrical Materials and Methods.
- B. Enclosure Nameplates: Label each enclosure with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.

3.4 CONNECTIONS

- A. Install equipment grounding connections for switches and circuit breakers with ground continuity to main electrical ground bus.
- B. Install power wiring. Install wiring between switches and circuit breakers, and control and indication devices.
- C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.5 FIELD QUALITY CONTROL

- A. Testing: After installing enclosed switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
 - 1. Procedures: Perform each visual and mechanical inspection and electrical test indicated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3.6 ADJUSTING

- A. Set field-adjustable switches and circuit-breaker trip ranges.

3.7 CLEANING

- A. On completion of installation, inspect interior and exterior of enclosures. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

END OF SECTION 16415

SECTION 16 476 - DISCONNECTS AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Service disconnects.
 - 2. Feeder and equipment disconnects.
 - 3. Circuit breakers.

1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for switches, circuit breakers, and accessories specified in this Section.
- C. Descriptive data and time-current curves for protective devices and let-through current curves for those devices with current-limiting characteristics. Include coordination charts and tables, and related data.
- D. Wiring diagrams detailing power and control wiring and differentiating clearly between manufacturer-installed wiring and field-installed wiring.
- E. Field test reports indicating and interpreting test results.
- F. Maintenance data for tripping devices to include in the "Operating and Maintenance Manual" specified in Division 1.

1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70 "National Electrical Code" for components and installation.
- B. Listing and Labeling: Provide products specified in this Section that are listed and labeled.
 - 1. The Terms "Listed" and "Labeled": As defined in the "National Electrical Code," Article 100.
 - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.
- C. Single-Source Responsibility: All enclosed switches and circuit breakers shall be the product of a single manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide enclosed switches and circuit breakers by one of the following:

1. Fusible Switches:
 - a. Cutler-Hammer Products; Eaton Corp.
 - b. Siemens Energy & Automation, Inc.
 - c. Square D Co.
2. Molded-Case Circuit Breakers:
 - a. Cutler-Hammer Products; Eaton Corp.
 - b. Siemens Energy & Automation, Inc.
 - c. Square D Co.

2.2 ENCLOSED SWITCHES

- A. Enclosed Non-fusible Switch: NEMA KS 1, Type HD, handle lockable with 2 padlocks.
- B. Enclosed Fusible Switch, 800 Amperes and Smaller: NEMA KS 1, Type HD, clips to accommodate specified fuses, enclosure consistent with environment where located, handle lockable with 2 padlocks, and interlocked with cover in CLOSED position.
- C. Enclosure: NEMA KS 1, Type 1, unless specified or required otherwise to meet environmental conditions of installed location.

1. Outdoor Locations: Type 3R.

2.3 ENCLOSED CIRCUIT BREAKERS

- A. Enclosed Molded-Case Circuit Breaker: NEMA AB 1, handle lockable with 2 padlocks.
- B. Characteristics: Frame size, trip rating, number of poles, and auxiliary devices as indicated; interrupting capacity rating as listed in Section 16180; with appropriate application listing when used for switching fluorescent lighting loads or heating, air conditioning, and refrigeration equipment.
- C. Interchangeable Trips: Circuit breakers, 200 amperes and larger, with trip units interchangeable within frame size.
- D. Lugs: Mechanical lugs and power-distribution connectors for number, size, and material of conductors indicated.
- E. Shunt Trip: Where indicated, 120 volts, 60 Hz.
- F. Enclosure: NEMA AB 1, Type 1, unless specified or required otherwise to meet environmental conditions of installed location.

1. Outdoor Locations: Type 3R.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install enclosed switches and circuit breakers in locations as indicated, according to manufacturer's written instructions.
- B. Install enclosed switches and circuit breakers level and plumb.

- C. Install wiring between enclosed switches and circuit breakers and control/indication devices.
- D. Connect enclosed switches and circuit breakers and components to wiring system and to ground as indicated and instructed by manufacturer. Tighten connectors and terminals, including screws and bolts according to equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals according to tightening torques specified in UL Standard 486A.

3.2 FIELD QUALITY CONTROL

- A. Testing: After installing enclosed switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
 - 1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA Standard ATS, Section 7.5 for enclosed switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
- B. Correct malfunctioning units at site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units, and retest.

3.3 ADJUSTING

- A. Set field-adjustable enclosed switches and circuit breaker trip ranges as indicated.

3.4 CLEANING

- A. After completing system installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish including chips, scratches, and abrasions.

3.5 DEMONSTRATION

- A. Train Owner's maintenance personnel on procedures and schedules for startup and shutdown, troubleshooting, servicing, and preventive maintenance.
- B. Review data in the "Operating and Maintenance Manual." Refer to Division 1 Section "Project Closeout."
- C. Schedule training with Owner through the Architect with at least 7 days' advance notice.

END OF SECTION 16 476 – DISCONNECTS AND CIRCUIT BREAKERS

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