

IN WITNESS THEREOF, the Parties hereto have caused this Contract to be executed by their duly authorized representatives as attested and witnessed and their corporate seals to be hereunto affixed as of the day and year date first above written.

OWNER:

CONTRACTOR:

FULTON COUNTY, GEORGIA

J SQUARE PLUMBING COMPANY, INC.

Robert L. Pitts, Chairman
Fulton County Board of Commissioners

Broderick Jackson, President

ATTEST:

ATTEST:

Tonya R. Grier,
Interim Clerk to the Commission

Secretary/
Assistant Secretary

(Affix County Seal)

(Affix Corporate Seal)



APPROVED AS TO FORM:

Office of the County Attorney

APPROVED AS TO CONTENT:

Joseph N. Davis, Director
Department of Real Estate and Asset
Management

END OF SECTION

ITEM#: _____	RCS: _____	ITEM#: _____	RM: _____
RECESS MEETING		REGULAR MEETING	

ITEM # 19-1142 RCS 12/18/17
RECESS/MEETING

OWNER - CONTRACTOR AGREEMENT

19ITB654321K-JAJ FCGC Complex Tower & Public Safety Building Domestic Water Piping Replacement- Phase II

Contractor: J Squared Plumbing Company, Inc. Project No. 19ITB654321K-JAJ

Address: 5365 Dividend Drive Suite A
Decatur, GA 30035

Telephone: 404-353-1465

Contact: Broderick Jackson

Facsimile: N/A

THIS AGREEMENT is effective as of the _____ day of _____, 2019, by and between Fulton County, a political subdivision of the State of Georgia (hereinafter called the "County"), and the above named CONTRACTOR in accordance with all provisions of this Construction Agreement ("Contract"), which consists of the following: Owner-Contractor Agreement, Owner's invitation for bid, instructions to bidders, bid form, performance bond, payment bond, acknowledgments, general conditions, special conditions, scope of work and specifications, plans, drawings, exhibits, addenda, Purchasing forms, Office of Contract Compliance Forms, Risk Management insurance provisions forms and written change orders.

The specific Exhibits of this Contract are as follows:

- Exhibit A: General Conditions
- Exhibit B: Special Conditions (if applicable)
- Exhibit C: Addenda
- Exhibit D: Bid Form
- Exhibit E: Bonds (Bid, Payment & Performance)
- Exhibit F: Scope of Work and Technical Specifications
- Exhibit G: Exhibits
- Exhibit H: Purchasing Forms
- Exhibit I: Office of Contract Compliance Forms
- Exhibit J: Risk Management Insurance Provisions Forms

WITNESSETH: That the said Contractor has agreed, and by these present does agree with the said County, for and in consideration of a Contract Price of **Five Hundred Fifty-Seven Thousand, Three Hundred Seventy Dollars and Zero Cents (\$557,370.00)** and other good and valuable consideration, and under the penalty expressed on Bonds hereto attached, to furnish all equipment, tools, materials, skill, and labor of every description necessary to carry out and complete in good, firm, and workmanlike manner, the Work specified, in strict conformity with the Drawings and the Specifications hereinafter set forth, which Drawings and Specifications together with the bid submittals made by the Contractor, General Conditions, Special Provisions, Detailed Specifications, Exhibits, and this Construction Agreement, shall all form essential parts of this Contract. The Work covered by this Contract includes all Work indicated on Plans and Specifications and listed in the Bid entitled:

Project Number: 19ITB654321K-JAJ
FCGC Complex Tower & Public Safety Building Water Piping Replacement- Phase II

The Contractor, providing services as an Independent Contractor, shall commence the Work with adequate force and equipment within 10 days from receipt of Notice to Proceed ("NTP") from the County, and shall complete the work within One Hundred Eighty (180) Calendar Days from the Notice to Proceed or the date work begins, whichever comes first. The Contractor shall remain responsible for performing, in accordance with the terms of the Contract, all work assigned prior to the expiration of the said calendar days allowed for completion of the work even if the work is not completed until after the expiration of such days. The Contractor shall agree that in the performance of this Contract he will comply with all lawful agreements, if any, which the contractor has made with any association, union or other entity, with respect to wages, salaries and working conditions, so as to cause inconvenience, picketing or work stoppage.

As full compensation for the faithful performance of this Contract, the County shall pay the Contractor in accordance with the General Conditions and the prices stipulated in the Bid, hereto attached.

It is further mutually agreed between the parties hereto that if, at any time after the execution of this Agreement and the Surety Bonds hereto attached for its faithful performance, the County shall deem the surety or sureties upon such bonds to be unsatisfactory, or, if, for any reason, such bonds cease to be adequate to cover the performance of the Work, the Contractor shall, at his expense, within five days after receipt of notice from the County so to do, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the County. In such event no further payment to the Contractor shall be deemed to be due under this Agreement until such new or additional security for the faithful performance of the Work shall be furnished in manner and form satisfactory to the County.

The Contractor hereby assumes the entire responsibility and liability for any and all injury to or death of any and all persons, including the Contractor's agents, servants, and employees, and in addition thereto, for any and all damages to property caused by or resulting from or arising out of any act or omission in connection with this contract or the prosecution of work hereunder, whether caused by the Contractor or the Contractor's agents, Servants, or employees, or by any of the Contractor's subcontractors or suppliers, and the Contractor shall indemnify and hold harmless the County, the Program Manager, County's Commissioners, officers, employees, successors, assigns and agents, or any of their subcontractors from and against any and all loss and/or expense which they or any of them may suffer or pay as a result of claims or suits due to, because of, or arising out of any and all such injuries, deaths and/or damage, irrespective of County or Program Manager negligence (except that no party shall be indemnified for their own sole negligence). The Contractor, if requested, shall assume and defend at the Contractor's own expense, any suit, action or other legal proceedings arising there from, and the Contractor hereby agrees to satisfy, pay, and cause to be discharged of record any judgment which may be rendered against the County and the Program Manager arising there from.

In the event of any such loss, expense, damage, or injury, or if any claim or demand for damages as heretofore set forth is made against the County or the Program Manager, the County may withhold from any payment due or thereafter to become

due to the Contractor under the terms of this Contract, an amount sufficient in its judgment to protect and indemnify it and the Program Manager, County's Commissioners, officers, employees, successors, assigns and agents from any and all claims, expense, loss, damages, or injury; and the County, in its discretion, may require the Contractor to furnish a surety bond satisfactory to the County providing for such protection and indemnity, which bond shall be furnished by the Contractor within five (5) days after written demand has been made therefore. The expense of said Bond shall be borne by the Contractor. **[See General Conditions for similar provision]**

This Contract constitutes the full agreement between the parties, and the Contractor shall not sublet, assign, transfer, pledge, convey, sell or otherwise dispose of the whole or any part of this Contract or his right, title, or interest therein to any person, firm or corporation without the previous consent of the County in writing. Subject to applicable provisions of law, this Contract shall be in full force and effect as a Contract, from the date on which a fully executed and approved counterpart hereof is delivered to the Contractor and shall remain and continue in full force and effect until after the expiration of any guarantee period and the Contractor and his sureties are finally released by the County.

This agreement was approved by the Fulton County Board of Commissioner on December 18, 2019 Item # 19-1142.

[SIGNATURES NEXT PAGE]

EXHIBIT A
GENERAL CONDITIONS

SECTION 8 GENERAL CONDITIONS

00700-1 FAMILIARITY WITH SITE

Execution of this agreement by the Contractor 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 this agreement.

00700-2 CONTRACT DOCUMENTS

This agreement consists of Owner's invitation for bid, instructions to bidders, bid form, performance bond, payment bond, acknowledgments, the contract, general conditions, special conditions, specifications, plans, drawings, exhibits, addenda, and written change orders.

- A. Notice of Award of Contract:
- B. Execution of Contract Documents

Upon notification of Award of Contract, the Owner shall furnish the Contractor the conformed copies of Contract Documents for execution by the Contractor and the 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 Owner 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 Owner shall have the right to proceed on the Bid Bond accompanying the bid.

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

Drawings and Specifications:

The Drawings, Specifications, Contract Documents, and all supplemental documents, are considered essential parts of the Contract, and requirements occurring in one are as binding as though occurring in all. They are intended to define, describe and provide for all Work necessary to complete the Project in an acceptable manner, ready for use, occupancy, or operation by the Owner.

In case of conflict between the Drawings and Specifications, the Specifications shall govern. Figure dimensions on Drawings shall govern over scale dimensions, and detailed Drawings shall govern over general Drawings.

In cases where products or quantities are omitted from the Specifications, the description and quantities shown on the Drawings shall govern.

Any ambiguities or need for clarification of the Drawings or Specifications shall be immediately reported to the Construction Manager in writing. Any such ambiguity or need for clarification shall be handled by the Construction Manager in writing. No clarification of the Drawings and Specifications hereunder by the Construction Manager shall entitle the Contractor to any additional monies unless a Change Order has been processed as provided by "Changes in the Contract" hereof.

Any work done by the Contractor following a discovery of such differing site condition or ambiguity or need for clarification in the Contract Drawings and Specifications prior to a written report to the Construction Manager shall not entitle the Contractor to additional monies and shall be done at the Contractor's risk.

The Construction Manager will furnish the Contractor five (5) copies of the Contract Drawings and the Specifications, one copy of which the Contractor shall have available at all times on the Project site.

00700-3 DEFINITIONS

The following terms as used in this agreement are defined as follows to the extent the definitions herein differ or conflict with those in the Instructions for Bidders, Section 00100, the definitions herein shall control.

Alternate bids – the amount stated in the bid or proposal to be added to or deducted from the amount of the base bid or base proposal if the corresponding change in project scope or alternate materials or methods of construction is accepted.

Base bid – the amount of money stated in the bid or proposal as the sum for which the bidder or proposer offers to perform the work.

Change Order - an alteration, addition, or deduction from the original scope of work as defined by the contract documents to address changes or unforeseen conditions necessary for project completion. A written order to the Contractor issued by the County pursuant to Fulton County Code Section 102-420 for changes in the work within the general scope of the contract documents, adjustment of the contract price, extension of the contract time, or reservation of determination of a time extension.

Construction Manager - shall mean the individual designated in writing, by the Real Estate & Asset Management Department as the Construction Manager.

Contractor - shall mean the party of the second part to the Contract Agreement or the authorized and legal representative of such party.

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.

Contract Price - The sum specified in the Agreement to be paid to the Contractor in consideration of the Work.

Contract Time - shall mean the number of consecutive calendar days as provided in the Contract Agreement for completion of the Work, to be computed from the date of Notice to Proceed.

Owner or County - shall mean Fulton County Government, party of the first part to the Contract Agreement, or its authorized and legal representatives.

Day - A calendar day of twenty-four hours lasting from midnight of one day to midnight the next day.

Director - Director of the Real Estate & Asset Management Department of Fulton County, Georgia or the designee thereof.

Final Completion - shall mean the completion of all work as required in accordance with the terms and conditions of the contract documents.

Liquidated Damages - shall mean the amount, stated in the Contract Agreement, which the Contractor agrees to pay to the Owner for each consecutive calendar day beyond the Contract time required to complete the Project or for failing to comply with associated milestones. Liquidated Damages will end upon written notification from the Owner of Final Acceptance of the Project or upon written notification of from the Owner of completion of the milestone.

Notice to Proceed - A written communication issued by the County to the Contractor authorizing it to proceed with the work, establishing the date of commencement and completion of the work, and providing other direction to the Contractor.

Products - shall mean materials or equipment permanently incorporated into the work.

Project Manual - The Contract Documents.

Provide - shall mean to furnish and install.

Substantial Completion - The date certified by the Construction Manager when all or a part of the work, as established pursuant to General Condition 0700-81, is sufficiently completed in accordance with the requirements of the contract documents so that the identified portion of the work can be utilized for the purposes for which it is intended.

Work or Project - All of the services specified, indicated, shown or contemplated by the contract documents, and furnishing by the Contractor of all materials, equipment, labor, methods, processes, construction and manufacturing materials and equipment, tools, plans, supplies, power, water, transportation and other things necessary to complete such services in accordance with the contract documents to insure a functional and complete facility.

00700-4 CODES

All codes, specifications, and standards referenced in the contract documents shall be the latest editions, amendments and revisions of such referenced standards in effect as of the date of the request for proposals for this contract.

00700-5 REVIEW OF CONTRACT DOCUMENTS

Before making its proposal to the County, and continuously after the execution of the agreement, the Contractor shall carefully study and compare the contract documents and shall at once report to the Construction Manager any error, ambiguity, inconsistency

or omission that may be discovered, including any requirement which may be contrary to any law, ordinance, rule, or regulation of any public authority bearing on the performance of the work. By submitting its proposal, the Contractor agrees that the contract documents, along with any supplementary written instructions issued by or through the Construction Manager that have become a part of the contract documents, appear accurate, consistent and complete insofar as can be reasonably determined. If the Contractor has timely reported in writing any error, inconsistency, or omission to the Construction Manager, has properly stopped the affected work until instructed to proceed, and has otherwise followed the instructions of the Construction Manager, the Contractor shall not be liable to the County for any damage resulting from any such error, inconsistency, or omission in the contract documents. The Contractor shall not perform any portion of the work without the contract documents, approved plans, specifications, products and data, or samples for such portion of the work. For purposes of this section "timely" is defined as the time period in which the contractor discovers, or should have discovered, the error, inconsistency, or omission, with the exercise of reasonable diligence.

00700-6 STRICT COMPLIANCE

No observation, inspection, test or approval of the County or Construction Manager shall relieve the Contractor from its obligation to perform the work in strict conformity with the contract documents except as provided in General Condition 00700-48.

00700-7 APPLICABLE LAW

All applicable State laws, County ordinances, codes, and rules and regulations of all authorities having jurisdiction over the construction of the project shall apply to this agreement. The Contractor shall comply with the requirements of any Fulton County program concerning non-discrimination in contracting. All work performed within the right of way of the Georgia Department of Transportation and any railroad crossing shall be in accordance with Georgia Department of Transportation regulations, policies and procedures and, where applicable, those of any affected railroad. The Contractor shall comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work as specified and the Contractor agrees to indemnify and hold harmless the County, its officers, agents and employees, as well as the Construction Manager and the Program Manager against any claim or liability arising from or based on the violation of any law, ordinance, regulation, order or decree affecting the conduct of the work, whether occasioned by the Contractor, his agents or employees.

00700-8 PERMITS, LICENSES AND BONDS

All permits and licenses necessary for the work shall be secured and paid for by the Contractor. If any permit, license or certificate expires or is revoked, terminated, or suspended as a result of any action on the part of the Contractor, the Contractor shall not be entitled to additional compensation or time. The Contractor shall obtain and keep in force at all times performance and payment bonds payable to Fulton County in penal amounts equal to 100% of the Contract price.

00700-9 TAXES

- A. The Contractor shall pay all sales, retail, occupational, service, excise, old age benefit and unemployment compensation taxes, consumer, use and other similar taxes, as well as any other taxes or duties on the materials, equipment, and labor for the work provided by the Contractor which are legally enacted by any municipal, county, state or federal authority, department or agency at the time

bids are received, whether or not yet effective. The Contractor shall maintain records pertaining to such taxes and levies as well as payment thereof and shall make the same available to the County at all reasonable times for inspection and copying. The Contractor shall apply for any and all tax exemptions which may be applicable and shall timely request from the County such documents and information as may be necessary to obtain such tax exemptions. The County shall have no liability to the Contractor for payment of any tax from which it is exempt.

- B. The Contractor is obligated to comply with all local and State Sales and Use Tax laws. The Contractor shall provide the Owner with documentation to assist the Owner in obtaining sales and/or use tax refunds for eligible machinery and equipment used for the primary purpose of reducing or eliminating air or water pollution as provided for in Chapter 48-8-3 (36) and (37) of the Official Code of Georgia. All taxes shall be paid by the Contractor. All refunds will accrue to the Owner.

Acceptance of the project as complete and final payment will not be made by the Owner until the Contractor has fully complied with this requirement.

00700-10 DELINQUENT CONTRACTORS

The County shall not pay any claim, debt, demand or account whatsoever to any person firm or corporation who is in arrears to the County for taxes. The County shall be entitled to a counterclaim, back charge, and offset for any such debt in the amount of taxes in arrears, and no assignment or transfer of such debt after the taxes become due shall affect the right of the County to offset any taxes owed against said debt.

00700-11 LIEN WAIVERS

The Contractor shall furnish the County with evidence that all persons who have performed work or furnished materials pursuant to this agreement have been paid in full prior to submitting its demand for final payment pursuant to this agreement. A final affidavit, Exhibit A, must be completed, and submitted to comply with requirements of 00700-11. In the event that such evidence is not furnished, the County may retain sufficient sums necessary to meet all lawful claims of such laborers and materialmen. The County assumes no obligation nor in any way undertakes to pay such lawful claims from any funds due or that may become due to the Contractor.

00700-12 MEASUREMENT

All items of work to be paid for per unit of measurement shall be subject to inspection, measurement, and confirmation by the Construction Manager.

00700-13 ASSIGNMENT

The Contractor shall not assign any portion of this agreement or moneys due there from (include factoring of receivables) without the prior written consent of the County. The Contractor shall retain personal control and shall provide personal attention to the fulfillment of its obligations pursuant to this agreement. Any assignment without the express written consent of the County shall render this contract voidable at the sole option of the County.

00700-14 FOREIGN CONTRACTORS

In the event that the Contractor is a foreign corporation, partnership, or sole proprietorship, the Contractor hereby irrevocably appoints the Secretary of State of Georgia as its agent for service of all legal process for the purpose of this contract only.

00700-15 INDEMNIFICATION

The Contractor hereby assumes the entire responsibility and liability for any and all injury to or death of any and all persons, including the Contractor's agents, servants, and employees, and in addition thereto, for any and all damages to property caused by or resulting from or arising out of any act or omission in connection with this contract or the prosecution of work hereunder, whether caused by the Contractor or the Contractor's agents, Servants, or employees, or by any of the Contractor's subcontractors or suppliers, and the Contractor shall indemnify and hold harmless the County, the Construction Manager, County's Commissioners, officers, employees, successors, assigns and agents, or any of their subcontractors from and against any and all loss and/or expense which they or any of them may suffer or pay as a result of claims or suits due to, because of, or arising out of any and all such injuries, deaths and/or damage, irrespective of County or Construction Manager negligence (except that no party shall be indemnified for their own sole negligence). The Contractor, if requested, shall assume and defend at the Contractor's own expense, any suit, action or other legal proceedings arising there from, and the Contractor hereby agrees to satisfy, pay, and cause to be discharged of record any judgment which may be rendered against the County and the Construction Manager arising there from.

In the event of any such loss, expense, damage, or injury, or if any claim or demand for damages as heretofore set forth is made against the County or the Construction Manager, the County may withhold from any payment due or thereafter to become due to the Contractor under the terms of this Contract, an amount sufficient in its judgment to protect and indemnify it and the Construction Manager, County's Commissioners, officers, employees, successors, assigns and agents from any and all claims, expense, loss, damages, or injury; and the County, in its discretion, may require the Contractor to furnish a surety bond satisfactory to the County providing for such protection and indemnity, which bond shall be furnished by the Contractor within five (5) days after written demand has been made therefore. The expense of said Bond shall be borne by the Contractor.

00700-16 SUPERVISION OF WORK AND COORDINATION WITH OTHERS

The Contractor shall supervise and direct the work using the Contractor's best skill and attention. The Contractor shall be solely responsible for all construction methods and procedures and shall coordinate all portions of the work pursuant to the contract subject to the overall coordination of the Construction Manager. All work pursuant to this agreement shall be performed in a skillful and workmanlike manner.

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.

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.

The Contractor shall cooperate with the County and separate contractors in arranging the introduction and storage of materials and equipment and execution of their work, and shall cooperate in coordinating connection of its work with theirs as required by the Contract Documents.

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 to the Construction Manager any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results **within fourteen (14) days** of discovery of such discrepancy or defect. 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.

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

Should the Contractor wrongfully cause damage to the work or property of the County or to other work or property on the site, including the work of separate contractors, the Contractor shall promptly remedy such damage at the Contractor's expense.

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 inasmuch as the parties to this agreement are the only beneficiaries hereof and there are no third party beneficiaries and neither the County nor the Construction Manager shall have liabilities therefore, but the Contractor may assert his claim for damages solely against such other contractor. The Contractor shall not be excused from performance of the contract by reason of any dispute as to damages with any other contractor or third party.

Where the Work of this Contract shall be performed concurrently in the same areas as other construction work, the Contractor shall coordinate with the Construction Manager and the separate contractors in establishing mutually acceptable schedules and procedures that shall permit all jobs to proceed with minimum interference.

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 County shall determine to be just.

00700-17 ADMINISTRATION OF CONTRACT

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

For the administration of this Contract, the Construction Manager shall serve as the County's primary representative during design and construction and until final payment to the Contractor is due. The Construction Manager shall advise and consult with the County and the Program Manager. The primary point of contact for the Contractor shall be the Construction Manager. All correspondence from the Contractor to the County shall be forwarded through the Construction Manager. Likewise, all correspondence and instructions to the Contractor shall be forwarded through the Construction Manager.

The Construction Manager 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.

The Construction Manager 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 it be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Construction Manager will not be responsible for or have control or charge over the acts or omissions of the Contractor, its engineers, consultants, subcontractors, or any of their agents or employees, or any other persons performing the Work.

Based on the Construction Manager's observations 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.

The Construction Manager shall render interpretations necessary for the proper execution or progress of the Work. Either party to the Contract may make written requests to the Construction Manager for such interpretations.

Claims, disputes and other matters in question between the Contractor and the County relating to the progress of the Work or the interpretation of the Contract Documents shall be referred to the Construction Manager for interpretation.

All interpretations of the Construction Manager shall be consistent with the intent of and reasonably inferable from the Contract Documents and shall be in writing or in graphic form.

Except as otherwise provided in this Contract, the Construction Manager shall issue a decision on any disagreement concerning a question of fact arising under this Contract. The Construction Manager shall reduce the 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) days from the date of receipt of such copy, the Contractor files a written appeal with the Director of Public Works and mails or otherwise furnishes the Construction Manager a copy of such appeal. The decision of the Director of Public Works or the Director's duly authorized representative for the determination of such appeals shall be final and conclusive. Such final decision shall not be pleaded in any suit involving a question of fact arising under this Contract, provided such is not fraudulent, capricious, arbitrary, so grossly erroneous as necessarily implying bad faith, or is not supported by substantial evidence. In connection with any appeal proceeding under this Article, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of Contractor's appeal. Pending any final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract as directed by the Construction Manager.

The Construction Manager shall have 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 County shall have authority to require special inspection or testing of the Work whether or not such Work be then fabricated, installed or completed. The Contractor shall pay for such special inspection or testing if the Work so inspected or tested is found not to comply with the requirements of the contract; the County shall pay for special inspection and testing if the Work is found to comply with the contract. Neither the Construction Manager's authority to act under this Subparagraph, nor any decision made by the Construction Manager in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Construction

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

The Contractor shall provide such shop drawings, product data, and samples as may be required by the Construction Manager and/or as required by these Contract Documents.

The Construction Manager shall conduct inspections to determine 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 General Conditions 00700-81, 00700-82, 00700-84 and 00700-85 of this Agreement.

Except as provided in General Condition 00700-48, the Contractor shall not be relieved from the Contractor's obligations to perform the work in accordance with the contract documents by the activities or duties of the County or any of its officers, employees, or agents, including inspections, tests or approvals, required or performed pursuant to this agreement.

00700-18 RESPONSIBILITY FOR ACTS OF EMPLOYEES

The Contractor shall employ only competent and skilled personnel. The Contractor shall, upon demand from the Construction Manager, immediately remove any superintendent, foreman or workman whom the Construction Manager may consider incompetent or undesirable.

The Contractor shall be responsible to the County for the acts and omissions of the Contractor's employees, subcontractors, and agents as well as any other persons performing work pursuant to this agreement for the Contractor.

00700-19 LABOR, MATERIALS, SUPPLIES, AND EQUIPMENT

Unless otherwise provided in this agreement, the Contractor shall make all arrangements with necessary support agencies and utility companies 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 execution and completion of the work.

00700-20 DISCIPLINE ON WORK SITE

The Contractor shall enforce strict discipline and good order among its employees and subcontractors at all times during the performance of the work, to include compliance with the Fulton County Drug Free Work Place Policy. The Contractor shall not employ any subcontractor who is not skilled in the task assigned to it. The Construction Manager may, by written notice, require the Contractor to remove from the work any subcontractor or employee deemed by the Construction Manager to be incompetent.

00700-21 HOURS OF OPERATION

All work at the construction site shall be performed during regular business hours of the Fulton County government, except upon the Construction Manager's prior written consent to other work hours. It is further understood that the Contractor's construction schedule is based on a normal 40 hours, five day work week, less Fulton County-recognized holidays. Contractors work schedule shall not violate Fulton County Noise Ordinance by working hours inconsistent with the Fulton County Noise Ordinance. The County's current noise ordinance or other applicable ordinance shall govern. If the

Contractor desires to work in excess of this limit, the Contractor shall submit a written request to the Construction Manager, a minimum of five days prior to the desired work date. The Contractor shall be responsible for any additional expenses incurred by the Owner as a result of the extended work hours, including resident inspection overtime. The cost associated with resident inspector overtime shall be deducted from the Contractor monthly payment request.

00700-22 FAMILIARITY WITH WORK CONDITIONS

The Contractor shall take all steps necessary to ascertain the nature and location of the work and the general and local conditions which may affect the work or the cost thereof. The Contractor's failure to fully acquaint itself with the conditions which may affect the work, including, but not limited to conditions relating to transportation, handling, storage of materials, availability of utilities, labor, water, roads, weather, topographic and subsurface conditions, other separate contracts to be entered into by the County relating to the project which may affect the work of the Contractor, applicable provisions of law, and the character and availability of equipment and facilities necessary prior to and during the performance of the work shall not relieve the Contractor of its responsibilities pursuant to this agreement and shall not constitute a basis for an equitable adjustment of the contract terms. The County reserves the right to perform with its own forces or to contract with other entities for other portions of the project work, in which case the Contractor's responsibility to assure its familiarity with work conditions hereunder shall include all coordination with such other contractors and the County necessary to insure that there is no interference between contractors as will delay or hinder any contractor in its prosecution of work on the project. The County assumes no responsibility for any understandings or representations concerning conditions of the work made by any of its officers, agents, or employees prior to the execution of this agreement.

00700-23 RIGHT OF ENTRY

The County reserves the right to enter the site of the work by such agent, including the Construction Manager, as it may elect for the purpose of inspecting the work or installing such collateral work as the County may desire. The Contractor shall provide safe facilities for such access so that the County and its agents may perform their functions.

00700-24 NOTICES

Any notice, order, instruction, claim or other written communication required pursuant to this agreement shall be deemed to have been delivered or received as follows:

Upon personal delivery to the Contractor, its authorized representative, or the Construction Manager on behalf of the County. Personal delivery may be accomplished by in-person hand delivery or bona fide overnight express service.

Three days after depositing in the United States mail a certified letter addressed to the Contractor or the Construction Manager for the County. For purposes of mailed notices, the County's mailing address shall be 141 Pryor Street, 6th Floor, Atlanta, Georgia 30303, or as the County shall have otherwise notified the Contractor. The Contractor's mailing address shall be the address stated in its proposal or as it shall have most recently notified the Construction Manager in writing.

00700-25 SAFETY

A. SAFETY, HEALTH AND LOSS PREVENTION

The Contractor shall be responsible for implementing a comprehensive project-specific safety, health and loss prevention program and employee substance

abuse program for this project. All Sub-Contractors must either implement their own program or follow the Contractor's safety, health and loss prevention program and employee substance abuse program.

The Contractor's safety, health and loss prevention program and employee substance abuse program must meet or exceed all governmental regulations (OSHA, EPA, DOT, State, local), and any other specific Fulton County requirements

B. COUNTY'S SAFETY, HEALTH, AND LOSS PREVENTION PROCESS GUIDELINES AND REQUIREMENTS

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.

C. COMPLIANCE OF WORK, EQUIPMENT, AND PROCEDURES WITH ALL APPLICABLE LAWS and REGULATIONS

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:

1. 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.
2. 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.

D. PROTECTION OF THE WORK

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.
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.

E. SAFETY EQUIPMENT

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.

F. EMERGENCIES

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.
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 00700-25(G) (1) above against any sums then or thereafter due to the Contractor. The Contractor shall defend, indemnify and hold the County, its officers, agents, and employees harmless against any and all costs or expenses caused by or arising from the exercise by the County of its authority to act in an emergency as set out herein. 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 General Condition 00700-52 and General Condition 00700-87 of this Agreement.

G. SUSPENSION OF THE WORK

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, 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.
2. Should the Contractor or any Sub-Contractor fail to provide a safe and healthy work place 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.

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

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.
2. The Contractor shall not raise as a defense to its obligation to indemnify under this Subparagraph I 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.
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 I 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.

00700-26 BLASTING AND EXCAVATION

The Contractor acknowledges that it is fully aware of the contents and requirements of O.C.G.A. § 25-9-1 through 25-9-12 concerning blasting and excavation near underground gas pipes and facilities and shall fully comply therewith.

00700-27 HIGH VOLTAGE LINES

The Contractor acknowledges that it is fully aware of the contents and requirements O.C.G.A. § 46-3-30 through 46-3-39 concerning safeguards against contact with high voltage lines, and the Contractor shall fully comply with said provisions.

00700-28 SCAFFOLDING AND STAGING

The Contractor acknowledges that it is the person responsible for employing and directing others to perform labor within the meaning of O.C.G.A. § 34-1-1 and agrees to comply with said provisions.

00700-29 CLEAN-UP

The Contractor shall clean up all refuse, rubbish, scrap materials, and debris caused by its operations to the end that the site of the work shall present a neat, orderly and workmanlike appearance at all times.

00700-30 PROTECTION OF WORK

The Contractor shall be responsible for maintenance and protection of the work, which shall include any County-furnished supplies, material, equipment, until final completion of this agreement and acceptance of the work as defined herein. Any portion of the work suffering injury, damage or loss shall be considered defective and shall be corrected or replaced by the Contractor without additional cost to the County.

00700-31 REJECTED WORK

The Contractor shall promptly remove from the project all work rejected by the Construction Manager for failure to comply with the contract documents and the Contractor shall promptly replace and re-execute the work in accordance with the contract documents and without expense to the County. The Contractor shall also bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.

00700-32 DEFECTIVE WORK

If the Contractor defaults or neglects to carry out any portion of the work in accordance with the contract documents, and fails within three days after receipt of written notice from the Construction Manager to commence and continue correction of such default or neglect with diligence and promptness, the County may, after three days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the County may have, make good such deficiencies and complete all or any portion of any work through such means as the County may select, including the use of a separate Contractor. In such case, an appropriate change order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies. In the event the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the County on demand.

The County may, at its option, accept defective or nonconforming work instead of requiring its removal or correction. In such case, a change order shall be issued reducing the price due the contractor to the extent appropriate and equitable. Such contract price adjustment shall be effected whether or not final payment has been made.

00700-33 WARRANTY OF NEW MATERIALS

The Contractor warrants to the County that all materials and equipment furnished under this contract will be new unless otherwise specified, and the Contractor further warrants that all work will be of good quality, free from faults and defects, and in conformance with the contract documents. The warranty set forth in this paragraph shall survive final acceptance of the work.

00700-34 CONTRACTOR'S WARRANTY OF THE WORK

If within one year after the date of issuance of the certificate of final payment pursuant to General Condition 84, or within such longer period of time as may be prescribed by law or by the term 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 correct such work promptly after receipt of written notice from the Construction Manager to do so. This obligation shall survive both final payment for the work and termination of the contract.

00700-35 ASSIGNMENT OF MANUFACTURERS' WARRANTIES

Without limiting the responsibility or liability of the Contractor pursuant to this agreement, all warranties given by manufacturers on materials or equipment incorporated in the work are hereby assigned by the Contractor to the County. If requested, the Contractor shall execute formal assignments of said manufacturer's warranties to the County. All such warranties shall be directly enforceable by the County.

00700-36 WARRANTIES IMPLIED BY LAW

The warranties contained in this agreement, as well as those warranties implied by law, shall be deemed cumulative and shall not be deemed alternative or exclusive. No one or more of the warranties contained herein shall be deemed to alter or limit any other.

00700-37 STOP WORK ORDERS

In the event that the Contractor fails to correct defective work as required by the contract documents or fails to carry out the work in accordance with contract documents, the Construction Manager, in writing, may order the Contractor to stop work until the cause for such order has been eliminated. This right of the County to stop work shall not give rise to any duty on the part of the County or the Construction Manager to execute this right for the benefit of the Contractor or for any other person or entity.

00700-38 TERMINATION FOR CAUSE

If the Contractor is adjudged bankrupt, makes a general assignment for the benefit of creditors, suffers the appointment of a receiver on account of its insolvency, fails to supply sufficient properly skilled workers or materials, fails to make prompt payment to subcontractors or materialmen, disregards laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction, fails to diligently prosecute the work, or is otherwise guilty of a material violation of this agreement and fails within seven 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 days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the County may have, terminate the employment of the Contractor and take possession of the site as well as all materials, equipment, tools, construction equipment and machinery thereon. The County may finish the work by whatever methods the County deems expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is completed.

Upon completion of the work, the County shall determine in its sole discretion whether the Contractor is due any compensation for those services the Contractor performed prior to the termination to the satisfaction of the County ("Unpaid Satisfactory Work"), and shall compensate Contractor for the same. The County shall further determine in its sole discretion whether the County's completion of the work was made more costly as a result of failures, acts, or omissions of the Contractor, and if so, shall deduct such amounts ("Overages") from any amounts that may be due to the Contractor. In the event that the Overages exceed the Unpaid Satisfactory Work, the Contractor shall immediately pay the difference to the County on demand. These obligations for payment shall survive the termination of the contract. Termination of this agreement pursuant to

this paragraph may result in disqualification of the Contractor from bidding on future County contracts.

00700-39 TERMINATION FOR CONVENIENCE

The County may, at any time upon written notice to the Contractor, terminate the whole or any portion of the work for the convenience of the County. The effective date of the termination shall be provided in the written notice. Said termination shall be without prejudice to any right or remedy of the County provided herein. In addition, in the event this agreement has been terminated by the County through the Termination for Cause provisions due to a claim of default by the Contractor, and it is later determined that the Contractor was not in default pursuant to the provisions of this agreement at the time of termination, then such termination shall be considered a Termination for Convenience pursuant to this paragraph and administered according to the provisions related to Termination for Convenience set out in this Contract.

00700-40 TERMINATION FOR CONVENIENCE - PAYMENT

If the Contract is terminated for convenience by the Owner as provided in this article, Contractor will be paid compensation for those services actually performed as approved by the Owner or his representative. Partially completed tasks will be compensated for based on a signed statement of completion prepared by the Project Manager and submitted to the Contractor which shall itemize each task element and briefly state what work has been completed and what work remains to be done. Contractor shall also be paid for reasonable costs for the orderly filing and closing of the project.

00700-41 TERMINATION FOR CONVENIENCE - PAYMENT LIMITATIONS

Except for normal spoilage, and except to the extent that the County shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor the fair value, as determined by the Construction Manager, of property which is destroyed, lost, stolen or damaged so as to become undeliverable to the County or to another buyer.

00700-42 COST TO CURE

If the County terminates for cause the whole or any part of the work pursuant to this agreement, then the County may procure upon such terms and in such manner as the Construction Manager may deem appropriate, supplies or services similar to those so terminated, for the purpose of completing the work for which the Contractor was contractually engaged, and the Contractor shall be liable to the County for any excess costs for such similar supplies or services. The Contractor shall continue the performance of this agreement to the extent not terminated hereunder.

00700-43 ATTORNEY'S FEES

Should the Contractor default pursuant to any of the provisions of this agreement, the Contractor and its surety shall pay to the County such reasonable attorney's fees as the County may expend as a result thereof and all costs, expenses, and filing fees incidental thereto.

00700-44 CONTRACTOR'S RESPONSIBILITIES UPON TERMINATION

After receipt of a notice of termination from the County, and except as otherwise directed by the Construction Manager, the Contractor shall:

1. Stop work under the contract on the date and to the extent specified in the notice of termination;

2. Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the work under the agreement as is not terminated;
3. Unless otherwise directed by the Construction Manager, terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the notice of termination;
4. Assign to the County in the manner, at the times, and to the extent directed by the Construction Manager, all of the rights, title and interest of the Contractor under the orders and subcontracts so terminated, in which case the County shall have the right, at its discretion, to settle or pay any and all claims arising out of the termination of such orders or subcontracts;
5. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts with the approval or ratification of the Construction Manager, to the extent the Construction Manager may require, which approval or ratification shall be final for all purposes;
6. Transfer title and deliver to the entity or entities designated by the Construction Manager, in the manner, at the times, and to the extent, if any, directed by the Construction Manager, and to the extent specifically produced or specifically acquired by the Contractor for the performance of such portion of the work as has been terminated:
 - a. The fabricated or un-fabricated parts, work, and progress, partially completed supplies, and equipment, materials, parts, tools, dyes, jigs, and other fixtures, 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 to the work.
7. Use its best efforts to sell in the manner, at the times, to the extent, and at the prices directed or authorized by the Construction Manager, any property described in Section 6 of this paragraph, provided, however, that the Contractor shall not be required to extend credit to any buyer and further provided that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the County to the Contractor pursuant to this agreement.
8. Complete performance of such part of the work as shall not have been terminated by the notice of termination; and
9. Take such action as may be necessary, or as the Construction Manager may direct, for the protection and preservation of the property related to the agreement which is in the possession of the Contractor and in which the County has or may acquire an interest.

00700-45 RECORDS

The Contractor shall preserve and make available to the County all of its records, books, documents and other evidence bearing on the costs and expenses of the Contractor and

any subcontractor pursuant to this agreement upon three days advance notice to the Contractor.

00700-46 DEDUCTIONS

In arriving at any amount due the Contractor pursuant to the terms of this agreement, there shall be deducted all liquidated damages, advance payments made to the Contractor applicable to the termination portion of the contract, the amount of any claim which the County may have against the Contractor, the amount determined by the Construction Manager to be necessary to protect the County against loss due to outstanding potential liens or claims, and the agreed price of any materials acquired or sold by the Contractor and not otherwise recovered by or credited to the County.

00700-47 REIMBURSEMENT OF THE COUNTY

In the event of termination for cause or convenience, the Contractor shall refund to the County any amount paid by the County to the Contractor in excess of the costs properly reimbursable to the Contractor.

00700-48 SUSPENSION, INTERRUPTION, DELAY, DAMAGES

The Contractor shall be entitled to only those damages and that relief from termination by the County as specifically set forth in this agreement. The Construction Manager may issue a written order requiring the Contractor to suspend, delay or interrupt all or any part of the work for such period of time as the County may determine to be appropriate for the convenience of the County. If the performance of the work is interrupted for an unreasonable period of time by an act of the County or any of its officers, agents, employees, contractors, or consultants in the administration of this agreement, an equitable adjustment shall be made for any increase in the Contractor's costs of performance and any increase in the time required for performance of the work necessarily caused by the unreasonable suspension, delay, or interruption. Any equitable adjustment shall be reduced to writing and shall constitute a modification to this agreement. In no event, however, shall an equitable adjustment be made to the extent that performance of this agreement would have been suspended, delayed or interrupted by any other cause, including the fault or negligence of the Contractor. No claim for an equitable adjustment pursuant to this paragraph shall be permitted before the Contractor shall have notified the Construction Manager in writing of the act or failure to act involved, and no claim shall be allowed unless asserted in writing to the Construction Manager within ten days after the termination of such suspension, delay or interruption.

00700-49 COMMENCEMENT AND DURATION OF WORK

The County may issue a Notice to Proceed at any time within 120 days following execution of the contract by the County. The Contractor shall commence work pursuant to this agreement within ten days of mailing or delivery of written notice to proceed. The Contractor shall diligently conduct the work to completion within the time specified therefore in the Agreement. The capacity of the Contractor's construction and manufacturing equipment and plan, sequence and method of operation and forces employed, including management and supervisory personnel, shall be such as to insure completion of the work within the time specified in the Agreement. The Contractor and County hereby agree that the contract time for completion of the work is reasonable taking into consideration the average climatic conditions prevailing in the locality of the work and anticipated work schedules of other contractors whose activities are in conjunction with or may affect the work under this contract.

00700-50 TIME OF THE ESSENCE

All time limits stated in this agreement are of the essence of this contract.

00700-51 IMPACT DAMAGES

Except as specifically provided pursuant to a stop work order or change order, the Contractor shall not be entitled to payment or compensation of any kind from the County for direct or indirect or impact damages including, but not limited to, costs of acceleration arising because of delay, disruption, interference or hindrance from any cause whatsoever whether such delay, disruption, interference or hindrance is reasonable or unreasonable, foreseeable or unforeseeable, or avoidable, provided, however, that this provision shall not preclude the recovery of damages by the Contractor for hindrances or delays due solely to fraud or bad faith on the part of the County, its agents, or employees. The Contractor shall be entitled only to extensions in the time required for performance of the work as specifically provided in the contract.

00700-52 DELAY

The Contractor may be entitled to an extension of the contract time, but not an increase in the contract price or damages, for delays arising from unforeseeable causes beyond the control and without the fault or negligence of the Contractor or its subcontractors for labor strikes, acts of God, acts of the public enemy, acts of the state, federal or local government in its sovereign capacity, by acts of another separate contractor, or by an act or neglect of the County.

00700-53 INCLEMENT WEATHER

The Contractor shall not be entitled to an extension of the contract time due to normal inclement weather. Unless the Contractor can substantiate to the satisfaction of the Construction Manager that there was greater than normal inclement weather and that such greater than normal inclement weather actually delayed the work, the Contractor shall not be entitled to an extension of time therefore. The following shall be considered the normal inclement weather days for each month listed, and extensions of time shall be granted in increments of not less than one half day only for inclement weather in excess of the days set out.

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	3 days
November	6 days
December	9 days

00700-54 DELAY - NOTICE AND CLAIM

The Contractor shall not receive an extension of time unless a Notice of Delay is filed with the Construction Manager within ten days of the first instance of such delay, disruption, interference or hindrance and a written Statement of the Claim is filed with the Construction Manager within 20 days of the first such instance. In the event that the Contractor fails to comply with this provision, it waives any claim which it may have for an extension of time pursuant to this agreement.

00700-55 STATEMENT OF CLAIM - CONTENTS

The Statement of Claim referenced in Article 00700-54 shall include specific information concerning the nature of the delay, the date of commencement of the delay, the construction activities affected by the delay, the person or organization responsible for the delay, the anticipated extent of the delay, and any recommended action to avoid or minimize the delay.

00700-56 WORK BEHIND SCHEDULE, REMEDY BY CONTRACTOR

If the work actually in place falls behind the currently updated and approved schedule, and it becomes apparent from the current schedule that work will not be completed within the contract time, the Contractor agrees that it will, as necessary, or as directed by the Construction Manager, take action at no additional cost to the County to improve the progress of the work, including increasing manpower, increasing the number of working hours per shift or shifts per working day, increasing the amount of equipment at the site, and any other measure reasonably required to complete the work in a timely fashion.

00700-57 DILIGENCE

The Contractor's failure to substantially comply with the requirements of the preceding paragraph may be grounds for determination by the County that the Contractor is failing to prosecute the work with such diligence as will insure its completion within the time specified. In such event, the County shall have the right to furnish, from its own forces or by contract, such additional labor and materials as may be required to comply with the schedule after 48 hours written notice to the Contractor, and the Contractor shall be liable for such costs incurred by the County.

00700-58 SET-OFFS

Any monies due to the Contractor pursuant to the preceding paragraph of this agreement may be deducted by the County against monies due from the County to the Contractor.

00700-59 REMEDIES CUMULATIVE

The remedies of the County under Articles 00700-56, 00700-57, and 00700-58 are in addition to and without prejudice to all of the rights and remedies of the County at law, in equity, or contained in this agreement.

00700-60 TITLE TO MATERIALS

No materials or supplies shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sales contract or other agreement by which any interest is retained by the seller. The Contractor hereby warrants that it has good and marketable title to all materials and supplies used by it in the work, and

the Contractor further warrants that all materials and supplies shall be free from all liens, claims, or encumbrances at the time of incorporation in the work.

00700-61 INSPECTION OF MATERIALS

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards and in accordance with the requirements of the contract documents. Additional tests performed after the rejection of materials or equipment shall be at the Contractor's expense.

00700-62 CONSTRUCTION MANAGER'S PRESENCE DURING TESTING

All tests performed by the Contractor shall be witnessed by the Construction Manager unless the requirement therefore is waived in writing. The Construction Manager may perform additional tests on materials previously tested by the Contractor, and the Contractor shall furnish samples for this purpose as requested.

00700-63 MATERIALS INCORPORATED IN WORK

The Contractor shall furnish all materials and equipment to be incorporated in the work. All such materials or equipment shall be new and of the highest quality available. Manufactured materials and equipment shall be obtained from sources which are currently manufacturing such materials, except as otherwise specifically approved by the Construction Manager.

00700-64 STORAGE OF MATERIALS

Materials and equipment to be incorporated in the work shall be stored in such a manner as to preserve their quality and fitness for the work and to facilitate inspection.

00700-65 PAYROLL REPORTS

The Contractor may be required to furnish payroll reports to the Construction Manager as required by the Owner Controlled Insurance Program.

00700-66 CONTRACTORS' REPRESENTATIVE

Before beginning work, the Contractor shall notify the Construction Manager in writing of one person within its organization who shall have complete authority to supervise the work, receive orders from the Construction Manager, and represent the Contractor in all matters arising pursuant to this agreement. The Contractor shall not remove its representative without first designating in writing a new representative. The Contractor's representative shall normally be present at or about the site of work while the work is in progress. When neither the Contractor nor its representative is present at the work site, the superintendent, foreman, or other of the Contractor' employee in charge of the work shall be an authorized representative of the Contractor.

00700-67 SPECIALTY SUB-CONTRACTORS

The Contractor may utilize the services of specialty subcontractors on those parts of the project which, under normal contracting practices, are performed by specialty subcontractors. The Contractor shall not award more than seventy-five percent of the work to subcontractors.

00700-68 INSPECTION BY THE CONSTRUCTION MANAGER

All work pursuant to this agreement shall be subject to inspection by the Construction Manager for conformity with contract drawings and specifications. The Contractor shall

give the Construction Manager reasonable advance notice of operations requiring special inspection of a portion of the work.

00700-69 WORK COVERED PRIOR TO CONSTRUCTION MANAGER'S INSPECTION

In the event that work is covered or completed without the approval of the Construction Manager, and such approval is required by the specifications or required in advance by the Construction Manager, the Contractor shall bear all costs involved in inspection notwithstanding conformance of such portion of the work to the contract drawings and specifications.

00700-70 SCHEDULING OF THE WORK

The work of this contract shall be planned, scheduled, executed, and reported as required by the Contract Documents.

00700-71 PROGRESS ESTIMATES

The Contractor shall prepare a written report for the Construction Manager's approval, on County forms, of the total value of work performed and materials and equipment obtained to the date of submission. Such a report must accompany each request for a progress payment and is subject to review and approval by the Construction Manager. Approval of a progress estimate or tendering of a progress payment shall not be considered an approval or acceptance of any work performed, and all estimates and payments shall be subject to correction in subsequent estimates. Progress payments shall be made for all completed activities and for materials suitably stored on-site.

00700-72 PROGRESS PAYMENTS

Upon approval of each monthly estimate of work performed and materials furnished, the Construction Manager shall approve payment to the Contractor for the estimated value of such work, materials, and equipment, less the amount of all prior payments and any liquidated damages. The Contractor will be paid 100 percent, less retainage, of the cost of materials received and properly stored on-site but not incorporated into the work. Payments for materials or equipment stored on the site shall be conditioned upon submission by the Contractor of bills of sale to establish the County's title to such materials or equipment. The Contractor's request for payment shall provide sufficient detail as to the work completed or materials purchased for which payment is requested to permit meaningful review by the Construction Manager.

00700-73 TIME OF PAYMENT

The Contractor will be paid within 45 days following receipt of an approved Progress Estimate. The Contractor expressly agrees that the payment provisions within this Contract shall supersede the rates of interest, payment periods, and contract and subcontract terms provided for under the Georgia Prompt Pay Act, O.C.G.A. §13-11-1 et seq., and that 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. The County shall not be liable for any late payment interest or penalty.

Submittal of Invoices: Invoices shall be submitted as follows:

Via Mail:

Fulton County Government
141 Pryor Street, SW
Suite 7001
Atlanta, Georgia 30303

Attn: Finance Department – Accounts Payable

OR

Via Email:

Email: Accounts.Payable@fultoncountyga.gov

At minimum, original invoices must reference all of the following information:

- 1) Vendor Information
 - a. Vendor Name
 - b. Vendor Address
 - c. Vendor Code
 - d. Vendor Contact Information
 - e. Remittance Address

- 2) Invoice Details
 - a. Invoice Date
 - b. Invoice Number (uniquely numbered, no duplicates)
 - c. Purchase Order Reference Number
 - d. Date(s) of Services Performed
 - e. A written report of the total value of work performed and materials and equipment obtained to the date of submission

- 3) Fulton County Department Information (needed for invoice approval)
 - a. Department Name
 - b. Department Representative Name

00700-74 RETAINAGE

The County shall retain from each progress payment ten percent of the estimated value of the work performed until the progress payments, including retainage, total 50 percent of the contract price. If a contract includes two or more projects or assignments that have been separately priced and have separate budgets, and the performances of such projects or assignments are not related to or dependent upon the performance of any other, the 50 per cent limit shall be based upon the price for each individual project or assignment. Thereafter, no further retainage shall be withheld so long as the Contractor is making satisfactory progress to insure completion of the work within the time specified therefore. The County may reinstate the ten percent retainage in the event the Construction Manager determines that the Contractor is not making satisfactory progress to complete the work within the time specified in this agreement or in the event that the Construction Manager provides a specific cause for such withholding. The County may also withhold retainage upon substantial completion of the work as provided in O.C.G.A. §13-10-81(c). Interest may be paid upon the retainage in accordance with Georgia law.

00700-75 PAYMENT OF SUBCONTRACTORS

The Contractor shall promptly pay each subcontractor upon the receipt of payment from the County. Such payment shall be made from the amount paid to the Contractor pursuant to the subcontractor's work. The Contractor shall also maintain the records of the percentage retained from payments to the Contractor pursuant to such subcontractor's work. The Contractor shall procure agreements from each subcontractor

requiring each subcontractor to pay their subcontractors, agents and employees in a similar manner. The County reserves the right to inquire of any subcontractor, supplier, materialmen, or subconsultant, the status of any indebtedness of the Contractor. The County further reserves the right to require the Contractor to designate on each instrument of payment exceeding \$400.00 to subcontractors, suppliers, materialmen, and subconsultants that such payment is on account of the work under this Contract.

00700-76 COUNTY'S RESPONSIBILITIES TO SUBCONTRACTORS

Neither the County nor the Construction Manager shall have any obligation to pay any subcontractor except as otherwise required by law.

00700-77 PROGRESS PAYMENTS - ACCEPTANCE OF WORK

Certification of progress payments, as well as the actual payment thereof, shall not constitute the County's acceptance of work performed pursuant to this agreement.

00700-78 PAYMENTS IN TRUST

All sums paid to the Contractor pursuant to this agreement are hereby declared to constitute trust funds in the hands of the contractor to be applied first to the payment of claims of subcontractors, laborers, and suppliers arising out of the work, to claims for utilities furnished and taxes imposed, and to the payment of premiums on surety and other bonds and on insurance for any other application.

00700-79 JOINT PAYMENTS

The County reserves the right to issue any progress payment or final payment by check jointly to the Contractor and any subcontractor or supplier.

00700-80 RIGHT TO WITHHOLD PAYMENT

The Construction Manager may decline to approve payment and may withhold payment in whole or in part to the extent reasonable and necessary to protect the County against loss due to defective work, probable or actual third party claims, the Contractor's failure to pay subcontractors or materialmen, reasonable evidence that the work will not be completed within the contract time or contract price or damage to the County or any other contractor on the project.

00700-81 CERTIFICATE OF SUBSTANTIAL COMPLETION

Upon the Contractor's submission of a request for a certificate of Substantial Completion, the Construction Manager shall inspect the work and determine whether the work is Substantially Complete. If the work is Substantially Complete, the Construction Manager shall issue a certificate of Substantial Completion of the work which shall establish the date of Substantial Completion, 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 submitted by the Contractor as requiring correction or further work. The certificate of substantial completion of the work shall be submitted to the County and the Contractor for their written acceptance of the responsibilities assigned to them pursuant to such certificate.

If in the sole opinion of the Construction Manager, the work is not substantially complete, the Construction Manager shall notify the Contractor of such, in writing, and outline requirements to be met to achieve Substantial Completion.

00700-82 PAYMENT UPON SUBSTANTIAL COMPLETION

Upon Substantial Completion of the work and upon application by the Contractor and approval by the Construction Manager, the County shall make payment reflecting 100% work completed, less value of work remaining as determined by Construction Manager and any authorized retainage.

00700-83 COMMENCEMENT OF WARRANTIES

Warranties required by this agreement shall commence on the date of final completion of the project as determined under Article 00700-84 unless otherwise provided in the certificate of Substantial Completion.

00700-84 FINAL PAYMENT - WAIVER OF CLAIMS, DISPUTE OF FINAL PAYMENT

The acceptance of the Substantial Completion payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of application for payment at Substantial Completion and except for the retainage sums due at final acceptance. Following the Construction Manager's issuance of the certificate of Substantial Completion and the Contractor's completion of the work pursuant to this agreement, the Contractor shall forward to the Construction Manager a written notice that the work is ready for final inspection and acceptance. If after inspection the Construction Manager certifies that the work is complete and issues written notification of such to the Contractor, the Contractor shall forward to the Construction Manager a final application for payment. The Construction Manager shall issue a certificate for payment, which shall approve final payment to the Contractor and shall establish the date of final completion.

In the event the Contractor timely disputes the amount of the 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 County and the Contractor. 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.

00700-85 DOCUMENTATION OF COMPLETION OF WORK

Neither the final payment nor the remaining retainage shall become due until the Contractor submits the following documents to the Construction Manager:

- a. An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the work have been paid other otherwise satisfied;
- b. The surety's consent to final payment; and
- c. Any other data reasonably required by the County or Construction Manager establishing payment or satisfaction of all such obligations, including releases, waivers of liens, and documents of satisfaction of debts.

In the event that a subcontractor refuses to furnish a release or waiver as required by the County or Construction Manager, the Contractor may furnish a bond satisfactory to the County to indemnify the County against such loss. In the event that any lien or indebtedness remains unsatisfied after all payments are made, the contractor shall refund to the County all moneys that the County may become compelled to pay in discharging such lien or other indebtedness, including all costs and reasonable attorney's fees.

00700-86 GOVERNING LAW

Each and every provision of this agreement shall be construed in accordance with and governed by Georgia law. The parties acknowledge that this contract is executed in Fulton County, Georgia and that the contract is to be performed in Fulton County, Georgia. Each party hereby consents to the Fulton Superior Court's sole jurisdiction over any dispute which arises as a result of the execution or performance of this agreement, and each party hereby waives any and all objections to venue in the Fulton Superior Court.

00700-87 CHANGES IN THE WORK

A. CHANGE ORDERS

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 forms designated by the County with Contractor providing supporting documentation as required by the Construction Manager. The Contract Sum and the Contract Time may be changed only by approved Change Order pursuant to Fulton County Code Section 102-420. The amount payable by the Change Order is payment in full for all direct and indirect costs incurred and related to the work under said Change Order, including but not limited to delays, imports, acceleration, disruption and extended overhead. 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.
2. The County, without invalidating the Contract, may order changes in the Work within the general scope of the Contract as defined herein. The time allowed for performance of the work and the contract price to be paid to the Contractor may be adjusted accordingly.
3. 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:
 - a. By mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
 - b. By unit prices stated in the Contract Documents or subsequently agreed upon;
 - c. By cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
 - d. By the method provided in Subparagraph A4 below.

4. If none of the methods set forth in Subparagraphs 3a, 3b, or 3c 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 5a 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 the schedules set forth in Subparagraphs 5b and 6 below shall be applied to the cost or credit.
 - a. In such case, and also under Subparagraph 3a 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.
 - b. 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.
5. In Subparagraphs 3 and 4 above, the items included in "Cost and Overhead" shall be based on the following schedule:
 - a. 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.
 - b. 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.
- c. 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.
6. In Subparagraphs 3 and 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:
 - a. For the Contractor, for any work performed by the Contractor's own forces, ten (10) percent of the cost.
 - b. For the Contractor, for any work performed by a Contractor's subcontractor, five (5) percent of the amount due the subcontractor.
 - c. 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.
 - d. For each subcontractor, for work performed by a sub-subcontractor, five (5) percent of the amount due to the sub-subcontractor.
 - e. Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 5 above unless modified otherwise.
 7. 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 4 above. Where major cost items are subcontracts, they shall be itemized also. In no case shall a change be approved without such itemization.
 8. No payment shall be made for any changes to the contract that are not included in a fully executed Change Order.
- B. CONCEALED, UNKNOWN AND DIFFERING CONDITIONS
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 C.1. below.

2. The Contractor shall promptly, and before such conditions are disturbed, notify the Construction Manager in writing of any claim of concealed, unknown or differing conditions pursuant to this paragraph. The Construction Manager shall authorize the Engineer to investigate the conditions, and if it is found that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the Work under this Contract, whether or not changed as a result of such conditions, an equitable adjustment shall be recommended to the Construction Manager.
3. No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in (a) above, prior to disturbing the condition.
4. No claim by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this Contract.
5. Any materially differing site condition as between what is shown on the Drawings and Specifications and actually found on site shall be immediately reported to the Construction Manager in writing prior to the commencement of Work at the site. Failure of the Contractor to notify the Construction Manager in writing of the differing site condition prior to performance of Work at the site shall constitute a waiver of any claim for additional monies. Any Change Order necessitated by the differing site condition shall be processed as provided under "Changes in the Contract".

C. REQUESTS FOR ADDITIONAL COST

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 Article 00700-25 and Subparagraph A.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.
2. If the Contractor claims that addition cost is involved because of, but not limited to (1) any written interpretation pursuant to General Condition 00700-17 of this Agreement, (2) any order by the County to stop the Work pursuant to Articles 00700-25 and 00700-37 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 D below, the Contractor shall submit a request for an increase in the Contract Sum as provided in Subparagraph C.1 above. No such claim shall be valid unless the Contractor complies with Subparagraph C.1 above and approved by the County pursuant to Fulton County Code Section 102-420.

D. MINOR CHANGES IN THE WORK

The Construction Manager may order minor changes in the Work not involving an adjustment in the Contract Price, extension of the time allowed for performance of the work and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by a written Change Directive issued by the Construction Manager, and shall be binding on the County and the Contractor. The Contractor shall carry out such written orders promptly.

E. BONDS

If any change order results in an increase in the contract price, the contractor shall increase the penal sum of the performance and payment bonds to equal the increased price.

00700-88 DISAGREEMENT WITH ORDERS FOR CHANGE

Contractor's written acceptance of a Change Order or other order for changes shall constitute his final and binding agreement to the provisions thereof and a waiver of all claims in connection therewith, whether direct or consequential in nature. Should Contractor disagree with any order for changes, he may submit a notice of potential claim to the Construction Manager, at such time as the order is set forth in the form of a Change Order. Disagreement with the provisions of an order for changes shall not relieve Contractor of his obligation under Article 00700-87 of this Agreement.

00700-89 NO WAIVER OF REMEDIES

Exercise by the County of any remedy is not exclusive of any other remedy available to County and shall not constitute a waiver of any such other remedies. Failure of the County to exercise any remedy, including breach of contract remedies, shall not preclude the County from exercising such remedies in similar circumstances in the future.

00700-90 LAND AND RIGHTS-OF-WAY

The owner will provide, as indicated in the Contract Documents and prior to Notice to Proceed, the lands upon which the work is to be done, right-of-way for access thereto, and such other lands which are designated for the use of the Contractor. The Contractor shall confine the Contractor's work and all associated activities to the easements and other areas designated for the Contractor's use. The Contractor shall comply with any limits on construction methods and practices which may be required by easement agreements. If, due to some unforeseen reason, the necessary easements are not obtained, the Contractor shall receive an equitable extension of contract time dependent upon the effect on the critical path of the project schedule or the County may terminate the Contract for its convenience.

00700-91 COORDINATION WITH STATE DEPARTMENT OF TRANSPORTATION

No clearing or grading shall be completed by Contractor within the State Department of Transportation (DOT) area under construction. The Contractor must coordinate his construction scheduling with DOT.

If the Contractor begins work before DOT's completion date, he must obtain the approval of DOT before starting work in the area. The state DOT has the right to stop the Contractor's work the DOT area.

The Contractor shall receive no additional compensation or damages resulting from delay or work stoppage from DOT actions or scheduling.

Contractor shall obtain DOT drawings of the DOT, project area for verification of road geometry, storm drains, etc. from Georgia Department of Transportation or Fulton County. The Contractor is responsible for obtaining any pertinent DOT revisions.

I N D E X

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EXHIBIT A
FINAL AFFIDAVIT

TO FULTON COUNTY, GEORGIA

I, _____, hereby certify that all suppliers of materials, equipment and service, subcontractors, mechanic, and laborers employed by _____ or any of his subcontractors in connection with the design and/or construction of _____ at Fulton County have been paid and satisfied in full as of _____, 20____, and that there are no outstanding obligations or claims of any kind for the payment of which Fulton County on the above-named project might be liable, or subject to, in any lawful proceeding at law or in equity.

Signature

Title

Personally appeared before me this _____ day of _____, 20____. _____, who under Oath deposes and says that he is _____ of the firm of _____, that he has read the above statement and that to the best of his knowledge and belief same is an exact true statement.

Notary Public

My Commission expires

END OF SECTION

EXHIBIT B
SPECIAL CONDITIONS

SECTION 9

SPECIAL CONDITIONS

All work under this contract will be performed before and/or after regular business hours (M-F 8:00AM to 5:00PM), and on weekends and holidays.

END OF SECTION

END OF SECTION

EXHIBIT C
ADDENDA



Date; October 4, 2109

Re: 19ITB654321K-JAJ FCGC Water Piping Replacement

Dear Bidders/Proposers:

Attached is one (1) copy of Addendum 1, hereby made a part of the above-referenced Invitation to Bid (ITB).

Except as provided herein, all terms and conditions in the ITB referenced above remain unchanged and in full force and effect.

Sincerely,
James A. Jones
James A. Jones
APA

19ITB654321K-JAJ
October 4, 2019
Page 2

This Addendum forms a part of the contract documents and modifies the original RFP documents as noted below:

Attached you will find Section 5, Insurance and Risk Management Provisions for 19ITB654321K-JAJ FCGC Complex Tower & Public Safety Building Domestic Water Piping Replacement. The time and location for receipt of bids remains the same.

ACKNOWLEDGEMENT OF ADDENDUM NO. 1, 19ITB654321K-JAJ FCGC Water Piping Replacement.

The undersigned Proposer acknowledges receipt of this Addendum by returning one (1) copy of this form with the Bid/Proposal submittal package to the Department of Purchasing & Contract Compliance, Fulton County Public Safety Building, 130 Peachtree Street, S.W., Suite 1168, Atlanta, Georgia 30303 by the ITB due date October 18, 2019 @ 11:00 A.M.

This is to acknowledge receipt of Addendum No. 1, 9th day of October, 2019.

J Squared Plumbing Co. Inc.
Legal Name of Bidder/Proposer


Signature of Authorized Representative

Pres/CEO
Title



FULTON
COUNTY

October 9, 2019

Re: 19ITB654321K-JAJ FCGC Domestic Water Piping Replacement

Dear Bidders/Proposers:

Attached is one (1) copy of Addendum 2 hereby made a part of the above-referenced Invitation to Bid (ITB).

Except as provided herein, all terms and conditions in the ITB referenced above remain unchanged and in full force and effect.

Sincerely,

James A. Jones

James A. Jones

APA

This Addendum forms a part of the contract documents and modifies the original ITB documents as noted below:

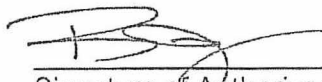
- A second pre-bid conference will be held on Friday, October 18, 2019 @11:00 A.M. in the Department of Purchasing and Contract Compliance; Fulton County Public Safety Building located at 130 Peachtree Street S.W. Suite #1168 Atlanta, GA 30303. A mandatory walk-through will occur immediately following the pre-bid conference.
- The bid due date is hereby extended until Friday, November 1, 2019. The time and place for receipt of bids remains the same.

**ACKNOWLEDGEMENT OF ADDENDUM NO. 2, 19ITB654321K-JAJ FCGC
Domestic Water Piping Replacement**

The undersigned Proposer acknowledges receipt of this Addendum by returning one (1) copy of this form with the Bid/Proposal submittal package to the Department of Purchasing & Contract Compliance, Fulton County Public Safety Building, 130 Peachtree Street, S.W., Suite 1168, Atlanta, Georgia 30303 by the ITB due date October 31, 2019 @ 11:00A.M.

This is to acknowledge receipt of Addendum No. 2, 9th day of October, 2019

J Squared Plumbing Co, Inc.
Legal Name of Bidder/Proposer



Signature of Authorized Representative

Pres / CEO

Title



FULTON
COUNTY

Date; October 30, 2019

Re: 19ITB654321K-JAJ FCGC Water Piping Replacement

Dear Bidders/Proposers:

Attached is one (1) copy of Addendum 3, hereby made a part of the above-referenced Request for Proposal (RFP).

Except as provided herein, all terms and conditions in the ITB referenced above remain unchanged and in full force and effect.

Sincerely,

James A. Jones

James A. Jones

APA

19ITB654321K-JAJ
October 30, 2019
Page 2

This Addendum forms a part of the contract documents and modifies the original ITB documents as noted below:

The date for receipt of bids is extended until **Monday, November 4, 2019**. The time and location for receipt of bids remains as previously published.

1. Question: During the walk through, the engineer mentioned that the project will include replacement of mop sinks in the PSB tower. I think they mentioned that there were a total of 4. This is not shown in the bid package. Will this be covered in an addendum or should we exclude it from our bid?

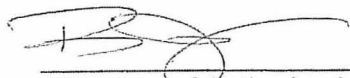
Answer: See attached revised drawings.

ACKNOWLEDGEMENT OF ADDENDUM NO. 3, 19ITB654321K-JAJ FCGC Water Piping Replacement

The undersigned Proposer acknowledges receipt of this Addendum by returning one (1) copy of this form with the Bid/Proposal submittal package to the Department of Purchasing & Contract Compliance, Fulton County Public Safety Building, 130 Peachtree Street, S.W., Suite 1168, Atlanta, Georgia 30303 by the ITB due date November 4, 2019 @ 11:00 A.M.

This is to acknowledge receipt of Addendum No. 3, 29th day of October, 2019.

J Squared Plumbing Co. Inc
Legal Name of Bidder/Proposer


Signature of Authorized Representative

Pres. / CEO
Title

EXHIBIT D

BID FORMS

BID FORM

Submitted To: Fulton County Government

Submitted By: J Squared Plumbing Co. Inc

For: 19ITB654321K-JAJ FCGC Domestic Water Piping Replacement

Submitted on November 4, 2019

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 IS THE AMOUNT UPON WHICH THE BIDDER WILL BE FORMALLY EVALUATED AND WHICH WILL BE USED TO DETERMINE THE LOWEST RESPONSIBLE BIDDER.

The base bid may not be withdrawn or modified for a period of ninety (90) days following the receipt of bids.

BASE BID AMOUNT

\$ 557,370.00

(Dollar Amount in Numbers)

Five hundred fifty seven thousand and three hundred and seventy dollars and
(Dollar Amount in Words) 00/100 cents

The Bidder agrees hereby to commence work under this Contract, with adequate personnel and equipment, on a date to be specified in a written "Notice to Proceed" from the County.

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.

ALLOWANCES

- A. INCLUDE THESE ALLOWANCE DOLLAR AMOUNTS IN THE LUMP SUM AMOUNT.
- B. ALLOWANCE FOR BALL VALVES **INCLUDING PARTITION OR CEILING DEMOLITION AND PARTITION OR CEILING RESTORATION AS REQUIRED**: \$30,000.00.
- C. ALLOWANCE FOR ACCESS PANELS **INCLUDING PARTITION OR CEILING DEMOLITION AND PARTITION OR CEILING RESTORATION AS REQUIRED**: \$5,000.00.

UNIT PRICES

THE DRAWINGS INDICATE THE NUMBER OF BALL VALVES AND ACCESS DOORS THAT COULD BE IDENTIFIED, DURING THE DESING PHASE. IF THERE ARE ANY ADDITIONAL BALL VALVES AND/OR ACCESS DOORS REQUIRED, BESIDES THE ONES SHOWN ON THE DRAWINGS, THE COSTS FOR THOSE WILL BE APPLIED TOWARDS THE ALLOWANCES AND UNIT PRICES STATED BELOW.

- A. ALL UNIT PRICES ARE INSTALLED PRICES. SEE SPECIFICATIONS FOR SPECIFIC ITEM DESCRIPTION AND INSTALLATION REQUIREMENTS.
- B. UNIT PRICES FOR BALL VALVES **INCLUDING PARTITION OR CEILING DEMOLITION AND PARTITION OR CEILING RESTORATION AS REQUIRED**:

Valve Size	Unit Price
3/4"	\$ 55,00
1"	\$ 85,00
1-1/4"	\$ 110,00
1-1/2"	\$ 145,00

2"	\$ 185.00
2-1/2"	\$ 315.00
3"	\$ 522.00
4"	\$ 672.00

C. UNIT PRICES FOR ACCESS PANELS INCLUDING PARTITION OR CEILING DEMOLITION AND PARTITION OR CEILING RESTORATION AS REQUIRED:

Panel size	Unit Price
12" X 12"	\$ 1500.00
18" X 18"	\$ 1700.00
24" X 24"	\$ 1900.00

D. THE UNUSED PORTION OF THE ALLOWANCES WILL BE SUBTRACTED FROM THE CONTRACT AMOUNT AT THE CONCLUSION OF THE WORK.

OWNER CONTROLLED CONTINGENCY:

OWNER CONTROLLED CONTINGENCY: INCLUDE THIS DOLLAR AMOUNT IN THE BASE BID AMOUNT: \$50,000.00. THE UNUSED PORTION OF THE CONTINGENCY WILL BE SUBTRACTED FROM THE CONTRACT AMOUNT AT THE CONCLUSION OF THE WORK

BASE BID AMOUNT

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	TOTAL PRICE
1.	Base Bid	1	LS	472,370.00
2.	Allowance (Ball Valves)	1	LS	\$30,000.00
3.	Allowance (Access Panels)	1	LS	\$5,000.00
4.	Owner Controlled Contingency	1	LS	\$50,000.00
	TOTAL BASE BID (Lump Sum) AMOUNT (lines 1-5)	1	LS	557,370.00

--	--	--	--	--

The Bidder furthermore agrees that, in the case of a failure on his part to execute the Contract Agreement and Bonds within ten 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.

All applicable federal and State of Georgia taxes are included in the Lump Sum Amount.
All Contingency Allowances are included in the Lump Sum Amount.

Enclosed is a Bid Bond in the approved form, in the sum of:

Four hundred and seventy two thousand, three hundred and seventy Dollars

(\$472,370.00) 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 #	<u>1</u>	DATED	<u>10/4/19</u>
ADDENDUM #	<u>2</u>	DATED	<u>10/9/19</u>
ADDENDUM #	<u>3</u>	DATED	<u>10/30/19</u>
ADDENDUM #	_____	DATED	_____

BIDDER: J Squared Plumbing Co. Inc

Signed by: Broderick Jackson
[Type or Print Name]

Title: Pres. / CEO

Business Address: 5365 Dividend DR Ste A
Decatur, GA 30035

Business Phone: 404-545-7295

Note: If the Bidder is a corporation, the Bid shall be signed by an officer of the corporation; if a partnership, it shall be signed by a partner. If signed by others, authority for signature shall be attached.

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	_____
ADDENDUM #	N/A	DATED	N/A
ADDENDUM #	_____	DATED	_____
ADDENDUM #	_____	DATED	_____

BIDDER: _____
Signed by: _____
[Type or Print Name]

Title: _____
Business Address: _____

Business Phone: _____

Note: If the Bidder is a corporation, the Bid shall be signed by an officer of the corporation; if a partnership, it shall be signed by a partner. If signed by others, authority for signature shall be attached.

The full name and addresses of persons or parties interested in the foregoing Bid, as principals, are as follows:

Name	Address
<u>Broderick Jackson CEO</u>	<u>220 Ponce De Leon Pl. Dec, GA 30030</u>
<hr/>	<hr/>
<hr/>	<hr/>
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<hr/>	<hr/>
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END OF SECTION

EXHIBIT E
BONDS (BID, PAYMENT,
PERFORMANCE)

BID BOND
19ITB654321K-JAJ FCGC Complex Tower & Public Safety Building
Domestic Water Piping Replacement

STATE OF GEORGIA
COUNTY OF FULTON

KNOW ALL MEN BY THESE PRESENTS, THAT WE J Squared Plumbing Company, Inc.
5365 Dividend Street, Suite A, Decatur, GA 30035

hereinafter called the PRINCIPAL, and American Southern Insurance Company
365 Northridge Rd., Suite 400, Atlanta, GA 30350

hereinafter call the SURETY, a corporation chartered and existing under the laws of the State of
Kansas 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 Five percent (5%) of amount bid-Penal sum not to exceed thirty five thousand
and 00/100 Dollars and Cents (\$ Not to exceed \$35,000.00) 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 **19ITB654321K-JAJ FCGC
Complex Tower & Public Safety Building Domestic Water Piping Replacement**, 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 Five percent of bid amount
Penal sum not to exceed thirty five thousand and 00/100 Dollars
(\$ 35,000.00) 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 4th day of November, 2019

ATTEST:

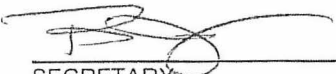
J Squared Plumbing Company, Inc.
PRINCIPAL

(SEAL)

BY 

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, Broderick Jackson, certify that I am the Secretary of the Corporation named as principal in the within bond; that Broderick Jackson, 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)

American Southern Insurance Company
SURETY

Michael J. Brown, Attorney-in-Fact
(SEAL)

BY Michael Brown

END OF SECTION

Bond No.: 68450
PAYMENT BOND

"County:" means Fulton County Government; a political subdivision of the State of Georgia (hereinafter called the "Owner"). 130 Peachstreet St., SW, Atlanta, GA 30303

"Project:" means [Insert Project Number and Project Name] Project No. 19ITB654321K-JAJ

FCGC Complex Tower & Public Safety Building Domestic Water Piping Replacement Phase II

"Principal:" (Legal Name and Business Address), [Insert Name of Contractor (hereinafter "Principal")]

called the J Squared Plumbing Company, Inc. Broderick Jackson
5365 Dividend St., Ste. A
Decatur, GA 30303

Type of Organization ("X" one): Individual
 Partnership
 Joint Venture
 Corporation

"Surety:" (Name and Business Address) American Southern Insurance Company
365 Northridge Rd., Suite 400, Atlanta, GA 30350
duly authorized by the Commissioner of Insurance of the State of Georgia to transact surety business in the State of Georgia.

"Contract:" Agreement between Principal and Owner, dated ____ day of _____, 2020, regarding performance of Work relative to the Project.

"Penal Sum:" [100% of contract amount] Five hundred fifty seven thousand three hundred seventy dollars and 00/100 (\$557,370.00)

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety hereto, as named above, are held and firmly bound to the Owner in the above Penal Sum for the payment of which well and truly to be made we bind ourselves, executors, administrators, successors and assigns, jointly and severally.

WHEREAS, the Principal and the Owner entered into a certain written Contract identified above, which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for construction-type services for the Project identified above;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall promptly make payment of all persons working on or supplying labor or materials or equipment for the performance of said work, this obligation shall be void; otherwise of 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 and 36-91-1, *et seq.*, 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 Principal and Surety have hereunto affixed their corporate seals and caused this obligations to be signed by their duly authorized representatives this day of _____, 2020.

PRINCIPAL: J Squared Plumbing Company, Inc.



President/Vice President (Sign)

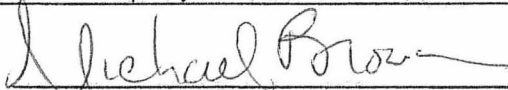
Broderick Jackson

President/Vice President (Type or Print)

Attested to by:

Secretary/Assistant Secretary (Seal)

SURETY: American Southern Insurance Company

By: 
Attorney-in-Fact (Sign)

Michael J. Brown, Attorney-in-Fact

Attorney-in-Fact (Type or Print)


Secretary/Assistant Secretary (Seal)
Judy McDonald, Underwriting Assistant

AMERICAN SOUTHERN INSURANCE COMPANY

Home Office: 3715 Northside Parkway, NW
Suite 4-800
Atlanta, Georgia 30327

Mailing Address: P. O. Box 723030
Atlanta, GA 31139-0030

GENERAL POWER OF ATTORNEY

Know all men by these Presents, that the American Southern Insurance Company had made, constituted and appointed, and by these presents does make, constitute and appoint Stefan E. Tauger of Parker, Colorado; Scott E. Stoltzner of Hoover, Alabama; Arthur S. Johnson of Atlanta, Georgia; Andrew C. Heaner of Atlanta, Georgia; Jeffery L. Booth of Blacklick, Ohio; James E. Feldner of West Lake, Ohio; David R. Brett of Columbia, South Carolina; Melanie J. Stokes of Atlanta, Georgia; Jason S. Centrella of Jacksonville, Florida; Michael J. Brown of Cumming, Georgia; Tamara D. Johnson of Atlanta, Georgia; or Omar G. Guerra of Overland Park, Kansas, EACH as its true and lawful attorney for it and its name, place and stead to execute on behalf of the said company, as surety, bonds, undertakings and contracts of suretyship to be given to all obligees provided that no bond or undertaking or contract of suretyship executed under this authority shall exceed in amount of the sum of \$1,000,000 (one million dollars), including but not limited to consents of surety for the release of retained percentages and/or final estimates on construction contracts or similar authority requested by the Department of Transportation, State of Florida; and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of the presents, shall be as binding upon the Company as if they had been duly signed by the President and attested by the Secretary of the Company in their own proper persons.

This Power of Attorney is granted and is signed and sealed by facsimile under and by the authority of the following Resolution adopted pursuant to due authorization by the Executive Committee of the Board of Directors of the American Southern Insurance Company on the 26th day of May, 1998:

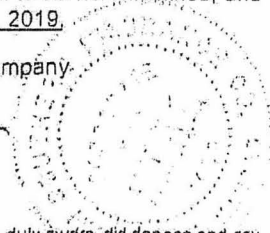
RESOLVED, that the Chairman, President or any Vice President of the Company be, and that each or any of them hereby is, authorized to execute Powers of Attorney qualifying the attorney named in the given Power of Attorney to execute in behalf of the American Southern Insurance Company bonds, undertakings and all contracts of suretyship; and that any Secretary or any Assistant Secretary be, and that each or any of them hereby is, authorized to attest the execution of any such Power of Attorney, and to attach thereto the seal of the Company.

FURTHER RESOLVED, that the signature of such officers and the seal of the Company may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company when so affixed and in the future, with respect to any bond undertaking or contract of suretyship to which it is attached.

In Witness Whereof, the American Southern Insurance Company has caused its official seal to be hereto affixed, and these presents to be signed by its President and attested by its Secretary this 4th day of January, 2019.

Attest:
Melonie A. Coppola, Secretary

American Southern Insurance Company
By: Scott G. Thompson, President



STATE OF GEORGIA
SS:
COUNTY OF FULTON

On this 4th day of January, 2019, before me personally came Scott G. Thompson to me known, who being by me duly sworn, did depose and say that he resides in Atlanta, in the County of Fulton, State of Georgia, at 421 Hollydale Court; that he is the President of American Southern Insurance Company, the corporation described in and which executed the above instrument; that he knows the seal of the said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed; and that he signed his name thereto pursuant to due authorization.

STATE OF GEORGIA
SS:
COUNTY OF FULTON



Jonathan R. Bell
Notary Public, State of Georgia
Qualified in Cherokee County
Commission Expires March 12, 2021

I, the undersigned, a Vice President of American Southern Insurance Company, a Kansas Corporation, DO HEREBY CERTIFY that the foregoing and attached Power of Attorney remains in full force and has not been revoked; and, furthermore, that the Resolution of the Executive Committee of the Board of Directors set forth in the Power of Attorney is now in

Signed and sealed at the City of Atlanta, Dated the ___ day of ___ 2020

John R. Huot
Vice President

Power No. 48467

Bond No. 68450

Bond No.: 68450
PERFORMANCE BOND

"County:" means Fulton County Government; a political subdivision of the State of Georgia (hereinafter called the "Owner"). 130 Peachstreet St., SW, Atlanta, GA 30303

"Project:" means [Insert Project Number and Project Name] Project No. 19ITB654321K-JAJ
FCGC Complex Tower & Public Safety Building Domestic Water Piping Replacement - Phase II
"Principal:" (Legal Name and Business Address), [Insert Name of Contractor (hereinafter called the "Principal")]
J Squared Plumbing Company, Inc. Broderick Jackson
5365 Dividend St., Ste. A
Decatur, GA 30303

Type of Organization ("X" one): Individual
 Partnership
 Joint Venture
 Corporation

"Surety:" (Name and Business Address) American Southern Insurance Company
365 Northridge Rd., Suite 400, Atlanta, GA 30350
duly authorized by the Commissioner of Insurance of the State of Georgia to transact surety business in the State of Georgia.

"Contract:" Agreement between Principal and Owner, dated _____ day of _____, 2020, regarding performance of Work relative to the Project.

"Penal Sum:" [100% of contract amount] Five hundred fifty seven thousand three hundred seventy dollars & 00/100 (\$557,370.00)

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety hereto, as named above, are held and firmly bound to the Owner in the above Penal Sum for the payment of which well and truly to be made we bind ourselves, our executors, administrators, successors and assigns, jointly and severally.

WHEREAS, the Principal and the Owner entered into a certain written Contract identified above, which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for construction-type services for the Project identified above;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall faithfully and fully comply with, perform and fulfill all of the undertakings, covenants, conditions and all other of the terms and conditions of said Contract, including any and all duly authorized modifications of such Contract, within the original term of such Contract and any extensions thereof, which shall include, but not be limited to any obligations created by way of warranties and/or guarantees for workmanship and materials which warranty and/or guarantee may extend for a period of time of one year beyond completion of said Contract, this obligation shall be void; otherwise, of 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 Principal and the Surety have caused these presents to be duly signed and sealed this _____ day of _____, 2020.

PRINCIPAL: J Squared Plumbing Company, Inc.



President/Vice President (Sign)

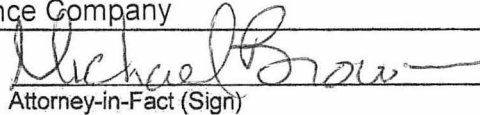
Broderick Jackson
President/Vice President (Type or Print)

Attested to by:

Secretary/Assistant Secretary (Seal)

SURETY: American Southern Insurance Company

By:



Attorney-in-Fact (Sign)

Michael J. Brown, Attorney-in-Fact
Attorney-in-Fact (Type or Print)

END OF SECTION

EXHIBIT F

SCOPE OF WORK AND

TECHNICAL SPECIFICATIONS

SECTION 4

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

The Work of the Project generally is defined by the Contract Documents that include Design Drawings and Specifications:

1. The Fulton County Government Center (FCGC) is approximately a 627,000-sf complex of interconnected buildings consisting of the following: Tower and Public Safety Hall Building, Low Rise Building, Midrise Building, Public Safety Building, Atrium, and High-Rise Building.
2. The main primary domestic water line on Martin Luther King Jr Street which provides domestic water to the Tower buildings in the Government Center and branches up to serve the East and West toilet room up to the 10th floor, are failing. The piping is original to the building and potentially hazardous. Leaks exist at numerous locations along the lines and new ones seem to appear weekly. Over the past several years, there have been complaints about the leaks from the water line from Martin Luther King Jr Street, debris in water and scaling inside the main pipeline. The main domestic line and risers are galvanized steel and most of the branch lines are copper lines. Some small sections of the water line were replaced by an On-Call Plumbing contractor. However, it was found that the corrosion and scaling has occurred for lengths beyond the repaired sections and because the extent of such damage could not be determined, a decision was made to replace the entire length of the main domestic water lines and all branches, including the valves installed in these sections, along with the janitor sinks and some hot water heaters.

END OF SECTION



**FULTON
COUNTY**

PROJECT SPECIFICATIONS

**FULTON COUNTY GOVERNMENT CENTER COMPLEX
TOWER AND PUBLIC SAFETY BUILDINGS
DOMESTIC WATER PIPING REPLACEMENT – PHASE II**

FOR

DEPARTMENT OF REALESTATE AND ASSET MANAGEMENT

OF

FULTON COUNTY GOVERNMENT

FULTON COUNTY GOVERNMENT CENTER COMPLEX
TOWER AND PUBLIC SAFETY BUILDINGS
DOMESTIC WATER PIPING REPLACEMENT – PHASE II

PROJECT SPECIFICATIONS TABLE OF CONTENTS:

SECTION	TITLE
011000	Summary
011100	Project Procedures
012973	Schedule of Values
013100	Project Management and Coordination
013200	Construction Progress Documentation
013213	Scheduling of the Work
013233	Photographic Documentation
013300	Submittal Procedures
013529	Health, Safety, and Emergency Procedures
014219	Reference Standards
015000	Construction Facilities & Temporary Controls
015719	Environmental Protection
017700	Closeout Procedures
017823	Operation and Maintenance Data
017839	Project Record Documents
078413	Penetration Firestopping
010400	Quality Requirements
02410	Demolition
09050	Stainless Steel Wall Covering
09211	Gypsum Board Assemblies
09300	Tiling
09510	Acoustical Ceilings
09912	Interior Painting
15010	Plumbing General
15250	Plumbing Insulation
15410	Plumbing Piping, Valves and Specialities
15440	Plumbing Fixtures
15460	Domestic Water Heaters
16000	Electrical General Conditions
16060	Grounding and Bonding for Electrical Systems
16070	Hangers and Supports for Electrical Systems
16075	Identification for Electrical Systems
16120	Low-Voltage Electrical Power Conductors and Cables
16130	Conduit
16135	Boxes
16150	Equipment Wiring
16440	Modification of Existing Low Voltage Panelboards

Fulton County Government Center Complex - Domestic Water Piping Replacement Phase 2

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work under separate contracts.
5. Access to site.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and drawing conventions.
9. Miscellaneous provisions.

1.2 PROJECT INFORMATION

A. Project Identification: Fulton County Government Center Complex - Domestic Water Piping Replacement Phase 2.

1. Project Location: 141 Pryor St, Atlanta, GA 30303

B. Owner: Fulton County

1. Owner's Representative: Heery/McAfee3 – a Joint Venture Program Management Team (FCPMT).

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project generally is defined by the Contract Documents that include Design Drawings and Specifications:

The Fulton County Government Center (FCGC) is approximately a 627,000 sf complex of interconnected buildings consisting of the following: Assembly Hall Building, Low Rise Building, Midrise Building, Public Safety Building, Atrium, and High Rise Building.

B. The domestic water service lines to the Government Center complex and risers within the buildings are failing. The piping is galvanized steel and is original to the building. The overall primary purpose of the project is to replace the galvanized steel piping with copper piping.

Fulton County Government Center Complex - Domestic Water Piping Replacement Phase 2

1.4 ACCESS TO SITE

- A. General: Contractor shall have use of Project site for construction operations during construction period. Contractor's use of Project site is limited by Owner's right to perform work, or to retain other contractors on portions of Project, and the need for on-site Contractor staff to apply for and wear temporary County Identification badges issued by the Fulton County Police Department located in the Fulton County Government Center building.
- B. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- C. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Driveways, Walkways and Entrances: Keep driveways parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather tight condition throughout construction period. Repair damage caused by construction operations.

1.5 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to avoid conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify Owner in writing not less than 72 hours in advance of activities that will affect Owner's operations. Contractor must adhere to Owner's concerns in response to such notifications to Owner.

1.6 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.

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1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: All work in the occupied office areas shall be performed during non-operating hours; final testing or those causing audible alarms shall be performed after normal hours of operation or during weekends/holidays. The work in non-occupied spaces shall be permitted during operating hours (8:00am to 5:00pm EST). The non-occupied spaces are, but not limited to, mechanical rooms, electrical rooms, stairs, storage, parking level, section of atrium, etc. Also, to minimize disturbance to the occupants of the building, schedule or coordinate all work with the Fulton County Project Manager and Maintenance Staff. Fulton County will provide security personnel for contractor support while contractor is on site for afterhours and/or on weekends portion of work.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 1. Notify Owner not less than two days in advance of proposed disruptive operations.
 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Controlled Substances: Use of tobacco products and other controlled substances within the existing building is not permitted.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

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1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

END OF SECTION 011000

SECTION 011100 - PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Work of this section includes project requirements for:

1. Cutting and patching.
2. Submittals.
3. Temporary facilities and controls.
4. Materials.
5. Product options.
6. Contract closeout.
7. Cleaning up.

1.2 CUTTING AND PATCHING

A. Summary:

1. Contractor's responsibilities:

- a. Contractor shall be responsible for cutting, fitting and patching required to complete the work and as follows:
 - 1) Make new and existing parts fit together.
 - 2) Provide penetrations of structural and non-structural surfaces for installation of materials and products as specified.
- b. In addition to Contract requirements, perform the following:
 - 1) Uncover work to provide for observation of covered work.
 - 2) Remove samples of existing installed materials for testing and for matching of new materials.
 - 3) Remove work to provide for alteration, restoration or refinishing of existing work.
- c. Do not endanger work by cutting or altering work.
- d. Do not cut or alter work not of this Contract without written consent of Owner.

2. Costs incurred for ill-timed work or uncovering of work shall include cost for services of Owner's consultants.

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B. Job conditions:

1. During cutting and patching operations, should suspect asbestos or asbestos-containing materials, or any other material listed as a hazardous material by the Environmental Protection Agency be discovered, notify FCPMT, Engineer, and Owner, secure jobsite from inclement weather and discontinue that portion of the work until further instructed.
2. Drawings indicating existing building conditions are available from the Owner for general information only. The Owner assumes no responsibility for the actual condition of work to be altered. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable. However, variations may occur by Owner's removal and salvage operations prior to the start of the demolition work.
3. Conduct operations and the removal of debris to ensure minimum interference with roads, streets, walks and adjacent facilities.
4. Do not close or obstruct streets or walks without permission from authorities having jurisdiction. Provide flagman where public thoroughfares are used for debris removal. Maintain thoroughfares free of dirt and debris caused by removals or hauling operations.
5. Conduct removal operations to minimize disruption or interference with building occupants and operation, and the use of building facilities not included in the work. Coordinate phasing of work with the Owner, as directed by the Owner.
6. Protect portions of existing building indicated to remain. Repair or replace portions of building damaged by this work, at no additional cost.
7. Provide temporary enclosures or other methods to limit dust transmission to adjacent areas. Provide temporary weatherproof enclosures for portions of work exposed to weather. Provide temporary noise reduction barriers to separate work areas from adjacent occupied areas.
8. Maintain building security. Secure construction area during non-working hours.
9. Where removal or alteration of concealed structural members is required, which are not included in detail on drawings, submit details for review by Engineer prior to proceeding.
10. Provide temporary fire protection devices. Coordinate with local building officials and Owner's insurance carrier.
11. Provide temporary protective walkways or covering on existing finish floor surfaces to protect existing and new floor finishes.
12. Schedule high noise level operations to non-business hours as acceptable to Owner where working in close proximity to existing business operations.
13. Limit exterior dust by sprinkling or other acceptable methods.

1.2 SUBMITTALS

A. General Provisions:

1. Provisions specified are mandatory procedures for preparing and submitting specified

submittals.

2. Submittals shall be in orderly sequence and timed to cause no delay in the Work.
3. Job delays occasioned by requirement of resubmission of submittals not in accord with Contract Documents are Contractor's responsibility and will not be considered valid justification for extension of Contract time.
4. Commence no portion of work requiring submittals until submittal has been reviewed and accepted by Engineer.

B. Submittal Schedule:

1. At least five days prior to date of pre-construction conference, submit a list of all required submittals, by specification section. Indicate timing for submission of required submittals and relation to construction sequence.
2. During course of the Work, maintain an updated submittal schedule showing status of all submittals. Provide copies for Owner's and Engineer information at project meetings and at other times when requested.

C. Sample Preparation:

1. Prepare samples in sizes, shapes and finishes in accord with provisions of individual specification sections.
2. Samples submitted for color, sheen or texture selection for review shall be actual samples of the required material. Where a range of color, sheen or texture is anticipated or proposed, samples shall indicate full range proposed, from which Owner and Engineer may select the exact range to be provided.
3. The number of samples submitted shall be the number required by Contractor, plus one which will be retained by the Owner, unless otherwise indicated.
4. Attach a tag to each sample, sized to accept Contractor's stamp and Engineer's review comments. Samples submitted to Engineer shall have tag stamped with Contractor's stamp and appropriate action shall be indicated thereon.

D. Shop Drawing Preparation:

1. Drawings shall conform to the following requirements:
 - a. Number drawings consecutively.
 - b. Indicate working and erection dimensions and relationships to adjacent work.
 - c. Show arrangements and sectional views, where applicable.
 - d. Indicate material, gauges, thicknesses, finishes and characteristics.

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- e. Indicate anchoring and fastening details, including information for making connections to adjacent work.
 - f. Contract documents prepared by the Engineer and his consultants will not be acceptable as shop drawing submittals.
2. Form: Submit electronic copies of shop drawings in .pdf form.
- E. Product Data Preparation:
1. Include product manufacturer's standard printed material, dated, with product description and installation instructions indicated. Product data may also contain test and performance data, illustrations and special details.
 2. Form: Number of copies submitted shall be the number required by Contractor, plus one which will be retained by Engineer, plus one which will be retained by the Owner.
- F. Contractor's Review:
1. Review, stamp with approval and submit to the Engineer submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor, which are not required by the Contract Documents, will be returned without action.
 2. By approving and submitting submittals, Contractor represents that he has determined and verified materials, field measurements, and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
 3. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's review of submittals unless the Contractor has specifically informed the Engineer in writing of such deviation at the time of submittal and the Engineer has given written acceptance to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in shop drawings, product data, samples or similar submittals by the Engineer's review thereof.
 4. The Contractor shall direct specific attention, in writing or on resubmitted submittals, to revisions other than those requested by the Engineer on previous submittals.
 5. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Engineer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

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6. Where work is indicated "By Others," Contractor shall indicate responsibility for providing and coordinating such work, whether by Subcontractors or under separate contracts.
7. Contractor agrees that submittals processed by Engineer are not Construction Change Directives or Change Orders; that purpose of submittals by Contractor is to demonstrate that Contractor understands design concept; that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing fabrication and installation methods he intends to use.
8. Contractor represents by submitting submittals that he has complied with provisions herein specified. Submissions made without Contractor's approval indicated thereon will be returned without being reviewed for compliance with this requirement.
9. Date each submittal and indicate name of Project, Contractor, Subcontractor, as applicable, description or name of equipment, material or product, and identify location at which it is to be used in the Work.
10. Accompany submittal with transmittal letter containing project name, Contractor's name, number and type of submittals, titles and other pertinent data. Transmittal shall outline deviations, if any, in submittals from requirements of Contract Documents.
11. Perform no portion of the Work requiring submittal and review of submittals until the respective submittal has been reviewed and accepted by the Engineer.

G. Engineer's Review:

1. Engineer will review each submittal, mark it with appropriate action, and return it to Contractor with reasonable promptness, except where it must be held for coordination and the Contractor is so advised.
2. Engineer's review or other appropriate action is only for checking for conformance with information given and the concepts expressed in the Contract Documents. Engineer's acceptance of a specific item shall not indicate acceptance of an assembly in which item is a component.
3. Engineer's review of submittals shall not relieve Contractor of responsibility for deviation from requirements of Contract Documents unless Contractor has informed Engineer in writing of such deviation at time of submission and Engineer has given written acceptance to the specific deviation. Engineer's review shall not relieve Contractor from responsibility for errors or omissions in submittals.
4. Submittals required to be submitted "For Information Only" are required to demonstrate that the Work complies with performance requirements of the Contract Documents. Such submittals, if acceptable to Engineer, will not be returned to Contractor.
5. Engineer will return one copy of reviewed shop drawings for printing and distribution by Contractor.

H. Resubmission:

1. Make corrections and changes indicated for unacceptable submittals, and resubmit in same manner as specified above until Engineer's acceptance is obtained.
2. On re-submittal transmittal, direct specific attention to revisions other than corrections requested by Engineer on previous submittals, if any.

I. Distribution:

1. Contractor is responsible for obtaining and distributing copies of submittals to his subcontractors and material suppliers after, as well as before, final acceptance. Prints of reviewed shop drawings shall be made from transparencies which carry the Engineer's appropriate comments.
2. For duration of project, Contractor shall maintain a file of accepted submittals which shall be delivered to Owner as a part of project closeout documents.

1.4 TEMPORARY FACILITIES AND CONTROLS

A. Temporary Storage Facilities: Materials and equipment may be stored on-site at locations acceptable to the Owner. The Contractor is solely responsible for security of designated storage areas.

B. Site access and Parking:

1. Parking for construction personnel shall be in locations acceptable to the Owner. Minimal parking is available.

C. Temporary Utilities:

1. Electrical service: Electrical power service of existing voltage and amperage may be obtained from Owner's present facility at no cost to Contractor. Contractor shall be responsible for making connections to Owner's service and for extensions of service. Contractor shall provide additional higher voltage power service and pay all costs for such power, including connections and extensions, if required by him for construction purposes.
2. Temporary heat and ventilation:

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- a. Provide temporary heat and ventilation as may be required by product manufacturers for proper product installation and performance of manufactured products.
 - b. Provide ventilation to prevent accumulation of dust, fumes or gases and to cure materials and disperse humidity.
3. Water: Water for construction purposes may be obtained from Owner's present facility. Contractor shall be responsible for extending lines from source and for making connections.
 4. Sanitary toilet facilities: Provide and maintain temporary toilet facilities for construction personnel. Existing facilities may not be used by personnel. Locate temporary toilet facilities in locations acceptable to Owner. Or construction personnel will be able to use Fulton County's Facilities. Location will be directed by the Owner.
- D. Temporary Hoist and Staging Equipment: Provide temporary equipment for transportation of personnel, materials and equipment.
1. Provide protective devices for structure during equipment use.
 2. Do not overload building structural system with temporary equipment; do not overload hoisting equipment or staging.
- E. Security:
1. For off-hours work of construction personnel, coordinate security clearance with the Owner's building security.
 2. Provide security guards as necessary to direct traffic during work operations. Security provisions to prevent loss of the contractor's tools, equipment, materials shall be at the sole discretion of the Contractor.
- F. Building Access:
1. The Contractor shall generally be prohibited from entering the areas of the building except where work is in progress. Access to work areas through the building shall be approved by and coordinated with the Owner. Work and access shall cause no disruption to building occupants or facility operations.
 2. Schedule the Work and arrange material storage in a manner which leaves the project site as unencumbered as possible. Provide temporary barriers and enclosures, and maintain the site in clean condition at all times.
 3. The Contractor shall be responsible for correcting damages to the building caused by his work or passage. Soiled or damaged materials shall be replaced or repaired to satisfaction of the Owner.

G. Special Protection Requirements:

1. Protect buildings and building components from damage, staining or defacing due to the Work. Correct or replace damaged materials or finishes to satisfaction of the Owner.
2. Provide barricades as required at areas captured for executing The Work.
3. Protect building from rain or water leakage during the course of The Work. Openings shall not be left unprotected overnight.
4. Protect landscape planting from damage, including toxic overspray or run-off from cleaning materials. Damaged or ruined planting shall be replaced by the Contractor with plants of identical variety, size and configurations. Replace damaged plants materials to match existing.
5. If required by work, provide protective enclosures at building entrances and exterior walkways to protect building occupants. Enclosures shall include protection from cleaning and applied materials. Coordinate placement and location of all protective enclosures with Owner. Building entrances and exits shall not be made inaccessible unless approved in advance by Owner and local fire officials.
6. Provide protection against overspray of cleaning materials or paint contacting building occupants or vehicles in drives or parking areas. Drives shall not be blocked to extent of restricting vehicular access, and parking area restrictions shall be kept to a minimum. Barriers and restrictions shall be approved in advance by the Owner. Do not work with materials subject to being wind-blown during times of high winds.
7. Protect surfaces of fresh coating products from damage or discoloration due to rain, dust or physical damage. Replace damaged or defaced materials which cannot be restored to satisfaction of the Owner.

H. Relocation and Removal:

1. Relocate temporary facilities during construction as required by progress of the Work at no additional cost to the Owner.
2. At completion of the Work or at the time of permanent utility connections, as applicable, remove temporary facilities, including connections and debris resulting from temporary installation.

1.5 MATERIALS

A. Delivery, Storage and Handling:

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1. Deliver manufactured products to project site in manufacturer's original packaging with labels and seals intact. Labels shall indicate manufacturer and product name, description, mixing and application instructions. Where applicable, labels shall indicate fire resistive classifications. Include material Safety Data Sheets with all material shipments.
 2. Inspect materials upon delivery to ensure they are proper.
 3. Comply with manufacturer's instructions and recommendations for product storage and handling.
 4. Prevent corrosion, soiling or breakage of materials or contact with deleterious materials.
 5. Handle materials and equipment to prevent damage, deterioration or contamination. Install no materials which are physically damaged or stained prior to time for installation.
 6. Store and handle fluid products subject to spillage in areas where spills will not deface finished surfaces or other work.
 7. Flammable or hazardous materials:
 - a. Store minimum quantities in protected areas.
 - b. Provide appropriate type fire extinguishers near storage areas.
 - c. Observe manufacturer's precautions and applicable ordinances and regulations.
 8. Comply with manufacturer's product data in all aspects of basic material usage, handling, installation and substrate preparation, except where more stringent requirements are specified.
- B. Materials Containing Hazardous Substances:
1. The intent of the Contract Documents is to exclude all materials which contain known hazardous substances, including materials containing asbestos, polychlorinated biphenyl (PCB), or any other known substances determined to be a health hazard by the United States Environmental Protection Agency (EPA) and other recognized agencies. In studying the Contract Documents and at any time during execution of the Work, the Contractor shall at once report to the Construction Consultant any materials containing hazardous substances that he may discover. Do not proceed with installation of materials containing known hazardous substances.
 2. Where products are specified by product, by manufacturer, by reference standard or in descriptive manner without manufacturer's name, model number or trade name, Contractor shall select materials meeting specified requirements which do not contain known hazardous substances in any form.

C. Substrate Conditions:

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1. Verify and obtain substrate conditions, tolerances and material alignments to receive applied or attached materials and construction.
 2. Substrates shall be sound, clean, dry and free of imperfections and conditions which would be detrimental to receipt of applied materials and finishes.
 3. Align materials to give smooth, uniform surface planes within specified tolerances and straight, level and plumb surfaces.
 4. Inspect substrates prior to installation of applied materials and finishes. Correct unacceptable conditions prior to proceeding with work.
 5. Existing sub-surfaces receiving new finishes shall have existing finish removed or, if sound, prepared in accord with manufacturer's product data to receive new specified finish.
- D. Finished Surfaces:
1. Finished surfaces shall be clean, uniform and free of damages, soiling or defects in material and finish.
 2. Protection:
 - a. Protect finished surfaces from damage and soiling during application, drying or curing, as applicable.
 - b. Provide temporary protective coverings or barriers required.

1.6 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Products are specified by reference standards, performance and manufacturer's name and model number or trade name.
1. When proprietary products are specified, no substitutions are allowed.
 2. When specified only by reference standard or performance, Contractor may select any product meeting specified standards or performance requirements, by any manufacturer.
 3. When several products or manufacturers are specified as being acceptable, Contractor has the option of choosing among those named.
 4. When one product or manufacturer is specified or indicated as the "basis of design", "basis of selection" or "scheduled", Contractor shall bear costs associated with changes required for application or installation of other products or assemblies.
- B. In the event that specified items cannot be delivered to the jobsite and incorporated into the Work at such times and in such quantities as to cause no delay, then Contractor may request a substitution. Should the accepted substitution provide a cost savings, the Contract price will be adjusted by Change Order, with Owner receiving the benefit of the net savings. No increase in

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the Contract price will be allowed on substitutions made after the award of Contract, except where the Contractor can verify a timely placement of orders appropriate to the materials and conditions involved.

- C. Inability to obtain specified items due to Contractor's failure to place timely orders will not be considered reason for authorizing substitutions.

1.7 CONTRACT CLOSEOUT

A. Closeout Timing:

1. Contractor shall prepare, assemble and transmit the items listed herein to the Owner in care of the Construction Consultant.
2. Documents, tools, equipment, demonstrations and other closing requirements shall be submitted or performed and accepted prior to Date of Final Acceptance.

B. Detail Requirements:

1. Inspection reports:

- a. Submit certificates from applicable local governmental agencies that the construction has been inspected as required by laws.
- b. Submit one copy of testing agencies inspection and test reports.

2. Warranties:

- a. Contractor shall furnish his warranty and shall require each subcontractor to furnish his warranty, in writing. Assemble, bind, label and transmit warranties as required for other manuals above. Unless specifically indicated otherwise in individual sections, the period for warranties shall begin on the Date of Substantial Completion and shall continue for one year. Warranties shall state the Date of Substantial Completion and the date on which the warranty expires.
- b. Contractor shall forward manufacturers' and installers' warranties as specified in the individual specification sections. Assemble, bind, label and transmit warranties as required for other manuals above. Unless specifically indicated otherwise in individual sections, the period for warranties shall begin on the Date of Substantial Completion. Warranties shall state the Date of Substantial Completion and the date on which the warranty expires.

1.8 CLEANING UP

A. General Requirements:

1. Contractor shall keep the project site free from accumulation of waste materials and rubbish at all times during the construction period. At completion of the Work, he shall remove all waste materials and rubbish from and about the project, as well as his tools, construction equipment, machinery and surplus materials, except those specifically required by the Contract Documents to be left for the Owner's maintenance.
2. If Contractor fails to keep project clean or to clean up prior to Date of Substantial Completion, the Owner may do so, and the cost will be charged to the Contractor.

B. Safety Requirements:

1. Store volatile waste in covered metal containers. Remove from project site daily.
 - a. Allow no volatile wastes to accumulate on project site.
 - b. Provide adequate ventilation during use of volatile substances.
2. Do not burn or bury waste materials or rubbish on project site. Comply with governmental and environmental regulatory requirements for disposal of waste.
3. Dispose of no volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains, on pavements, in gutters or on project site.
4. Dispose of no waste or cleaning materials containing materials harmful to plant growth on project site. As quickly as possible, clean up materials which are accidentally spilled.

C. Cleanup During Construction:

1. Execute cleaning procedures to ensure that building, project site and adjacent properties are maintained free from debris and rubbish.
2. Wet down materials subject to blowing. Throw no waste materials from heights.
3. Provide covered on-site containers for waste collection. Place all waste materials and rubbish in containers in an expeditious manner to prevent accumulation. Remove waste from project site when containers become full.
4. Legally dispose of all waste materials, rubbish, volatile materials and cleaning materials off project site.
5. Dispose of no materials in waterways.
6. Protect newly finished and clean surfaces from contamination during cleaning operations.
7. Allow no accumulation of debris contributing to survival or spread of rodents, roaches or other pests. On a daily basis, remove debris containing food scraps.

D. Final Cleanup:

1. Clean all finished surfaces in accord with manufacturer's product data and requirements specified in specification sections, prior to Date of Substantial Completion. All general and specific cleaning shall be performed prior to Contractor's request that the project or portion thereof be inspected for Substantial Completion.
2. Remove dust, debris, oils, stains, fingerprints and labels from exposed finish surfaces.
3. Repair, patch and touch up marred surfaces to match adjacent finishes. Replace materials which cannot be repaired or patched.
4. Clean disturbed areas of project site of debris.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials for Replacement of Work Removed: Comply with specification sections for type of work to be performed.

2.2 REMOVED MATERIAL

- A. Reuse of Material: Reuse of any items involved in the work is subject to the Contractor's ability to remove, store and reinstall the item without permanently damaging or marring the items to be reused. If the Contractor is unable to reuse any item as prescribed herein, he shall substitute new material to match existing in lieu of reusing same. Contractor may also elect to use material to match existing in lieu of reuse of existing for his own convenience. Approved new materials used shall match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination:

1. Visit project site and compare locations of work with indications in Contract Documents. Report any discrepancies discovered for resolution.
2. Examine existing conditions of the project, including elements subject to damage or to movement during cutting and patching.

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3. After uncovering work, inspect conditions affecting installation of products or performance of work.
4. Report unsatisfactory or questionable conditions to FCPMT in writing; do not proceed with work until FCPMT has provided further instructions.

B. Preparation:

1. Provide adequate temporary support to ensure the structural value or integrity of the affected portion of the work.
2. Provide devices and methods to protect other portions of the project from damage.
3. Provide protection from the elements for that portion of the project which may be exposed by cutting and patching work.

3.2 PREPARATION

- A. Plan scheduling and phasing of the work to minimize interference with Owner's existing operations that will remain in use during the work. Minimize disruption of building operations and use of adjacent facilities.
- B. Security:
 1. Contractor shall provide safe access to occupied areas during the course of the work.
 2. Provide fences, enclosures, barricades or partitions to segregate work areas from occupied and used areas.
- C. Comply with governing regulations pertaining to environmental protection and water usage. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding and pollution.
- D. Clean adjacent structures and improvements of dust, dirt and debris caused by demolition operations, as directed by the Construction Consultant or governing authorities. Return adjacent areas to condition existing prior to the start of the work.

3.3 CUTTING AND PATCHING

A. Performance:

1. Execute cutting, patching and demolition by methods which will prevent damage to other work and will provide surfaces to receive installation of repairs.
2. Execute work by methods which will prevent settlement or damage to other work.

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3. Elements of a structural or support nature, including concealed elements exposed by the removal of existing elements of the work, shall be inspected and the Engineer notified should additional work be indicated due to loss of structural integrity, rot, rust, corrosion or other similar condition.
4. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
5. Restore work which has been cut or removed; install new products to provide complete work in accord with requirements of Contract Documents.
6. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces. Fire stop penetrations through fire-rated construction.
7. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
 - a. For continuous surfaces: Refinish to nearest intersection.
 - b. For an assembly: Refinish the entire unit.
8. Repair damaged adjacent surfaces and finishes to original condition.
9. Maintain integrity of fire-resistant and rated construction.

B. Restoration:

1. Remove existing elements of a particular visual nature with care and in such manner that maximum reuse is possible. Label, clean, protect and store to ensure reusability or reinstallation, as applicable, to as near original condition as possible.
2. Existing items of significant visual or operational value to Owner, not planned for reinstallation, shall be made available for Owner's retention for use in other work.
3. Repairs of visual or finish materials requiring new material shall be made using materials which will match existing work in type, size, texture and all other visual aspects as approved by Owner.
4. Restore elements of a structural or support nature, or other concealed elements exposed by the removal of existing elements of the work.
5. Finish surfaces requiring removal and repair, but designated to receive a new finish obscuring the nature of the original surface, may be repaired using materials most expedient to the nature of the work and which will result in a uniform, sound finished new surface of at least equal strength to existing adjacent material replaced. Sub surfaces to receive the new finish shall be of like nature to existing surrounding surfaces and acceptable to new finish surfacing installer for receipt of new materials without extra surface preparation for the repaired area.

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END OF SECTION 011100

SECTION 012973 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 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: The Schedule of Values will be submitted in a format as prescribed by and to the level of detail specified by the Construction Manager.
 - 1. The sum of the parts of the Schedule of Values shall aggregate to the total Contract Sum.
 - 2. 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.
 - 3. Schedule of Values items shall have a direct and understandable relation to the Project CPM Schedule.

1.2 SCHEDULE OF VALUES UTILIZATION

- A. Applications for Payment: The Schedule of Values, unless objected to by the Construction Manager or the Engineer, 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.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 102973

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination drawings.
 - 2. Requests for Information (RFIs).
 - 3. Project meetings.

1.2 DEFINITIONS

- A. RFI: Request from Owner, FCPMT, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.
- B. FCPMT: Fulton County Program Management Team
- C. Construction Documents: The written and graphic, professionally sealed documents prepared by the Engineer of Record that fully communicate the work to be provided by the contractor during the construction phase of the project. The construction documents are the documents submitted for the construction permit.

1.3 SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

1.4 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

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1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Pre-installation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.

1.5 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - b. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered as changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:

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1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid.
2. Plenum Space: Indicate sub-framing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Review: FCPMT will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility.

1.6 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of FCPMT.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to FCPMT.

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- D. FCPMT Action: FCPMT will review each RFI, determine action required, and respond. Allow seven working days for FCPMT's response for each RFI. RFIs received by FCPMT after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or inaccurately prepared RFIs.
 2. FCPMT's action may include a request for additional information, in which case FCPMT's time for response will date from time of receipt of additional information.
 3. FCPMT's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal in accordance with Fulton County Change Order Policy 800-6.
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify FCPMT in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of FCPMT.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date FCPMT's response was received.
- F. On receipt of FCPMT's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify the FCPMT within seven days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

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1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner of scheduled meeting dates and times at least 48 hours prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees at least 24 hours prior to meeting.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including FCPMT, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to FCPMT, but no later than 15 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner, FCPMT, Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Sustainable design requirements.
 - l. Preparation of record documents.
 - m. Use of the premises and existing building.
 - n. Work restrictions.
 - o. Working hours.
 - p. Owner's occupancy requirements.
 - q. Responsibility for temporary facilities and controls.
 - r. Procedures for moisture and mold control.
 - s. Procedures for disruptions and shutdowns.
 - t. Construction waste management and recycling.
 - u. Parking availability.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. First aid.
 - y. Security.
 - z. Progress cleaning.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

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- C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise FCPMT of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at regular weekly intervals.
1. Attendees: In addition to representatives of Owner, FCPMT, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in

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planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Status of sustainable design documentation.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site utilization.
 - 9) Temporary facilities and controls.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Status of correction of deficient items.
 - 13) Field observations.
 - 14) Status of RFIs.
 - 15) Status of proposal requests.
 - 16) Pending changes.
 - 17) Status of Change Orders.
 - 18) Pending claims and disputes.
 - 19) Documentation of information for payment requests.
3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Construction schedule updating reports.
 - 3. Daily construction reports.
 - 4. Site condition reports.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF electronic file.
 - 3. Two paper copies.

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- B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- C. Contractor's Schedule: Initial schedule, of size required to display entire schedule for entire design and construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
- E. Schedule Updating Reports: Submit with Applications for Payment.
- F. Daily Construction Reports: Submit at weekly intervals.
- G. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S SCHEDULE

- A. Time Frame: Extend schedule from date established for the Notice of Award to final completion.

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1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
 2. The schedule is to include milestones for production, reviews, and completion of 100% final construction documents.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 2. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 3. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for FCPMT's administrative procedures necessary for certification of Substantial Completion.
 5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 5. Work Stages: Indicate important stages of construction for each major portion of the Work.
- D. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.

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2. Unanswered Requests for Information.
 3. Rejected or unreturned submittals.
 4. Notations on returned submittals.
 5. Pending modifications affecting the Work and Contract Time.
- E. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the original County accepted schedule.
- F. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 CONTRACTOR'S SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice of Award that maintains project duration agreed to by County.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice of Award. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities. Duration of project is to conform to the duration accepted by the County.
- C. CPM Schedule: Prepare Contractor's construction schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for the Notice of Award.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.

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3. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing and commissioning.
 - j. Punch list and final completion.
 - k. Activities occurring following final completion.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.

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7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Accidents.
 8. Meetings and significant decisions.
 9. Unusual events.
 10. Stoppages, delays, shortages, and losses.
 11. Meter readings and similar recordings.
 12. Emergency procedures.
 13. Orders and requests of authorities having jurisdiction.
 14. Change Orders received and implemented.
 15. Construction Work Change Directives received and implemented.
 16. Services connected and disconnected.
 17. Equipment or system tests and startups.
 18. Partial completions and occupancies.
 19. Substantial Completions authorized.

PART 3 - EXECUTION

3.1 CONTRACTOR'S SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.

- B. Distribution: Distribute copies of approved schedule to FCPMT, separate contractors, testing and inspecting agencies, and other parties identified by Contractor and Owner with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013213 - SCHEDULING OF THE WORK

PART 1 - GENERAL

1.1 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 Program Management Team 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 execution of the Work.

1.2 GENERAL SCHEDULING REQUIREMENTS

- A. The Work of this Contract shall be planned, scheduled, executed, and reported using the critical path method (CPM). The Contractor shall use one of the following software programs to develop its Detailed Construction Schedule:
1. Primavera Project Planner, latest version.
 2. 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 Program Management Team, 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 Program Management Team 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.

1.3 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 Program Management Team. 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.

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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 the General Conditions to the Contract.
 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 computer disk, in a form and format acceptable to the Program Management Team, 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. 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.
- D. 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.
- E. The Contractor shall submit, as a part of the data submitted to the Program Management Team, 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.
- F. The Program Management Team 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 Program Management Team 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;

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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.

1.4 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.

1.5 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 Program Management Team, the Contractor shall arrange for its Project Manager, Superintendent and necessary subcontractors and suppliers to attend a monthly schedule meeting with the Program Management Team 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. 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

- D. 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.

- E. As part of the updating process, the Program Management Team will calculate, based upon progress data provided by the Contractor and agreed to by the Program Management Team, 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.

- F. 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.

1.6 RECOVERY SCHEDULE

- A. Should the updated Detailed Construction Schedule, at any time during the Contractor's performance, show, in the sole opinion of the Program Management Team, 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 Program Management Team, 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 1.7 below.

- C. The Contractor shall prepare and submit to the Program Management Team a one-month maximum duration Recovery Schedule, incorporating the best available information from sub consultants, 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 Program Management Team, the Contractor and any of the necessary subcontractors, suppliers, vendors, manufacturers, etc. shall participate in a conference with the Program Management Team 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 Program Management Team'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 Program Management Team to assess the effectiveness of the Recovery Schedule. As a result of these conferences, the Program Management Team will direct the Contractor as follows:
 - 1. If the Program Management Team determines the Contractor continues behind schedule, the Program Management Team 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 Program Management Team as provided elsewhere in the Contract Documents; or
 - 2. If the Program Management Team determines the Contractor has successfully complied with provisions of the Recovery Schedule, the Program Management Team 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 1.6 to recover delays in the schedule, the Program Management Team 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.

1.7 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 Paragraph and the Contract Documents. The approved Detailed Construction Schedule may only be revised by written approval of the Program Management Team as provided herein.
- B. The Contractor shall submit requests for revisions to the Detailed Construction Schedule to the Program Management Team, using a Schedule Revision Form provided by the Program Management Team, 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 Program Management Team 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 Program Management Team 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 Program Management Team 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.

1.8 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

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that float time may be used by the County or Program Management Team 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 Program Management Team, unnecessarily delays separate contractors from proceeding with their work in a way which is detrimental to the interests of the County.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013213

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SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 CONSTRUCTION PHOTOGRAPHS, GENERAL

- A. Take color photographs on a weekly basis to show progress of the work. Submit photographs with contractor's monthly application for payment.
- B. Take photographs beginning at first month of construction activity and terminating at date of final acceptance.
- C. Take photographs on same day each week, weather permitting, and at same time of day.
- D. Take photographs of same standard locations each week, unless otherwise directed by Owner. Assign a letter to each of the standard photograph locations, for comparison with previous and future submittals.

1.2 SUBMITTAL OF PHOTOGRAPHS

- A. Submit photographs in electronic format with contractor's application for payment. Format may be Print or Digital.
- B. Print
 - 1. Size: 8" x 10".
 - 2. Paper: Glossy.
 - 3. Label back of each photograph with project name, date, description and photograph number of location or element of the work and contractor's name.
- C. Digital
 - 1. Resolution: 5 megapixels.
 - 2. Format: jpeg.
 - 3. Time and date stamp each photograph.
 - 4. File name to include Project Name, letter of photograph location.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 2. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require FCPMT's responsive action.
- B. Informational Submittals: Written and graphic information and physical samples that do not require FCPMT's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by the construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by FCPMT and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

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2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. FCPMT reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on FCPMT's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. FCPMT will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- C. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by FCPMT.
 3. Include the following information for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of FCPMT.
 - e. Name of Contractor.
 - f. Name of subcontractor.
 - g. Name of supplier.
 - h. Name of manufacturer.
 - i. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - j. Number and title of appropriate Specification Section.
 - k. Drawing number and detail references, as appropriate.
 - l. Location(s) where product is to be installed, as appropriate.
 - m. Other necessary identification.

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4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless FCPMT observes noncompliance with provisions in the Construction Documents, initial submittal may serve as final submittal.
 - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to FCPMT.
 5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. FCPMT will discard submittals received from sources other than Contractor.
 - a. Transmittal Form for Paper Submittals: Use CSI Form 12.1A.
 - b. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
 - 1) Project name.
 - 2) Date.
 - 3) Destination (To:).
 - 4) Source (From:).
 - 5) Name and address of Architect.
 - 6) Name of FCPMT.
 - 7) Name of Contractor.
 - 8) Name of firm or entity that prepared submittal.
 - 9) Names of subcontractor, manufacturer, and supplier.
 - 10) Category and type of submittal.
 - 11) Submittal purpose and description.
 - 12) Specification Section number and title.
 - 13) Specification paragraph number or drawing designation and generic name for each of multiple items.
 - 14) Drawing number and detail references, as appropriate.
 - 15) Indication of full or partial submittal.
 - 16) Transmittal number, numbered consecutively.
 - 17) Submittal and transmittal distribution record.
 - 18) Remarks.
 - 19) Signature of transmitter.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

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3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by FCPMT.
4. Metadata: Include the following information as keywords in the electronic submittal file metadata:
 - a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations: Identify deviations from the Bidding Documents on submittals.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from and FCPMT's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from FCPMT's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
 1. Email electronic submittals as PDF electronic files directly to FCPMT specifically established for Project.
 - a. FCPMT, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Submit electronic submittals via email as PDF electronic files.
 - a. FCPMT, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

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3. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. FCPMT, will return two copies.
 4. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. FCPMT will not return copies.
 5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 6. Submit Product Data in the following format:
 - a. PDF electronic file.
 - b. Three paper copies of Product Data unless otherwise indicated. FCPMT, will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale.

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1. Preparation: Fully illustrate requirements in the Construction Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
 - b. Two opaque (bond) copies of each submittal. FCPMT will return one copy(ies).
- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Submit product schedule in the following format:
 - a. PDF electronic file.
- E. Coordination Drawings Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- F. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- G. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- H. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- I. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- J. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Construction Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

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- K. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Construction Documents and, where required, is authorized by manufacturer for this specific Project.
- L. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Construction Documents. Include evidence of manufacturing experience where required.
- M. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Construction Documents.
- N. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Construction Documents.
- O. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Construction Documents.
- P. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Construction Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- Q. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- R. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Construction Documents.
- S. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- T. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Construction Documents.

2.2 DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Construction Documents, provide products and systems complying with specific performance and design criteria indicated.

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1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to FCPMT.
- B. Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Construction Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Construction Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to FCPMT.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Construction Documents.

3.2 FULTON COUNTY CONSTRUCTION PROJECT MANAGER'S ACTION

- A. FCPMT will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: FCPMT will review each submittal, make marks to indicate corrections or revisions required, and return it. FCPMT will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- C. Informational Submittals: FCPMT will review each submittal and will not return it, or will return it if it does not comply with requirements. FCPMT will forward each submittal to appropriate party.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

END OF SECTION 013300

SECTION 013529 - HEALTH, SAFETY, AND EMERGENCY PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work of this section consists of establishing an effective accident prevention program and providing a safe environment for all personnel and visitors.

1.2 SUBMITTALS

- A. Accident Prevention Program: Before on-site work begins, submit for approval an accident prevention program. The Program Management Team will review the proposed program for compliance with OSHA and project requirements. If the program requires any revisions or corrections, the Contractor shall resubmit the program within 10 days. No progress payments will be made until the program is approved.

The program shall include:

1. Name of responsible supervisor to carry out the program.
 2. Weekly and monthly safety meetings.
 3. First aid procedures.
 4. Outline of each phase of the work, the hazards associated with each major phase, and the methods proposed to ensure property protection and safety of the public, Fulton County personnel, and Contractor's employees.
 5. Identify the work included under each phase by reference to specification section or division numbers.
 6. Training, both initial and continuing.
 7. Planning for possible emergency situations, such as floods, fires, cave-ins, slides, explosions, power outages, and wind storms. Such planning shall take into consideration the nature of construction, site conditions, and degree of exposure of persons and property.
 8. Cleaning.
 9. Fire Protection.
- B. Submit a copy of test reports, as required by OSHA, for personnel working with hazardous materials.
 - C. Submit a report of safety meetings and of inspections.
 - D. Upon request, submit proof of employees' qualifications to perform assigned duties in a safe manner.

1.3 QUALITY ASSURANCE

- A. Clauses entitled "Accident Prevention" and "Permits and Responsibilities" of the contract. In case of conflicts between Federal, state, and local safety and health requirements, the most stringent shall apply. Equipment or tools not meeting OSHA requirements will not be allowed on the project sites. Failure to comply with the requirements of this section and related sections may result in suspension of work.

- B. Qualifications of Employees:
 - 1. Ensure that employees are physically qualified to perform their assigned duties in a safe manner.
 - 2. Do not allow employees to work whose ability or alertness is impaired because of drugs, fatigue, illness, intoxication, or other conditions that may expose themselves or others to injury.
 - 3. Operators of vehicles, mobile equipment, hoisting equipment, and hazardous plant equipment shall be able to understand signs, signals, and operating Instructions, and be capable of operating such equipment. Provide operating instructions for all equipment. Newly hired operators shall be individually tested by an experienced operator or supervisor to determine if they are capable of safely operating equipment.

1.4 ACCIDENT REPORTING

- A. Reportable Accidents: A reportable accident is defined as death, occupational disease, traumatic injury to employees or the public, property damage by accident in excess of \$100, and fires. Notify Program Management Team immediately in the event of a reportable accident. Within 7 days of a reportable accident, fill out and forward to Program Management Team an Accident/Property Damage Report.

- B. All Other Accidents: The Contractor shall report all other accidents to the Program Management Team as soon as possible and assist the Program Management Team and other officials as required in the investigation of the accident.

PART 2 - PRODUCTS

2.1 FIRST AID FACILITIES

- A. Provide adequate facilities for the number of employees and the type of construction at the site.

2.2 PERSONNEL PROTECTIVE EQUIPMENT

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- A. Meet requirements of NIOSH and MSHA.

PART 3 - EXECUTION

3.1 EMERGENCY INSTRUCTIONS

- A. Post telephone numbers and reporting instructions for ambulance, physician, hospital, fire department, and police in conspicuous locations at the work site.

3.2 FIRE AND LIFE SAFETY

- A. Provide and maintain the fire and life safety requirements in NFPA 241 (Standard for Safeguarding Construction, Alteration, and Demolition Operations).
- B. Contractor shall have a Hazard Communications Plan; store hazardous materials in accordance with manufacturer's and OSHA recommendations; immediately report all spills of hazardous materials to the park; and maintain a spill emergency response kit.

3.3 PROTECTIVE EQUIPMENT

- A. Inspect personal protective equipment daily and maintain in a serviceable condition. Clean, sanitize, and repair, as appropriate, personal items before issuing them to another individual.
- B. Inspect and maintain other protective equipment and devices before use and on a periodic basis to ensure safe operation.

3.4 SAFETY MEETINGS

- A. As a minimum, conduct weekly 15-minute "toolbox" safety meetings. These meetings shall be conducted by a foreman and attended by all construction personnel at the worksite.
- B. Conduct monthly safety meetings for all levels of supervision. Notify the Program Management Team of meeting dates and times. These meetings shall be used to review the effectiveness of the Contractor's safety effort, to resolve current health and safety problems, to provide a forum for planning safe construction activities, and for updating the accident prevention program. The Program Management Team will attend the meeting and enter the results of the meetings into the daily log.

3.5 HARD HATS AND PROTECTIVE EQUIPMENT AREAS

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- A. A hard hat area will be designated by the Program Management Team. The hard hat area shall be posted by the Contractor in a manner satisfactory to the Program Management Team.
- B. It is the Contractor's responsibility to require all those working on or visiting the site to wear hard hats and other necessary protective equipment at all times. As a minimum, provide six hard hats for use by visitors. Change liners before reissuing hats.

3.6 TRAINING

- A. First Aid: Provide adequate training to ensure prompt and efficient first aid.
- B. Hazardous Material: Train and instruct each employee exposed to hazardous material in safe and approved methods of handling and storage. Hazardous materials are defined as explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful substances that could cause death or injury.

END OF SECTION 013529

SECTION 014219 - REFERENCE STANDARDS

PART 1 - GENERAL

1.1 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.

1.2 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.

1.3 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.

1.4 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.

1.5 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 014219

SECTION 015000 - CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 – GENERAL

1.1 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.

1.2 QUALITY ASSURANCE

- A. 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.

1.3 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.

1.4 TEMPORARY UTILITIES - GENERAL

- A. The Contractor shall provide and pay all costs for temporary utilities, if required, including consumption costs.
- B. Make all temporary connections to utilities and services in locations acceptable to the local authorities having jurisdiction. Furnish all necessary labor and materials, and make all installations in a manner subject to the acceptance of such authorities.

- C. Maintain all temporary utility installations connections and remove them when no longer required. Restore the services and sources of supply to proper operating condition.
- D. The Contractor may extend and use existing utilities for temporary facilities. Prior to Substantial Completion, remove temporary connections, replace lamps, filters, etc., and restore permanent utilities to specified condition.

PART 2 – PRODUCTS

2.1 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 have 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.
- C. 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.
- D. 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 National Electrical Code for the applied loads. Use only UL-labeled wire and devices.

- E. Equipment: Provide appropriate enclosures for the environment in which equipment is placed and used, in compliance with NEMA standards.

2.2 TEMPORARY LIGHTING

- A. Provide task lighting of sufficient level for installation of the Work. If the Construction Manager does not deem the amount of task lighting to be adequate in a given area, the Contractor shall immediately increase the amount of task lighting at no additional cost. Verbal direction for the Program Management Team shall be adequate in this situation.
- B. Lighting for outdoor work areas shall be provided by the Contractor as necessary.
- C. Outdoor area lighting, in excess of any existing streetlight levels, of any site staging areas shall be provided by the Contractor. This lighting shall be in the form of dusk-to-dawn mercury vapor fixtures. Lighting shall be of sufficient levels to permit security checks of the areas and provide for minimal access, but not sufficient by itself for work activity. If the Program Management Team does not deem the amount of area lighting to be adequate in a given area, the Contractor shall immediately increase the amount of area lighting at no additional cost.

2.3 TEMPORARY HEAT AND VENTILATION

- A. The Contractor shall be responsible for providing heating and ventilation where required for satisfactory execution of the Work. Specifically, temporary heating and ventilation is required to:
 - 1. Facilitate progress of the Work.
 - 2. Protect materials from dampness and the adverse effects of low ambient temperatures.
 - 3. Prevent moisture condensation on surfaces.
 - 4. Provide suitable temperature and humidity levels for installation and curing of materials.
- B. The Contractor shall provide heat as required for any work area outside the building confines.
- C. Safe Practices for Portable Heaters:
 - 1. Locate heating units so as not to create a hazard to personnel, stored materials, or work of other contractors.
 - 2. Avoid locating heaters in the vicinity of volatile, combustible, or explosive materials.
 - 3. Ventilate areas occupied by personnel to avoid dangerous levels of exhaust gases and consumption of oxygen.
 - 4. Use heating units bearing UL, FM or other approved label(s) appropriate for application.

- F. Install all temporary heating and ventilation work in a workmanlike manner, and ensure all work complies with rules and recommendations of involved local utility company, if applicable, as well as OSHA requirements.

2.4 TEMPORARY FIRE PROTECTION

A. Specific administrative and procedural minimum actions are specified in this Paragraph, as extensions of provisions in the Owner-Contractor Agreement and other Contract Documents. These requirements have been included for special purposes as indicated. Nothing in this Paragraph is intended to limit types and amounts of fire protection required, and no omission from this Paragraph will be recognized as an indication by the County or Program Management Team that such temporary activity is not required for successful completion of the Work and compliance with requirements of Contract Documents.

B. Quality Assurance:

1. NFPA Code: Comply with NFPA Code 241 "Building Construction and Demolition Operations."
2. The Contractor shall also comply with all applicable state, city and local fire codes.

C. The Contractor shall take all necessary precautions to guard against all possible fire hazards and to prevent damage to any construction Work, building materials, equipment, field offices, storage sheds and all other property, both public and private, in accordance with all fire protection and prevention laws and codes. The Contractor will assume full responsibility for damage caused by fire to construction and building, building materials, equipment and all property, both public and private.

D. The location of the nearest corporation or public fire alarm box and the number of the local fire department shall be conspicuously posted by the Contractor in its field office and in the construction area.

E. The Contractor's superintendent in charge of the Work shall review the Project at least once a week to make certain that it adheres to the conditions and requirements set forth herein.

F. No open fires shall be permitted. The Contractor and its subcontractors will not be allowed to start fires with gasoline, kerosene or other flammable materials. The bulk storage of all flammable liquids shall be located at least 75 feet from any inhabited trailer or office and from the yard storage of flammable building materials. All flammable liquids having a flash point of 100 degrees F or below, which must be brought into any building, shall be confined to the Underwriter's Laboratories' labeled safety cans. Drums containing flammable liquids are to be equipped with approved vent pumps and located per direction of the Program Management Team. Drums with spigots are prohibited for the storage of flammable liquids on the project site.

- G. Welding, flame cutting or other operations involving the use of flame, arcs or sparking devices will not be allowed without adequate protection and shielding. All combustible and flammable material shall be removed from the immediate working area. If removal is impossible, all flammable or combustible material shall be protected with a fire blanket or suitable noncombustible shields to prevent spark, flames or hot metal from reaching the flammable or combustible materials. The Contractor shall provide the necessary personnel and firefighting equipment to effectively control incipient fires resulting from welding, flame cutting or other operations involving the use of flame, arcs or sparking devices.

- H. Only fire resistant tarpaulins with UL label and flame spread of 15 or less shall be used on this project.

- I. Use of only Underwriters Laboratory approved heaters and/or stoves is permitted in field offices or storage sheds and they shall have fire resistive material underneath and at the sides near partitions and walls. Pipe sleeves and covering shall be used where stove pipe runs through wall or roof.

- J. Smoking shall be prohibited around concentrations of combustibles and in particularly hazardous areas. Restricted areas must be plainly marked, with signs posted. No smoking rules must be strictly enforced.

- K. Fire Extinguishers:
 - 1. The Contractor shall provide and maintain in working order during construction, an adequate number of fire extinguishers for use by all trades in each area of work. Two (2) fire extinguishers shall also be placed in the vicinity of Contractor's construction office.
 - 2. In areas of flammable liquids, asphalt or electrical hazards, extinguishers of the 15 lb. carbon dioxide type or 20 lb. dry chemical type shall be provided.
 - 3. The Contractor shall maintain and inspect all fire extinguishers periodically. Fire extinguishers must be mounted in plain view and sealed, so that operation of the fire extinguisher will break the seal. In the event a fire extinguisher is discharged or damaged, it shall be removed from service and be replaced with a charged unit.
 - 4. The Contractor shall post warnings and quick instructions at each extinguisher location. The Contractor and all of its subcontractors shall instruct their personnel at the project site, at the time of their first arrival, on proper use of extinguishers and other available facilities at the project site.

2.5 TEMPORARY ENCLOSURES

- A. Provide temporary enclosures reasonably required to ensure adequate workmanship and protection from the weather and unsatisfactory ambient conditions for the Work, including those enclosures inside which temporary heat is used.

- B. Provide fire-retardant treated lumber and plywood where used for temporary enclosures.

2.6 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. Contractor might get permission to use Fulton County's restrooms. It will be decided during construction kick-off meeting.
- 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.

2.7 TEMPORARY SIGNAGE

- A. Project Sign: The Contractor shall construct, erect and maintain one (1) 4 foot by 8-foot project sign of $\frac{3}{4}$ inch (minimum) exterior grade plywood, given two coats of paint and mounted in location selected by the Program Management Team. 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. Verify sign content with County, through the Program Management Team, prior to procuring and erecting the sign.
- B. No other signs or advertising shall be displayed on the premises without the approval of the Program Management Team, other than the posting of required notices and cautionary signage by the Contractor, and signage on equipment and trailers to designate ownership.

2.8 TEMPORARY CONSTRUCTION BARRICADES AND PROTECTIVE STRUCTURES

- A. All construction barricades and protective structures shall be placed and constructed in accordance with the regulations of the local authorities having jurisdiction.
- B. Construction barricades and protective structures shall be of suitable design, maintenance, and appearance.

2.9 FIRST AID STATION

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

PART 3 – EXECUTION

3.1 TEMPORARY SYSTEMS INSTALLATION

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

3.2 DEWATERING

- A. Maintain the Project site and all Work free of water accumulation.

3.3 CONSTRUCTION TRAFFIC INGRESS TO AND EGRESS FROM SITE

- A. 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 Program Management Team prior to start of construction.
- B. Cleaning: The Contractor shall take all precautions necessary to prevent the tracking of mud and debris into the adjacent facilities. The Contractor shall immediately clean any affected area if directed by the Program Management Team.

3.4 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 Project Management Team.

- 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 Program Management Team, 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 Program Management Team at the Contractor's expense.

3.5 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 Program Management Team of any theft or damage which may delay the execution of the Work.
 - 2. The Contractor shall furnish the Program Management Team 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 locations for material deliveries, equipment deliveries, and worker access to the construction site as indicated on its site access/utilization plan and approved by the Program Management Team.
- D. The County or Program Management Team, 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.

3.5 TRASH / DEBRIS DISPOSAL

- A. The Contractor shall provide a dumpster sufficient to hold site waste from its operations and that of its subcontractors at an on-grade location approved by the Program Management Team 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 Program Management Team.

3.6 SITE CLEANING

- A. The Contractor shall be responsible for the maintenance of a clean, neat and safe project site. The Program Management Team is hereby placing the Contractor on notice that failure to clean up on a weekly basis will immediately result in the Program Management Team 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 Program Management Team.
- C. No exceptions to these rules will be allowed. Failure to immediately adhere to all of the Program Management Team's directions in this regard will result in the holdup of Contractor's progress payments until compliance with these rules are obtained.

3.7 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 Program Management Team 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 Program Management Team 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 Program Management Team.

- 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.
- J. 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
- K. 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 Program Management Team's personnel.

END OF SECTION 015000

SECTION 015719 - ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- 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.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Products, devices and materials shall be approved by authorities having jurisdiction.

PART 3 - EXECUTION

3.1 ENVIRONMENTAL PROTECTION PROCEDURES

- A. General:
 - 1. Conform to laws, ordinances, restrictions, and rules of governmental bodies having enforcement power in regard to site preservation and erosion control.
 - 2. Prevent droppings of petroleum products, cementitious waste and chemical substances on the ground or into storm, sanitary drains or waterways.
 - 3. 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.
 - 4. Take special precautions when working on floors directly above occupied floors. Minimize noise, dust, or other environmental hazards to spaces.
- B. Noise Control:
 - 1. Provide mufflers on combustion engine powered equipment to minimize noise.
- C. Air Quality Control:
 - 1. Maintain acceptable air quality at all times.
- D. Water Control:
 - 1. All equipment necessary to keep work area free from the accumulation of water during the entire progress of the Work shall be the responsibility of the Contractor.

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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. 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.
- E. 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, stone, and masonry. Do not shake out bags containing cement, lime, and other dust-causing substances.
 4. 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.
 5. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.
- F. Snow and Ice Removal:
1. Arrange for removal of snow and ice in and about the premises, as necessary to conform with local regulations on public sidewalks adjacent to the site, and as necessary on and about the site and the Work to permit safe access to continue or perform work.
 2. When performing work under exposed conditions, remove snow and ice for the protection and execution of the Work.
- G. Vermin Control: Control vermin during the construction period. If vermin are encountered, provide extermination arrangements as necessary.
- H. 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.
- I. 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 site work damaged during construction shall be restored to good and acceptable condition.

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- J. Damage from Storms: Secure the site to avoid damage to the Work materials, as well as damage to adjacent property.

END OF SECTION 015719

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.

- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Program Management Team. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Program Management Team's signature for receipt of submittals.
 - 5. Submit test/adjust/balance records.
 - 6. Submit sustainable design submittals not previously submitted.
 - 7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.
 - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 - 6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 8. Complete final cleaning requirements, including touchup painting.
 9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, FCCPM will either proceed with inspection or notify Contractor of unfulfilled requirements. FCCPM will notify Contractor of items, either on Contractor's list or additional items identified by engineer, that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report and warranty.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, FCCPM will either proceed with inspection or notify Contractor of unfulfilled requirements. FCCPM will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if

necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file.
 - b. PDF electronic file.

1.8 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment [, elevator equipment,] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

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- m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
- p. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Product maintenance manuals.
 - 5. Systems and equipment maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Engineer will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to FCPMT.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 - 2. **Three** bound paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. FCPMT will return **two** reviewed copies with noted comments.
- C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least **15** days before commencing demonstration and training. FCPMT will return copy with comments.

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1. Correct or revise each manual to comply with FCPMT's comments. Submit copies of each corrected manual within **15** days of receipt of Architect's and FCPMT's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- C. Title Page: Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for FCPMT.
 7. Name and contact information for Engineer.
 8. Names and contact information for major consultants to the Engineer that designed the systems contained in the manuals.
 9. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.

2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

G. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, **loose-leaf** binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, **and** subject matter of contents, **and indicate Specification Section number on bottom of spine.** Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.

3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Precautions against improper use.
 9. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.

- C. Operating Procedures: Include the following, as applicable:
 - 1. Startup procedures.
 - 2. Equipment or system break-in procedures.
 - 3. Routine and normal operating instructions.
 - 4. Regulation and control procedures.
 - 5. Instructions on stopping.
 - 6. Normal shutdown instructions.
 - 7. Seasonal and weekend operating instructions.
 - 8. Required sequences for electric or electronic systems.
 - 9. Special operating instructions and procedures.

- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

2.4 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.

- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.

- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
- F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set of marked-up record prints.
 - 2. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit one paper-copy set of marked-up record prints.
 - 2) Submit PDF electronic files of scanned record prints.
 - 3) Submit record digital data files.
 - 4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
- B. Record Specifications: Submit one paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy and annotated PDF electronic files and directories of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.
1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it.
 - c. Record and check the markup before enclosing concealed installations.
 2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with FCPMT and provide one copy of marked-up record prints to FCPMT. Following receipt of written request from FCPMT, prepare full sets of corrected digital data files of the Construction Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Construction Drawings.
 2. Format: DWG, Version, Microsoft Windows operating system.
 3. Format: Annotated PDF electronic file.
 4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 5. Refer instances of uncertainty to Engineer through FCPMT for resolution.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Construction Drawings. Name each file with the sheet identification. Include identification in each digital data file.

4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Engineer and FCPMT.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as annotated PDF electronic file.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file and paper copy.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

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- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Construction Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for FCPMT's reference during normal working hours.

END OF SECTION 017839

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Penetrations in fire-resistance-rated walls.
2. Penetrations in horizontal assemblies.
3. Penetrations in smoke barriers.

1.2 INFORMATIONAL SUBMITTALS

A. Product test reports.

1.3 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."

- 2) Intertek Group in its "Directory of Listed Building Products."
- 3) FM Global in its "Building Materials Approval Guide."

2.2 PENETRATION FIRESTOPPING SYSTEMS

- A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
 1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
 1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
- D. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479, based on testing at a positive pressure differential of 0.30-inch wg (74.7 Pa).
 1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at and no more than 50-cfm (0.024-cu. m/s) cumulative total for any 100 sq. ft. (9.3 sq. m) at both ambient and elevated temperatures.
- E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E 84.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.
- C. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- D. Install fill materials by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.2 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches (76 mm) high and with minimum 0.375-inch (9.5-mm) strokes.
 - 1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet (4.57 m) from end of wall and at intervals not exceeding 30 feet (9.14 m).
- B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.

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3. Designation of applicable testing and inspecting agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.3 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

END OF SECTION 078413

**SECTION 010400
QUALITY REQUIREMENTS**

PART 1 GENERAL

.1.01 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. References and standards.
- D. Testing and inspection agencies and services.
- E. Contractor's design-related professional design services.
- F. Control of installation.
- G. Tolerances.
- H. Manufacturers' field services.
- I. Defect Assessment.

.1.02 RELATED REQUIREMENTS

- A. Document 00 720 - General Conditions: Inspections and approvals required by public authorities.
- B. Section 01 210 - Allowances: Allowance for payment of testing services.
- C. Section 01 300 - Administrative Requirements: Submittal procedures.
- D. Section 01 421 - Definitions.
- E. Section 01 600 - Product Requirements: Requirements for material and product quality.

.1.03 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2014).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2017.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2015a, with Editorial Revision (2016).
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.
- G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.
- H. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2017.

.1.04 DEFINITIONS

- A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.

.1.05 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Base design on performance and/or design criteria indicated in individual specification sections.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:

1. Concrete Mix Design: As described in Section 03 300 - Cast-in-Place Concrete. No specific designer qualifications are required.
2. Structural Design of Metal Fabrications: As described in Section 05 500 - Metal Fabrications.
3. Structural Design of Stairs: As described in Section 05 510 - Metal Stairs.
4. Structural Design of Railings: As described in Section 05 521 - Pipe and Tube Railings.
5. Structural Design: Include physical characteristics, engineering calculations, and resulting dimensional limitations as described in Section 08 431 - Aluminum-Framed Storefronts.
6. Structural Design of Canopy: As described in Section 10 731 - Metal Canopies.
7. Structural Design of Foundation: As described in Section 10 750 - Flagpoles.
8. Design of Structural Components: As described in Section 14 240 - Hydraulic Elevators.
9. Sprinkler Layout: Coordinate with ceiling installation, detailed pipe layout, and hydraulic calculations as described in Section 21 130 - Fire-Suppression Sprinkler Systems.
10. Written Sequence of Operation: Include entire HVAC system and each piece of equipment, as described in Section 23 099 - Sequence of Operations for HVAC Controls.

.1.06 SUBMITTALS

- A. See Section 01 300 - Administrative Requirements, for submittal procedures.
- B. Designer's Qualification Statement: Submit for Architect's knowledge as contract administrator, or for Fulton County Government's information.
 1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
 - a. Full name.
 - b. Professional licensure information.
 - c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.
- C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Fulton County Government's information.
 1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
 2. Include required product data and shop drawings.
 3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
 4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Fulton County Government's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Fulton County Government.
 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
- F. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Fulton County Government.
 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Fulton County Government.

.1.07 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

.1.08 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Fulton County Government will employ services of an independent testing agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01 2100; see Section 01 2100 and applicable sections for description of services included in allowance.
- B. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:
 - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093 and ASTM D3740
 - 2. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
 - 3. Laboratory: Authorized to operate in the State in which the Project is located.
 - 4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 - 5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

.3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

.3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

.3.03 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Attend preconstruction meetings and progress meetings.
 - 7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 - 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - 6. Arrange with Fulton County Government's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

.3.04 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

.3.05 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.

- B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION 01 400

SECTION 02410
DEMOLITION

PART 1 GENERAL

.1.01 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.
- B. Abandonment and removal of existing utilities and utility structures.

.1.02 RELATED REQUIREMENTS

- A. Section 01 100 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 100 - Summary: Sequencing and staging requirements.
- C. Section 01 100 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- D. Section 01 500 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

.1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

.1.04 SUBMITTALS

- A. See Section 01 300 - Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
 - 1. Areas for temporary construction and field offices.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 - 2. Identify demolition firm and submit qualifications.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 3 EXECUTION

.2.01 SCOPE

- A. Remove portions of existing buildings in the following sequence:
 - 1. Remove selected existing construction, as depicted in the Drawings, as necessary to complete the work. Coordinate the demolition with the overall construction phasing.
- B. Remove paving and curbs as required to accomplish new work.
- C. Remove other items indicated, for salvage.
- D. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 220.

.2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with other requirements specified in Section 01 700.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Use of explosives is not permitted.
 - 3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 4. Provide, erect, and maintain temporary barriers and security devices.
 - 5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

7. Do not close or obstruct roadways or sidewalks without permit.
 8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
 - C. Do not begin removal until receipt of notification to proceed from Fulton County Government.
 - D. Do not begin removal until built elements to be salvaged or relocated have been removed.
 - E. Protect existing structures and other elements that are not to be removed.
 1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
 - F. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
 - G. Hazardous Materials: Comply with 29 CFR 1926 and state and local regulations.
 - H. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.
- .2.03 EXISTING UTILITIES
- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
 - B. Protect existing utilities to remain from damage.
 - C. Do not disrupt public utilities without permit from authority having jurisdiction.
 - D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Fulton County Government.
 - E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Fulton County Government.
 - F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
 - G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
 - H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.
- .2.04 SELECTIVE DEMOLITION FOR ALTERATIONS
- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 1. Verify that construction and utility arrangements are as indicated.
 2. Report discrepancies to Architect before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
 - B. Separate areas in which demolition is being conducted from other areas that are still occupied.
 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 .
 - C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - D. Remove existing work as indicated and as required to accomplish new work.
 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 2. Remove items indicated on drawings.

- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 - 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - 3. See Section 01 1000 for other limitations on outages and required notifications.
 - 4. Verify that abandoned services serve only abandoned facilities before removal.
 - 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- F. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
 - 4. Patch as specified for patching new work.

.2.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Remove from site all materials not to be reused on site; do not burn or bury.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 410

SECTION 09050

STAINLESS STEEL WALL COVERING

PART 1 - GENERAL

1.1 SUMMARY

- A. Wall panels for wall protection

1.2 SECTION INCLUDES

- A. Stainless Steel Wall Panels

1.3 SUBMITTALS

- A. Product Data: Manufacturer's printed product data for each type of stainless steel wall panel systems specified.
- B. Detail Drawings: Mounting details with the appropriate adhesives for specific project substrates.
- C. Manufacturer's Installation Instruction: Printed installation instructions for stainless steel wall panels.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened factory packaging to the jobsite.
- B. Inspect materials at delivery to assure that specified products have been received.
- C. Store in original packaging in a climate controlled location away from direct sunlight.

1.5 PROJECT CONDITIONS

- A. Environmental Requirements: Products must be installed in an interior climate controlled environment.

1.6 WARRANTY

- A. Standard Limited Lifetime Warranty against material and manufacturing defects.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Acceptable Manufacturer: IPC Door and Wall Protection Systems, InPro Corporation, PO Box 406, Muskego, WI 53150 USA; Telephone: 800-222-5556, Fax: 888-715-8407, Internet address: <http://www.inprocorp.com>
- B. Substitutions: Approved Equal
- C. Once a product line has been established, it shall be consistently maintained throughout the entire installation from a single source.

2.2 MANUFACTURED UNITS

- A. Wall Panels
 - 1. Stainless Steel Wall Panels
 - a. Provide stainless steel wall panel systems that include panels, outside corners and inside corners. Panel system shall include stainless steel panels that have recessed overlap joints that maintain panel flatness and minimizes panel protrusion. Panel Size – Custom, Maximum 4' x 10'
 - b. Panel Thickness - 18 gauge.
 - c. Stainless Steel - Type 304
 - B. Stainless Steel Outside Corners
 - 1. 1.2" (50.8mm) x 2" (50.8mm), 16 gauge. Maximum
 - 2. Height 96", edges shall have an 11° taper
 - a. Stainless Steel - Type 304.
 - b. Attachment: Adhesive mount or screw mount
 - C. Stainless Steel Inside CornerS
 - 1. 1.2" (50.8mm) x 2" 16 gauge.
 - 2. Maximum Height 96", edges shall have an 11° taper.
 - 3. Stainless Steel - Type 304.
 - a. Attachment: Adhesive mount or screw mount

2.3 MATERIALS

- A. Equipment and materials shall be new.
- B. Stainless Steel
 - 1. Wall panels shall be manufactured from Type 304, 18 gauge. Stainless Steel.
 - 2. Outside and Inside Corners a. Thickness - 16 gauge Type 304.

2.4 COMPONENTS

- A. Attachment
- B. Panels
 - 1. Panels shall be adhered with field applied heavy duty adhesive.
 - 2. Corner Guards
 - a. Adhesive mount - Corner guards shall be adhered with field applied heavy duty adhesive and foam tape.
 - b. Screw mount – Corner guards shall be attached with stainless steel Phillips head screws into counter sunk beveled mounting holes.
 - 3. Edge finish – Edges shall be finished with color- matched caulk.

2.5 FINISH

- A. Stainless Steel: Panels and corner guards shall have a No. 4 satin finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions in which the wall panel systems will be installed.
 - I. Complete all finishing operations, including painting, before beginning installation of wall panel system materials.
- B. Wall surface shall be dry and free from dirt, grease and loose paint.

3.2 PREPARATION

- A. General: Prior to installation, clean substrate to remove dust, debris and loose particles.

3.3 INSTALLATION

- A. General: Locate the wall panels as indicated on the approved detail drawing for the appropriate substrate and in compliance with the IPC installation instructions. Install wall panels level and plumb at the height indicated on the drawings. Complete installation with inside and outside corners.

3.4 CLEANING

- A. At completion of the installation, clean surface in accordance with the IPC clean up and maintenance instructions

3.5 CUTTING AND PATCHING

- A. Any existing walls, doors and finishes shall be patched and painted to match existing conditions.

END OF SECTION 09050

SECTION 09211
GYPSON BOARD ASSEMBLIES

PART 1 GENERAL

.1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Acoustic insulation.
- E. Gypsum wallboard.
- F. Joint treatment and accessories.
- G. Acoustic (sound-dampening) wall and ceiling board.

.1.02 RELATED REQUIREMENTS

- A. Section 06 100 - Rough Carpentry: Building framing and sheathing.
- B. Section 06 100 - Rough Carpentry: Wood blocking product and execution requirements.
- C. Section 07 250 - Weather Barriers: Water-resistive barrier over sheathing.
- D. Section 07 920 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.
- E. Section 31 311 - Termite Control: Field-applied termiticide and mildewcide for metal framing.

.1.03 REFERENCE STANDARDS

- A. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2010 (Reaffirmed 2016).
- B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
- C. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board; 2012.
- D. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.
- E. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2014).
- F. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014, with Editorial Revision (2015).
- G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2017.
- H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2017a.
- I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2015.
- J. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2016.
- K. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- L. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.
- M. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2013.

- N. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2017.
- O. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing; 2013a.
- P. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets; 2017.
- Q. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units; 2017a.
- R. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- S. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2018.
- T. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2013.
- U. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- V. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- W. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- X. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- Y. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- Z. GA-216 - Application and Finishing of Gypsum Panel Products; 2016.
- AA. GA-226 - Application of Gypsum Board to Form Curved Surfaces; Gypsum Association; 2016.
- AB. GA-600 - Fire Resistance Design Manual; 2015.

.1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

PART 2 PRODUCTS

.2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
 - 1. See PART 3 for finishing requirements.
- B. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
 - 1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft (0.24 kPa) with maximum mid-span deflection of L/240.
 - 2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- C. Shaft Walls at Elevator Shafts: Provide completed assemblies with the following characteristics:
 - 1. Air Pressure Within Shaft: Intermittent loads of 5 lbf/sq ft (0.24 kPa) with maximum mid-span deflection of L/240.
 - 2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- D. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.

.2.02 METAL FRAMING MATERIALS

- A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf (L/120 at 240 Pa).

1. Studs: "C" shaped with flat or formed webs with knurled faces.
 2. Runners: U shaped, sized to match studs.
 3. Ceiling Channels: C-shaped.
 4. Furring: Hat-shaped sections, minimum depth of 7/8 inch (22 mm).
 5. Resilient Furring Channels: Single or double leg configuration; 1/2 inch (12 mm) channel depth.
- B. Shaft Wall Studs and Accessories: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.
- C. Area Separation Wall Studs and Accessories: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with specified performance requirements.
- D. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- E. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

.2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
1. American Gypsum Company: www.americangypsum.com/#sle.
 2. CertainTeed Corporation: www.certainteed.com/#sle.
 3. Continental Building Products: www.continental-bp.com/#sle.
 4. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
 5. National Gypsum Company: www.nationalgypsum.com/#sle.
 6. PABCO Gypsum: www.pabco gypsum.com/#sle.
 7. Substitutions: See Section 01 6000 - Product Requirements.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 2. Glass mat faced gypsum panels as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
 3. Unfaced fiber-reinforced gypsum panels as defined in ASTM C1278/C1278M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
 4. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
 5. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
 6. Thickness:
 - a. Vertical Surfaces: 5/8 inch (16 mm).
 - b. Ceilings: 5/8 inch (16 mm).
 - c. Multi-Layer Assemblies: Thicknesses as required to match existing construction.
- C. Abuse Resistant Wallboard:
1. Application: High-traffic areas indicated.
 2. Surface Abrasion: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
 3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
 4. Soft Body Impact: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
 5. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 6. Paper-Faced Type: Gypsum wallboard as defined in ASTM C1396/C1396M.
 7. Glass Mat-Faced Type: Gypsum wallboard as defined in ASTM C1658/C1658M.
 8. Unfaced Type: Interior fiber-reinforced gypsum panels as defined in ASTM C1278/C1278M.
 9. Type: Fire resistance rated Type X, UL or WH listed.
 10. Thickness: 5/8 inch (16 mm).
 11. Edges: Tapered.

- D. Impact Resistant Wallboard:
1. Application: High-traffic areas indicated.
 2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
 3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
 4. Soft Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
 5. Hard Body Impact: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
 6. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 7. Paper-Faced Type: Gypsum wallboard as defined in ASTM C1396/C1396M.
 8. Glass Mat-Faced Type: Gypsum wallboard as defined in ASTM C1658/C1658M.
 9. Unfaced Type: Interior fiber-reinforced gypsum panels as defined in ASTM C1278/C1278M.
 10. Type: Fire resistance rated Type X, UL or WH listed.
 11. Thickness: 5/8 inch (16 mm).
 12. Edges: Tapered.
- E. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
 2. Application: Horizontal surfaces behind tile in wet areas including countertops and floors.
 3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 4. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 1/2 inch (12.7 mm).
 5. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
 - a. Thickness: 1/2 inch (12.7 mm).
 6. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
 - a. Regular Type: Thickness 1/2 inch (12.7 mm).
 - b. Fire Resistant Type: Type X core, thickness 5/8 inch (16 mm).
- F. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
1. Application: Vertical surfaces behind thinset tile, except in wet areas.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
 4. Type: Regular and Type X, in locations indicated.
 5. Type X Thickness: 5/8 inch (16 mm).
 6. Type C Thickness: 1/2 inch (13 mm).
 7. Regular Board Thickness: 1/2 inch (13 mm).
 8. Edges: Tapered.
- G. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings, unless otherwise indicated.
 2. Thickness: 1/2 inch (13 mm).
 3. Edges: Tapered.
- H. Acoustical Sound Dampening Wall and Ceiling Board: Two layers of heavy paper faced, high density gypsum board separated by a viscoelastic polymer layer and capable of achieving STC rating of 50 or more in typical stud wall assemblies as calculated in accordance with ASTM E413 and when tested in accordance with ASTM E90.
1. Thickness: 1/2 inch (13 mm).
 2. Long Edges: Tapered.
 3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.

- I. Acoustical Fiberboard: ASTM C208 cellulosic fiberboard without facing or coating; square edged.
 - 1. Thickness: 1/2 inch (13 mm).
 - 2. In 1-Hour Fire-Rated Partitions: UL listed for assembly used.
- J. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
 - 1. Application: Exterior sheathing, unless otherwise indicated.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - 3. Fungal Resistance: No fungal growth when tested in accordance with ASTM G21.
 - 4. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
 - 5. Paper-Faced Sheathing: Gypsum sheathing board as defined in ASTM C1396/C1396M, moisture resistant type with water repellent paper faces.
 - 6. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
 - 7. Core Type: Regular and Type X, as indicated.
 - 8. Type X Thickness: 5/8 inch (16 mm).
 - 9. Regular Board Thickness: 1/2 inch (13 mm).
 - 10. Edges: Square.
- K. Shaftwall and Coreboard: Type X; 1 inch (25 mm) thick by 24 inches (610 mm) wide, beveled long edges, ends square cut.
 - 1. Paper-Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C1396/C1396M; water-resistant faces.
 - 2. Glass Mat Faced Type: Glass mat shaftliner gypsum panel or glass mat coreboard gypsum panel as defined in ASTM C1658/C1658M.
 - 3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.

2.04 GYPSUM WALLBOARD ACCESSORIES

- A. Sound Isolation Tape: Elastomeric foam tape for sound decoupling.
 - 1. Surface Burning Characteristics: Provide assemblies with flame spread index of 75 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
 - 2. Tape Thickness: 1/4 inch (6 mm).
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- C. Water-Resistive Barrier: As specified in Section 07 250.
- D. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
 - 1. Types: As detailed or required for finished appearance.
 - 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
- E. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 - 1. Fiberglass Tape: 2 inch (50 mm) wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
 - 2. Paper Tape: 2 inch (50 mm) wide, creased paper tape for joints and corners, except as otherwise indicated.
 - 3. Joint Compound: Setting type, field-mixed.
- F. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch (0.84 mm) in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.
- G. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch (0.84 to 2.84 mm) in Thickness: ASTM C954; steel drill screws, corrosion resistant.
- H. Nails for Attachment to Wood Members: ASTM C514.
- I. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

.3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

.3.02 SHAFT WALL INSTALLATION

- A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
 - 1. Fasten runners to structure with short leg to finished side, using appropriate power-driven fasteners at not more than 24 inches (600 mm) on center.
 - 2. Install studs at spacing required to meet performance requirements.
- B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.
 - 1. On walls over sixteen feet high, screw-attach studs to runners top and bottom.
 - 2. Seal perimeter of shaft wall and penetrations with acoustical sealant.

.3.03 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 - 1. Level ceiling system to a tolerance of 1/1200.
 - 2. Laterally brace entire suspension system.
- C. Studs: Space studs at 16 inches on center (at 406 mm on center).
 - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 - 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
 - 3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- E. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches (100 mm) from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches (600 mm) on center.
 - 1. Orientation: Horizontal.
 - 2. Spacing: As indicated.
- F. Acoustic Furring: Install resilient channels at maximum 24 inches (600 mm) on center. Locate joints over framing members.
- G. Furring for Fire Ratings: Install as required for fire resistance ratings indicated and to GA-600 requirements.

.3.04 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Sound Isolation Tape: Apply to vertical studs and top and bottom tracks/runners in accordance with manufacturer's instructions.
- C. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 - 1. Place one bead continuously on substrate before installation of perimeter framing members.
 - 2. Place continuous bead at perimeter of each layer of gypsum board.
 - 3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

.3.05 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
 - 1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- D. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 - 1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.
- E. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- F. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of non-rated double-layer assemblies, which may be installed by means of adhesive lamination.
- G. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For non-rated assemblies, install as follows:
 - 1. Single-Layer Applications: Screw attachment.
- H. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.

.3.06 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 - 1. Not more than 30 feet (10 meters) apart on walls and ceilings over 50 feet (16 meters) long.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

.3.07 JOINT TREATMENT

- A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.
- B. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.
- C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).
- E. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

.3.08 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

END OF SECTION 09 211

SECTION 09 300

TILING

PART 1 GENERAL

.1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as tile substrate.
- D. Stone thresholds.
- E. Ceramic trim.
- F. Non-ceramic trim.

.1.02 RELATED REQUIREMENTS

- A. Section 07 920 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

.1.03 REFERENCE STANDARDS

- A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2014.
- B. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- C. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement; 1999 (Reaffirmed 2010).
- D. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
- E. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- F. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 1999 (Reaffirmed 2010).
- G. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2010).
- H. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2010).
- I. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).
- J. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2010 (Reaffirmed 2016).
- K. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- L. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2010).
- M. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2013 (Revised).
- N. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Reaffirmed 2016).
- O. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).

- P. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.
- Q. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014.
- R. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
- S. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.
- T. ASTM C847 - Standard Specification for Metal Lath; 2018.
- U. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2017.

.1.04 SUBMITTALS

- A. See Section 01 300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches (457 by 457 mm) in size illustrating pattern, color variations, and grout joint size variations.

.1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.

.1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

.1.07 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during installation of mortar materials.

PART 2 PRODUCTS

.2.01 TILE

- A. Manufacturers:
 - 1. American Olean Corporation: www.americanolean.com/#sle.
 - 2. Dal-Tile Corporation: www.daltile.com/#sle.
 - 3. Emser Tile, LLC: www.emser.com/#sle.
 - 4. Tectura Designs, a division of Wausau Tile Inc: www.tecturadesigns.com/#sle.
 - 5. Terrazzo & Marble Supply Companies: www.tmsupply.com/#sle.
 - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Ceramic Mosaic Tile:
- C. Glazed Wall Tile:
- D. Quarry Tile:
- E. Porcelain Tile:

.2.02 TRIM AND ACCESSORIES

- A. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
 - 1. Manufacturers: Same as for tile.
- B. Non-Ceramic Trim: Satin brass anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.

- C. Thresholds: Marble, white or gray, honed finish; 2 inches (51 mm) wide by full width of wall or frame opening; 1/2 inch thick (12.7 mm thick); beveled one long edge with radiused corners on top side; without holes, cracks, or open seams.

.2.03 SETTING MATERIALS

A. Manufacturers:

1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
2. Bostik Inc: www.bostik-us.com/#sle.
3. Custom Building Products: www.custombuildingproducts.com/#sle.
4. LATICRETE International, Inc: www.laticrete.com/#sle.
5. Merkrete, by Parex USA, Inc: www.merkrete.com/#sle.
6. TEC, an H.B. Fuller Construction Products Brand: www.tecspecialty.com/#sle.
7. Substitutions: See Section 01 6000 - Product Requirements.

B. Improved Latex-Portland Cement Mortar Bond Coat: ANSI A118.15.

1. Applications: Use this type of bond coat where indicated and where no other type of bond coat is indicated.
2. Products:
 - a. ARDEX Engineered Cements; S 28: www.ardexamericas.com/#sle.
 - b. Custom Building Products; Complete Contact-LFT Premium Rapid Setting Large Format Tile Mortar, with Multi-Surface Bonding Primer: www.custombuildingproducts.com/#sle.
 - c. LATICRETE International, Inc; LATICRETE 254 Platinum: www.laticrete.com/#sle.
 - d. TEC, an H.B. Fuller Construction Products Brand; TEC 3N1 Performance Mortar: www.tecspecialty.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

C. Mortar Bed Materials: Pre-packaged mix of Portland cement, sand, latex additive, and water.

1. Products:
 - a. ARDEX Engineered Cements; A 38: www.ardexamericas.com/#sle.
 - b. LATICRETE International, Inc; LATICRETE 3701 Fortified Mortar Bed: www.laticrete.com/#sle.
 - c. Merkrete, by Parex USA, Inc; Merkrete Underlay C: www.merkrete.com/#sle.
 - d. Proflex Products, Inc; MSI - Mud Set Installation: www.proflex.us/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

.2.04 GROUTS

A. Manufacturers:

1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
2. Bostik Inc: www.bostik-us.com/#sle.
3. Custom Building Products: www.custombuildingproducts.com/#sle.
4. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
5. Merkrete, by Parex USA, Inc; Merkrete Duracolor Non-Sanded Color Grout: www.merkrete.com/#sle.
6. TEC, an H.B. Fuller Construction Products Brand; ____: www.tecspecialty.com/#sle.
7. Substitutions: See Section 01 6000 - Product Requirements.

B. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.

1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch (3.2 mm) wide and larger; use unsanded grout for joints less than 1/8 inch (3.2 mm) wide.

C. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.

1. Applications: Where indicated.

.2.05 MAINTENANCE MATERIALS

- A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.

1. Applications: Between tile and plumbing fixtures.
2. Color(s): As selected by Architect from manufacturer's full line.
3. Products:
 - a. ARDEX Engineered Cements; ARDEX SX: www.ardexamericas.com/#sle.
 - b. Custom Building Products; Commercial 100% Silicone Caulk: www.custombuildingproducts.com/#sle.
 - c. LATICRETE International, Inc; LATICRETE LATASIL: www.laticrete.com/#sle.
 - d. Merkrete, by Parex USA, Inc; Merkrete Colored Caulking: www.merkrete.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- B. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
 1. Composition: Water-based colorless silicone.
 2. Products:
 - a. Merkrete, by Parex USA, Inc; Merkrete Grout Sealer: www.merkrete.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.06 ACCESSORY MATERIALS

- A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
 1. Type: Fluid-applied.
 2. Thickness: 20 mils (0.5 mm), maximum.
 3. Crack Resistance: No failure at 1/16 inch (1.6 mm) gap, minimum.
 4. Products:
 - a. LATICRETE International, Inc; LATICRETE Blue 92 Anti-Fracture Membrane: www.laticrete.com/#sle.
 - b. Merkrete, by Parex USA, Inc; Merkrete Fracture Guard: www.merkrete.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- B. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 1. Crack Resistance: No failure at 1/16 inch (1.6 mm) gap, minimum; comply with ANSI A118.12.
 2. Fluid or Trowel Applied Type:
 - a. Material: Synthetic rubber or Acrylic.
 - b. Thickness: 25 mils (0.6 mm), minimum, dry film thickness.
 - c. Products:
 - 1) ARDEX Engineered Cements; ARDEX 8+9: www.ardexamericas.com/#sle.
 - 2) Custom Building Products; RedGard Crack Prevention and Waterproofing Membrane: www.custombuildingproducts.com/#sle.
 - 3) TEC, an H.B. Fuller Construction Products Brand; TEC HydraFlex Waterproofing Crack Isolation Membrane: www.tecspecialty.com/#sle.
 - 4) LATICRETE International, Inc; LATICRETE HYDRO BAN: www.laticrete.com/#sle.
 - 5) Merkrete, by Parex USA, Inc; Merkrete Hydro Guard 2000: www.merkrete.com/#sle.
- C. Reinforcing Mesh: 2 by 2 inch (51 by 51 mm) size weave of 16/16 wire size; welded fabric, galvanized.
- D. Metal Lath: ASTM C847, Flat diamond mesh, of weight to suit application, galvanized finish.
- E. Underlayment at Floors: Specifically designed for bonding to thin-set setting mortar; not primarily a waterproofing material and having the following characteristics:
 1. Crack Resistance: No failure at 1/16 inch (1.6 mm) gap, minimum; comply with ANSI A118.12.
 2. Water Resistance: Comply with ANSI A118.10, bonded waterproofing.
 3. Type: Fluid or Trowel Applied.
 - a. Products:
 - 1) Proflex Products, Inc; Hydra-Seal: www.proflex.us/#sle.
 - 2) Substitutions: See Section 01 6000 - Product Requirements.
 4. Type: Thin-Set Mortar Adhered Sheet.
 - a. Products:

- 1) ARDEX Engineered Cements; ARDEX UI 740 Flexbone:
www.ardexamericas.com/#sle.
 - 2) Custom Building Products; EasyMat Tile & Stone Underlayment:
www.custombuildingproducts.com/#sle.
 - 3) Custom Building Products; SpiderWeb II Uncoupling Mat:
www.custombuildingproducts.com/#sle.
 - 4) Noble Company; NobleSeal SIS: www.noblecompany.com/#sle.
 - 5) Pliteq, Inc; GenieMat RST: www.pliteq.com/#sle.
 - 6) Substitutions: See Section 01 6000 - Product Requirements.
- F. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch (12.7 mm) thick; 2 inch (51 mm) wide coated glass fiber tape for joints and corners.
1. Products:
 - a. Custom Building Products; WonderBoard Lite Backerboard:
www.custombuildingproducts.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- G. Mesh Tape: 2 inch (50 mm) wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION

.3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
- D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
- E. Verify that required floor-mounted utilities are in correct location.

.3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

.3.03 INSTALLATION - GENERAL

- A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Tile to match existing color, texture, and pattern as closely as possible.
- C. Layout pattern to match existing. Do not interrupt tile pattern through openings.
- D. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- E. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- F. Form internal angles square and external angles bullnosed.

- G. Install non-ceramic trim in accordance with manufacturer's instructions.
- H. Install thresholds where indicated.
- I. Sound tile after setting. Replace hollow sounding units.
- J. Keep control and expansion joints free of mortar, grout, and adhesive.
- K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- L. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- M. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

.3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over exterior concrete substrates, install in accordance with TCNA (HB) Method F102, with standard grout.
- B. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
 - 1. Use uncoupling membrane under all tile unless other underlayment is indicated.
 - 2. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.
 - 3. Where epoxy bond coat and grout are indicated, install in accordance with TCNA (HB) Method F131.
 - 4. Where furan bond coat and grout are indicated, install in accordance with TCNA (HB) Method F133.
 - 5. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCNA (HB) Method F115.
- C. Over wood substrates, install in accordance with TCNA (HB) Method F142, with standard grout, unless otherwise indicated.
 - 1. Where epoxy bond coat and grout are indicated, install in accordance with TCNA (HB) Method F143.
- D. Over wood substrate with backer board underlayment, install in accordance with TCNA (HB) Method F144, for cementitious backer boards, with standard grout.
- E. Install tile-to-tile floor movement joints in accordance with TCNA (HB) Method EJ171F.

.3.05 INSTALLATION - FLOORS - MORTAR BED METHODS

- A. Over exterior concrete substrates, install in accordance with TCNA (HB) Method F101, bonded, with standard grout.
- B. Over interior concrete substrates, install in accordance with TCNA (HB) Method F111, with cleavage membrane, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, with standard grout or no mention of grout type, install in accordance with TCNA (HB) Method F121.
 - 2. Where epoxy bond coat and grout are indicated, install in accordance with TCNA (HB) Method F132, bonded.
 - 3. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCNA (HB) Method F114, with cleavage membrane.
- C. Over wood substrates, install in accordance with TCNA (HB) Method F141, with standard grout, unless otherwise indicated.
- D. Cleavage Membrane: Lap edges and ends.
- E. Waterproofing Membrane: Install as recommended by manufacturer and as specified in the section in which the product is specified.
- F. Mortar Bed Thickness: 5/8 inch (15.9 mm), unless otherwise indicated.

.3.06 INSTALLATION - WALL TILE

- A. On exterior walls install in accordance with TCNA (HB) Method W244, thin-set over cementitious backer units, with waterproofing membrane.
- B. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.
- C. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.
 - 1. Where mortar bed is indicated, install in accordance with TCNA (HB) Method W222, one coat method.
 - 2. Where waterproofing membrane is indicated other than at showers and bathtub walls, install in accordance with TCNA (HB) Method W222, one coat method.
- D. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.
- E. Over metal studs without backer install in accordance with TCNA (HB) Method W241, mortar bed, with membrane where indicated.

.3.07 CLEANING

- A. Clean tile and grout surfaces.

.3.08 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION 09300

SECTION 09510
ACOUSTICAL CEILINGS

PART 1 GENERAL

.1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

.1.02 RELATED REQUIREMENTS

- A. Section 21 130 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.
- B. Section 23 370 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- C. Section 26 510 - Interior Lighting: Light fixtures in ceiling system.
- D. Section 27 511 - Public Address Systems: Speakers in ceiling system.
- E. Section 28 460 - Fire Detection and Alarm: Fire alarm components in ceiling system.

.1.03 REFERENCE STANDARDS

- A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2017.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2017.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
- E. UL (FRD) - Fire Resistance Directory; Current Edition.

.1.04 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

.1.05 SUBMITTALS

- A. See Section 01 300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components.

.1.06 QUALITY ASSURANCE

- A. Fire-Resistive Assemblies: Complete assembly listed and classified by UL (FRD) for the fire resistance indicated.
- B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

.1.07 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F (16 degrees C), and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

.2.01 MANUFACTURERS

- A. Acoustic Tiles/Panels:

1. Armstrong World Industries, Inc: www.armstrong.com/#sle.
2. Acoustic Ceiling Products, Inc: www.acpideas.com/#sle.
3. CertainTeed Corporation: www.certainteed.com/#sle.
4. Hunter Douglas Architectural: www.hunterdouglasarchitectural.com/#sle.
5. TECHLITE: www.techlite.com/#sle.
6. USG: www.usg.com/#sle.
7. Substitutions: See Section 01 6000 - Product Requirements.

B. Suspension Systems:

1. Armstrong World Industries, Inc: www.armstrong.com/#sle.
2. CertainTeed Corporation: www.certainteed.com/#sle.
3. Hunter Douglas Architectural: www.hunterdouglasarchitectural.com/#sle.
4. Rockfon, LLC: www.rockfon.com/#sle.
5. USG: www.usg.com/#sle.
6. Substitutions: See Section 01 600 - Product Requirements.

.2.02 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

1. Units for Installation in Fire-Rated Suspension System: Listed and classified for the fire-resistive assembly as part of suspension system.

B. Acoustical Panels: Match existing ceiling layout, color, texture, and patterns as closely as possible. Plastic faced mineral fiber, ASTM E1264 Type IV, with the following characteristics:

1. Size: 24 by 24 inches (600 by 600 mm).
2. Thickness: 3/4 inches (19 mm).
3. Composition: Wet felted.
4. Edge: Square.
5. Surface Color: White.
6. Suspension System: Exposed grid.

C. Acoustical Panels:

1. Size: 24 by 24 inches (600 by 600 mm).
2. Panel Edge: Square.
3. Surface Pattern: Perforated.
4. Surface Color: White.
5. Suspension System: Exposed grid.

.2.03 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Match existing ceiling layout, color, texture, and patterns as closely as possible. Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

B. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; heavy-duty.

1. Profile: Tee; 15/16 inch (24 mm) wide face.
2. Construction: Double web.
3. Finish: White painted.

C. Fire-Rated Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; light-duty. Match existing ceiling layout, color, texture, and patterns as closely as possible.

1. Profile: Tee; 15/16 inch (24 mm) wide face.
2. Construction: Double web.

.2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.

1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.

- C. Acoustical Insulation: ASTM C665, friction fit type, unfaced batts.
 - 1. Thickness: 2 inch (50 mm).
 - 2. Size: To fit acoustical suspension system.
- D. Gypsum Board: Fire rated type; 5/8 inch (15 mm) thick, ends and edges square, paper faced.
- E. Acoustical Sealant For Perimeter Moldings: Non-hardening, non-skinning, for use in conjunction with suspended ceiling system.
- F. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

.3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

.3.02 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.
- D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- E. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- F. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- G. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- I. Support fixture loads using supplementary hangers located within 6 inches (150 mm) of each corner, or support components independently.
- J. Do not eccentrically load system or induce rotation of runners.
- K. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.

.3.03 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Match existing ceiling layout, color, texture, and patterns as closely as possible.
- C. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- D. Fit border trim neatly against abutting surfaces.
- E. Install units after above-ceiling work is complete.
- F. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- G. Cutting Acoustical Units:
 - 1. Make field cut edges of same profile as factory edges.
- H. Where round obstructions occur, provide preformed closures to match perimeter molding.

.3.04 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION 09510

SECTION 09912
INTERIOR PAINTING

PART 1 GENERAL

.1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Elevator pit ladders.
 - 3. Surfaces inside cabinets.
 - 4. Prime surfaces to receive wall coverings.
 - 5. Mechanical and Electrical:
 - a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
 - b. In finished areas, paint shop-primed items.
 - c. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
 - d. Paint dampers exposed behind louvers, grilles, to match face panels.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
 - 6. Marble, granite, slate, and other natural stones.
 - 7. Floors, unless specifically indicated.
 - 8. Ceramic and other tiles.
 - 9. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
 - 10. Glass.
 - 11. Concrete masonry units in utility, mechanical, and electrical spaces.
 - 12. Acoustical materials, unless specifically indicated.
 - 13. Concealed pipes, ducts, and conduits.

.1.02 RELATED REQUIREMENTS

- A. Section 05 500 - Metal Fabrications: Shop-primed items.
- B. Section 05 510 - Metal Stairs: Shop-primed items.
- C. Section 09 911 - Exterior Painting.

.1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.
- D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

- E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- F. SSPC-SP 2 - Hand Tool Cleaning; 1982, with Editorial Revision (2004).
- G. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- H. SSPC-SP 13 - Surface Preparation of Concrete; 1997 (Reaffirmed 2003).

.1.04 SUBMITTALS

- A. See Section 01 300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. MPI product number (e.g. MPI #47).
 - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 - 4. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit two paper chip samples, 2 x 3 inch (____ by ____ mm) in size illustrating range of colors available for each surface finishing product scheduled.
- D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures.
- F. Maintenance Materials: Furnish the following for Fulton County Government's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

.1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience and approved by manufacturer.

.1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

.1.07 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F (3 degrees C) above the dew point; or to damp or wet surfaces.
- D. Minimum Application Temperatures for Paints: 50 degrees F (10 degrees C) for interiors unless required otherwise by manufacturer's instructions.

- E. Minimum Application Temperature for Varnish Finishes: 65 degrees F (18 degrees C) for interior, unless required otherwise by manufacturer's instructions.
- F. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

.2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 - 1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
 - 2. Substitution of other products by the same manufacturer is preferred over substitution of products by a different manufacturer.
 - 3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
- B. Paints:
 - 1. Behr Process Corporation: www.behr.com/#sle.
 - 2. Cloverdale Paint, Brand Products of Rodda Paint Company: www.cloverdalepaint.com/#sle.
 - 3. PPG Paints: www.ppgpaints.com/#sle.
 - 4. Rodda Paint Co: www.roddapaint.com/#sle.
 - 5. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
- C. Transparent Finishes:
 - 1. Base Manufacturer: Bona US: www.bona.com 800-872-5515.
 - 2. Behr Process Corporation: www.behr.com/#sle.
 - 3. PPG Paints Deft Interior Clears/Polyurethanes: www.ppgpaints.com/#sle.
 - 4. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
- D. Stains:
 - 1. Base Manufacturer: Bona US: www.bona.com 800-872-5515.
 - 2. Behr Process Corporation: www.behr.com/#sle.
 - 3. PPG Paints Deft Interior Stains: www.ppgpaints.com/#sle.
 - 4. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
- E. Primer Sealers: Same manufacturer as top coats.
- F. Substitutions: See Section 01 600 - Product Requirements.

.2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
 - 3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 - 4. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
 - 1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.

2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: To be selected from manufacturer's full range of available colors.
 1. Selection to be made by Architect after award of contract.
 2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Fulton County Government.
 3. Extend colors to surface edges; colors may change at any edge as directed by Architect.
 4. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
 5. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

.2.03 PAINT SYSTEMS - INTERIOR

- A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry units, brick, wood, plaster, uncoated steel, shop primed steel, galvanized steel, and aluminum.
 1. Two top coats and one coat primer.
 2. Top Coat(s): High Performance Architectural Interior Latex; MPI #138, 139, 140, or 141.
 - a. Products:
 - 1) Behr Marquee Interior Matte [No. 1450]. (MPI #138)
 - 2) PPG Paints Pitt-Glaze WB1 Pre-Catalyzed Water-Borne Acrylic Epoxy, 16-310 Series, Eggshell.
 - 3) PPG Paints Pitt-Glaze WB1 Pre-Catalyzed Water-Borne Acrylic Epoxy, 16-510 Series, Semi-Gloss.
 - 4) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1110 Series, Satin.
 - 5) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1210 Series, Semi-Gloss.
 - 6) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1310 Series, Gloss.
 - 7) PPG Paints Break-Through Interior/Exterior Satin Water-Borne Acrylic, V51-410 Series.
 - 8) PPG Paints Break-Through Interior/Exterior Gloss Water-Borne Acrylic, V71-610 Series.
 - 9) Sherwin-Williams Pre-Catalyzed Waterbased Epoxy, Eg-Shel. (MPI #139)
 - 10) Sherwin-Williams Pre-Catalyzed Waterbased Epoxy, Semi-Gloss. (MPI #141)
 - 11) Substitutions: Section 01 6000 - Product Requirements.
 3. Top Coat Sheen:
 - a. Eggshell: MPI gloss level 3; use this sheen for drywall applications.
 - b. Satin: MPI gloss level 4; use this sheen for all masonry and concrete applications.
 4. Primer: As recommended by top coat manufacturer for specific substrate.
- B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
 1. Medium duty applications include doors, door frames, railings, handrails, guardrails, and balustrades.
 2. Two top coats and one coat primer.
 3. Top Coat(s): Interior Alkyd, Water Based; MPI #167, 168, or 169.
 - a. Products:
 4. Top Coat Sheen:
 - a. Gloss: MPI gloss level 6; use this sheen at all locations.

- C. Paint I-OP-MD-WC - Medium Duty Vertical and Overhead: Including gypsum board, plaster, concrete, concrete masonry units, uncoated steel, shop primed steel, galvanized steel, and aluminum.
1. Top Coat(s): High Performance Architectural Interior Latex; MPI #138, 139, 140, or 141.
 - a. Products:
 - 1) PPG Paints Pitt-Glaze WB1 Pre-Catalyzed Water-Borne Acrylic Epoxy, 16-310 Series, Eggshell.
 - 2) PPG Paints Pitt-Glaze WB1 Pre-Catalyzed Water-Borne Acrylic Epoxy, 16-510 Series, Semi-Gloss.
 - 3) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1110 Series, Satin.
 - 4) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1210 Series, Semi-Gloss.
 - 5) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1310 Series, Gloss.
 - 6) PPG Paints Break-Through Interior/Exterior Satin Water-Borne Acrylic, V51-410 Series.
 - 7) PPG Paints Break-Through Interior/Exterior Gloss Water-Borne Acrylic, V71-610 Series.
 - 8) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Eg-Shel. (MPI #139)
 - 9) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Semi-Gloss. (MPI #141)
 - 10) Sherwin-Williams Pro Industrial Acrylic Coating, Eg-Shel.
 - 11) Sherwin-Williams Pro Industrial Acrylic Coating, Semi-Gloss. (MPI #141)
 - 12) Substitutions: Section 01 6000 - Product Requirements.
- D. Paint I-OP-FL - Wood Floors to be Painted. (Gymnasium)
1. Two top coats and one coat primer.
 2. Top Coat(s): Alkyd Floor Enamel, Gloss; MPI #27.
 - a. Products:
 - 1) PPG Paints Floor and Porch Enamel WB Alkyd, 3-610 Series, Gloss.
 - 2) Substitutions: Section 01 6000 - Product Requirements.
 3. Top Coat Sheen:
 - a. Gloss: MPI gloss level 6; use this sheen at all locations.
 4. Primer: As recommended by top coat manufacturer for specific substrate.
- E. Paint I-TR-FL - Transparent Finish on Wood Floors: (Gymnasium)
1. 2 top coats over stain.
 2. Stain: Semi-Transparent Stain for Wood.
 - a. Products:
 - 1) PPG Paints Deft Interior oil based Stain, DFT 400.
 - 2) Sherwin-Williams MinWax 250 VOC Oil Stain.
 - 3) Sherwin-Williams Wood Classics Interior Oil Stain.
 - 4) Bona US: www.bona.com 800-872-5515. Basis of Design
 3. Top Coat(s): Polyurethane Varnish, High Build.
 - a. Products:
 - 1) Sherwin-Williams MinWax High Build Polyurethane, Gloss.
 - 2) Bona US: DriFast Stain: www.bona.com 800-872-5515
 - 3) Substitutions: Section 01 6000 - Product Requirements.
 4. Top Coat Sheen:
 - a. Gloss: MPI gloss level 6; use this sheen at all locations.

.2.04 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

.3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Plaster and Stucco: 12 percent.
 - 3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
 - 4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
 - 5. Concrete Floors and Traffic Surfaces: 8 percent.

.3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or repair existing paints or finishes that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete:
 - 1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
 - 2. Clean surfaces with pressurized water. Use pressure range of 1,500 to 4,000 psi (10,350 to 27,580 kPa) at 6 to 12 inches (150 to 300 mm). Allow to dry.
 - 3. Clean concrete according to ASTM D4258. Allow to dry.
 - 4. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
- H. Masonry:
 - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
 - 2. Prepare surface as recommended by top coat manufacturer.
 - 3. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi (4,140 to 10,350 kPa) at 6 to 12 inches (150 to 300 mm). Allow to dry.
- I. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- J. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- K. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- L. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

- M. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- N. Copper: Remove contamination by steam, high pressure water, or solvent washing.
- O. Galvanized Surfaces:
 - 1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
 - 2. Prepare surface according to SSPC-SP 2.
- P. Ferrous Metal:
 - 1. Solvent clean according to SSPC-SP 1.
 - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
 - 3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
- Q. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- R. Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.
- S. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.
- T. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- G. Sand wood and metal surfaces lightly between coats to achieve required finish.
- H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- I. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- J. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION 09912

SECTION 15010

PLUMBING GENERAL

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Warranties:
 - 1. The contractor shall warrant to the Owner that work shall be free from defects and will conform to the contract documents. This warranty shall extend not less than one year from the date of beneficial occupancy.
- B. The plans accompanying these specifications are generally diagrammatic and do not show all details required for the complete work. Establish details of the work as necessary to provide for the complete installation of systems and materials.
- C. Coordinate the work with other trades, and existing conditions to avoid conflicts with items such as beams, fire barriers, ceiling types and heights, slab or wall thickness, cabinet heights, or door swings. Do not scale the plans for dimensions. Verify dimensions before starting work and report any discrepancy or interference to the Owner's representative for clarification.
- D. In the event of a discrepancy between the drawings and the specifications the more stringent requirement shall apply.
- E. Drawings are based on the equipment of one manufacturer. If equipment actually furnished have requirements other than those indicated on the drawings, services shall be adjusted as required, at no additional cost to the owner. Such adjustments are subject to review by the Architect.

1.2 QUALITY ASSURANCE

- A. Mechanical work shall be in accordance with the following codes and agencies:
 - 1. International Building Code (IBC) 2012 Edition with Georgia 2018 IBC Amendments.
 - 2. International Fire Code (IFC) 2012 Edition with Georgia 2018 IFC Amendments.
 - 3. International Plumbing Code (IPC) 2012 Edition with Georgia 2015 IPC Amendments.
 - 4. International Mechanical Code (IMC) 2012 Edition with Georgia 2018 IMC Amendments.
 - 5. International Energy Conservation Code (IECC) 2009 Edition with Georgia 2018 IECC Amendments.
 - 6. National Electrical Code (NEC), 2017 Edition
 - 7. State and local ordinances governing mechanical work.
 - 8. NFPA 90A, 2012 edition.
- B. Where the requirements of the specifications or drawings exceed those of referenced codes, standards and regulations, the drawings or specifications shall govern.
- C. Where UL listing is required, equipment and materials shall bear the UL label.

- D. The manufacturer's names and catalog numbers are subject to compliance with requirements. Substitutes of equivalent materials and equipment may be submitted for consideration. Any proposed exceptions to requirements shall be clearly and fully stated in one place, including required related changes to building systems, operating procedures, and maintenance functions.

1.3 PERMITS AND FEES

- A. Obtain permits and inspections required for the work involved and pay charges incident thereto related to:
 - 1. Water.
- B. Deliver to the Owner the certificates of inspection. Pay charges related to utility connections and coordinate with utility company for:

1.4 SUBMITTALS

- A. Provide submittals to indicate compliance with requirements. Submittals shall include:
 - 1. Specification paragraph.
 - 2. Manufacturer and model number.
 - 3. Schedule information.
 - 4. Electrical characteristics.
 - 5. Accessories and options.
 - 6. Installation instructions.
 - 7. Deviations from requirements.
- B. Product information for the following items shall be submitted for review:
 - 1. Equipment scheduled on the drawings.
 - 2. Seismic isolation devices, if required, including calculations.
 - 3. Vibration isolation.
 - 4. Other items specifically indicated to be submitted for review in other Sections.
- C. Record on one set of plans any changes and deviations from the contract plans. Record final location of equipment, piping, controls, ductwork, etc. Make sufficient measurements to locate major duct and piping runs and show same on record plans as as-built conditions. Transfer changes and deviations to reproducible plans and deliver to Owner's representative.
- D. Submittals not specifically required, or not complying with the format requirements, will be returned without review.

1.5 OPERATION AND MAINTENANCE INSTRUCTIONS

- A. Provide one hardcopy set and one electronic set of O&M Manuals. The manuals shall consist of printed material that shall, as a minimum, include:
 - 1. Parts lists for individual components of each piece of equipment.
 - 2. Manufacturer's name and address.
 - 3. Location of local parts supplier.
 - 4. Manufacturer's published operation and maintenance instructions.
 - 5. Data sheets highlighting equipment designations and model numbers.

- B. One hard copy and one electronic copy of O&M information shall be submitted for review prior to delivery to the Owner. The manual shall provide information for:
 - 1. Equipment scheduled on the drawings.
- C. Each Manual shall be compiled as follows:
 - 1. Data shall be bound in smooth surface hard back commercial quality three-ring notebooks with project identification shown on the front cover and binding back. Identification labels shall be typed and adhered with waterproof glue.
 - 2. Notebooks shall have 9-1/2-inch by 11-1/2-inch covers with back width to permit the covers to lie parallel or to converge, and have not less than 1-1/2-inch back width.
 - 3. Tabbed index divider sheets of heavy Manila paper shall be inserted between each section of the Manual for identification of Sections.
 - 4. Data sheets and diagrams shall be 8-1/2-inch x 11-inch or be mounted on 8-1/2-inch x 11-inch sheets. Drawings and diagrams larger than 8-1/2-inch by 11-inch shall be folded up from the bottom to form a height of 11-inches and folded to the left to form a width of 8-1/2-inches

1.6 INSTRUCTION OF OWNER PERSONNEL

- A. Prior to a request for final inspection, at a time designated by the Architect, instruct operating personnel designated by the Owner in operation and maintenance of the systems. The contractor shall give notice to the Architect not less than 30 days prior to the anticipated date of instruction to allow planning by the Owner.
- B. Operating and maintenance manuals and Test and Balance reports shall be submitted to the Owner 1 week prior to training.
- C. The training sessions shall include time in the field and time in the classroom. The O&M Manuals shall be used as the basis of instruction. Prepare and insert additional data when need for such data becomes apparent during instruction.
- D. The training shall consist of a minimum of 4 hours of on-site training. Training shall be conducted by the manufacturer's service personnel for each piece of equipment. Training shall include a review of the manufacturer's data sheets and O&M manuals. The contractor shall demonstrate, in the field, the sequence of operation of each piece of equipment and each system.

1.7 COMPLETION OF WORK

- A. At a minimum of two weeks prior to a request for final inspection, the contractor shall have completed and submitted the complete test and balance report.
- B. Incomplete Work: Prior to starting the inspection process at the semifinal or other inspections where work is inspected as being completed, the contractor shall give the Architect a list of work not completed, reason for non-completion, and date when said work will be completed.
- C. Inspection: At final inspection the entire system shall be shown to be in specified working condition. The following shall be available during the inspection:
 - 1. Contractor Representative.

2. Mechanic with hand tools.
3. Specified test data.
4. Complete Specifications and Drawings with addenda and revisions.
5. Operating and Maintenance Manuals.
6. Contractor's Pre-Final Punch list indicating disposition of items with initials of person confirming completion.

D. Concealed Work: Chase Walls shall be opened for inspection prior to sealing. Other concealed areas shall be opened upon request, where access is provided.

1.8 ELECTRICAL COORDINATION

- A. Review Plumbing drawings for electrical services supplied to equipment requiring electrical service. Provide equipment that matches services provided.
- B. Plumbing piping, or plumbing equipment shall not be installed in the following rooms or areas unless indicated on the Drawings:
 1. Electrical equipment rooms.
 2. Directly above or below electrical equipment.
 3. Within 42" (1065 mm) on all sides of electrical equipment rated under 600 volts.
 4. Within 60" (1525 mm) on all sides of electrical equipment rated over 600 volts.

1.9 PRODUCT DELIVERY, STORAGE, HANDLING, AND PROTECTION

- A. Provide a dry, weather protected space for storing materials. Store packaged materials in original shipping containers with manufacturer's labels and seals intact. Equipment and materials shall not be installed until environmental conditions of the job site are suitable. Replace damaged materials.

1.10 CLEANING AND PAINTING

- A. Remove oil, dirt, grease and foreign materials from equipment to provide a clean surface. Touch-up scratched or marred surfaces of equipment enclosures with paint manufactured specifically for that purpose.

1.11 SEQUENCING AND SCHEDULING

- A. Arrange for chases, slots, and openings in building structure during progress of construction to allow for plumbing installations.
- B. Coordinate the installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- C. Obtain approval from the Owner and Architect at least 7 days prior to any utility interruption or connection.

1.12 DEMOLITION

- A. Prior to submitting bids for the project, the contractor shall visit the site and shall become familiar with existing conditions that may affect the cost of the project.

- B. Notify the Owner's representative of any nonfunctioning material or potentially unsafe condition within the existing systems that is observed during the conduct of the work.
- C. Existing materials may not be reused unless otherwise stated or specified.
- D. Disconnect, demolish, and remove work specified under Division 15 and as indicated. Where pipe, insulation, or equipment to remain is damaged or disturbed, remove damaged portions and install new products of equal capacity and quality.
- E. Accessible Work: Remove indicated exposed pipe in its entirety.
- F. Abandoned Work: Cut and remove buried or concealed pipe abandoned in place, 2 inches beyond the face of adjacent construction. Cap and patch surface to match existing finish.
- G. Removal: Remove indicated equipment from the project site without interfering with other material or existing conditions. Existing material that is removed and not identified for salvage or reuse shall become property of the contractor and shall be removed from the premises.
- H. Remove Controls – Removal of controls includes sensors, actuator, valves, pneumatic tubing, wiring, flexible conduit, rigid conduit back to the main control panel or to the nearest junction box.
- I. Cutting and patching: Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for plumbing installations. Perform cutting by skilled plumbers or mechanics of the trades involved. Repair cut surfaces to match adjacent surfaces.

1.13 TESTING, ADJUSTING AND BALANCING

- A. The Contractor shall obtain the services of an independent test and balancing agency who shall perform testing and balancing of:
 - 1. Scheduled equipment.
- B. Report - The report shall be typed and shall include the following information:
 - 1. Name and address of project; name and address of Contractor; dates of tests; name and telephone number of the balancer.
 - 2. Any deviations from design data shall be explained in the report with possible reasons for deviations explained in report. Report shall be signed by balancer and shall be complete prior to final inspection.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Equipment and materials shall be new.
- B. Once a product line has been established, it shall be consistently maintained throughout the entire installation.

2.2 SLEEVES

- A. Sleeves through floors shall be schedule 40 black steel pipe.
- B. Sleeves through interior drywall shall be 26 gauge (0.55 mm) galvanized sheet metal.

2.3 FIRE STOPS

- A. Fire stops shall be asbestos free and shall provide a UL listed fire stopping system. Fire stops shall be compliance with ASTM E84, ASTM E119, ASTM E814, ANSI/UL 263, and ANSI/UL 723. Fire stops shall be: 3M, GE, Hilti, or Thomas & Betts.

2.4 HANGERS AND SUPPORTS FOR PLUMBING SYSTEMS

- A. Subject to compliance with requirements, pipe hangers and accessories shall be B-Line, Elcen, Michigan, or Grinnell.
- B. Hangers:
 - 1. Pipe hangers for steel and cast iron pipe shall be steel or malleable iron, unless indicated otherwise.
 - 2. Hangers for insulated lines shall be of sufficient size for pipe covering protection saddles and/or metal protecting bands to fit outside insulation.
 - 3. Copper piping hangers shall be copper-plated.

- C. Hanger rods:
 - 1. Sizes for single pipes:

<u>Pipe Size</u>	<u>Rod Diameter</u>
2" and smaller	0.375"
2 ½" and 3"	0.5"
4"	0.625"

- 2. Sizes for multiple pipe hangers shall be calculated for the total weight of supported piping. Channel strut systems shall be 14 gauge minimum galvanized steel with factory punched attachment holes with straps and attachment nuts.
- 3. Hanger rod sizes for sprinkler piping shall be in accordance with NFPA 13.

- D. Shields and Saddles:
 - 1. Saddles shall be installed at pipe hangers in horizontal insulated piping 2-1/2" in size and larger. Floor supported piping shall have saddles on the top and bottom of the pipe. Weld saddle lugs to pipe and fill with the same type of insulation as the pipe insulation. Saddles shall be the same thickness as the pipe insulation.

2.5 IDENTIFICATION OF PIPING AND EQUIPMENT

- A. Equipment labels shall be stenciled 1" high lettering on a white band in an accessible and visible location. Designations shall match the identifications indicated on the Drawings. Provide equipment labels for the following:
 - 1. Scheduled Water heaters.
- B. Pipe identification shall be preprinted, semi-rigid snap-on, color-coded pipe markers in accordance with ASME A13.1. Provide pipe markers for the following:
 - 1. Domestic cold water.
 - 2. Domestic hot water and hot water recirculating lines.

- C. Coordinate piping and equipment labels with identification indicated on the Drawings.
- 2.6 PRESSURE RELIEF VALVES
- A. Water pressure relief valves shall be ASME rated, bronze body construction with a steel spring. Pressure relief valves shall be: Mason-Neilan, Watts, or Wilkins.
- 2.7 PRESSURE REDUCING VALVES
- A. Pressure reducing valves for water service shall be field adjustable with bronze body construction, stainless steel spring and replaceable seat.
 - B. PRVs for plumbing water service shall be rated for 100 psig working pressure, and shall have an adjustable outlet pressure of not less than 35 to 75 psi. PRVs shall be: Watts, A.W. Cash, or Schade-Davis.
- 2.8 PRESSURE GAUGES AND GAUGE COCKS
- A. Gauges shall include 4 ½" dials, Plexiglas dial covers, safety disc and ¼" connection. Range for each gauge shall be selected such that the typical operating range falls in the approximate midpoint of the range. Gauge cocks shall be brass with lever handle. Gauges and gauge cocks shall be: Ashcroft, Moeller, Terrice, Weskler or Weiss.
- 2.9 THERMOMETERS AND TEST WELLS
- A. Thermometers shall be red-reading mercury filled adjustable angle, industrial glass type with locking device. Scale length shall be 9" (225 mm). Thermometers shall include brass separable socket. Thermometers shall be: Ashcroft, Moeller, Terrice, Weskler or Weiss.
 - B. For uninsulated piping, stem shall be 3.5" (90 mm).
 - C. For insulated piping stem, shall be 6" (150 mm). Sockets shall be extension neck type equal to thickness of insulation.
 - D. Thermometer scale range shall be as follows:
 - I. Domestic hot water 30 /240°F
 - E. Test wells shall be brass construction and shall include cap and chain with gasket. Test wells for thermometers on insulated piping shall be provided with extension neck of length equal to insulation thickness.
- 2.10 EXPANSION SEALS
- A. Expansion seal for pipe penetrations of walls below grade shall be plumbing expansion type. Manufacturer shall determine the sizing of links and sleeve for pipe sizes indicated.
 - B. Expansion seals shall be: Calpico Pipe Linx, or Thunderline Link Seal.

PART 3 - EXECUTION

- 3.1 Materials shall be installed in accordance with the manufacturer's published recommendations for installation, in accordance with any listing restrictions of a certifying laboratory or agency, and in accordance with the requirements of the authorities having jurisdiction.
- A. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
 - B. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
 - C. Install piping to permit valve servicing.
 - D. Install piping at indicated slopes.
 - E. Install piping free of sags and bends.
 - F. Install fittings for changes in direction and branch connections.
 - G. Install piping to allow application of insulation.

3.2 PIPE HANGERS AND SUPPORTS

- A. Horizontal runs of steel pipe shall be supported as follows:

<u>Pipe Size</u>	<u>Spacing of Hangers</u>
2" and smaller	8'
2 1/2" through 4"	10'
5" and larger	12'

- B. Horizontal runs of copper tubing shall be supported with hanger spacing not exceeding 6 feet for pipe size 3/4 inch and less, and 8 feet for pipe sizes 1 inch and larger.
- C. Horizontal runs of cast iron soil pipe shall be supported with hanger spacing not exceeding 5 feet with hanger placed behind soil pipe hub or at joint. Pipe hangers or supports shall be spaced not over 5 feet apart at valves. The maximum horizontal spacing shall be increased to 10 feet where 10-foot lengths of pipe are installed.
- D. A hanger shall be installed not over one foot from each change in direction of piping.
- E. Vertical piping shall be guided or supported in the center of each riser but with 10 feet maximum spacing and shall be supported at the base of the riser on a base elbow or tee with pipe stand. For non-insulated copper pipe or tubing, the riser clamp shall be copper or copper plated.
- F. Provide pipe-covering protectors where hangers or supports are installed on exterior of pipe insulation.
- G. Support bolts shall not pierce waterproofing.

- H. The body of underground piping shall be firmly bedded on solid ground and supported for its entire length.

3.3 IDENTIFICATION OF PIPING AND EQUIPMENT

- A. Equipment labels shall be installed in an accessible and visible location.
- B. Pipe identification shall be installed in the following locations:
 1. Equipment connections.
 2. Piping change of directions.
 3. Wall penetrations.
 4. Branch takeoffs.
 5. On 20-foot centers for exposed straight runs.

3.4 CUTTING AND PATCHING

- A. Do not cut any structural member without written permission from the Architect.

END OF SECTION 15010

SECTION 15250

PLUMBING INSULATION

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

- A. Materials shall be the standard products of manufacturers regularly engaged in the production of insulation products. Insulation materials shall be products that have been in use in commercial buildings for at least 2 years prior to bid opening.
- B. Insulation shall be installed by workers regularly employed for this type of work.
- C. Unless otherwise specified, indoor insulation, jackets, adhesives and tapes shall have a flame spread rating no higher than 75 and a smoke developed rating no higher than 150.
- D. The outside surface of insulation systems which are located in air plenums, in ceiling spaces, and in attic spaces shall have a flame spread rating no higher than 25 and a smoke developed rating no higher than 50. Flame spread and smoke developed ratings shall be determined by ASTM E 84-1991a. Jackets shall comply with the flame spread and smoke developed ratings required by ASTM C 921. Products shall bear a label indicating flame spread and smoke developed ratings.
- E. Materials containing asbestos shall not be used.

1.2 RELATED WORK

- A. Where pipes and ducts pass through fire walls, fire partitions, above grade floors, and fire rated chase walls, the penetration shall be sealed with firestopping .

1.3 SUBMITTALS

- A. Submit product information for insulation materials to the Architect in accordance with Division 1 and Section 15010 MECHANICAL GENERAL.

PART 2 - PRODUCTS

2.1 FIBERGLASS PIPE INSULATION

- A. Insulation shall be preformed fiberglass, meeting ASTM C 547, maximum K-value of 0.23 Btu/in. per square foot per °F per hour at 75°F (24°C) mean temperature, and vapor barrier aluminum foil and white kraft paper jacket with self-sealing longitudinal lap.
- B. Provide fiberglass pipe insulation for the following cold pipes:
 - 1. New Domestic cold water above ceiling.
- C. Provide fiberglass pipe insulation for the following hot pipes:
 - 1. New Domestic hot water and hot water recirculating lines above ceiling.

D. Fiberglass pipe insulation thickness shall be 1" [except as follows:]

	<u>Pipe Size</u>	<u>Thickness</u>
1. Domestic cold water	All sizes	½"
2. Domestic hot water	1½" to 2"	1½"
3. Domestic hot water	2½" and up	2"

E. Insulation shall be: CertainTeed, Knauf, Johns Manville, or Owens-Corning.

2.2 CELLULAR FOAM GLASS INSULATION

A. Cellular foam glass insulation shall be closed cell type in accordance with ASTM C 552-1991, Type II with maximum K-value of 0.33 Btu/inch per square foot per °F per hour at 75°F (24°C) mean temperature.

B. The following pipes shall be insulated with cellular foam glass:

1. New underground domestic hot water.
2. New utility piping in the utility chase

C. Thickness shall be 1.5" (40 mm) thick for piping 4" (100 mm) and smaller and 2" (50 mm) thick for piping 6" (150 mm) and larger.

D. Insulation shall be: Pittsburgh Corning.

E. Insulation and tape shall be: Armaflex AP, Rubatex, Halstead Insul-Tube or Kavco.

2.3 MISCELLANEOUS INSULATION MATERIALS

A. Staples shall not be allowed.

B. Finishing cement shall be mineral fiber hydraulic-setting thermal insulating cement in accordance with ASTM C 449-1988 manufactured by Keene, Pabco, Ramco, or Rock Wool.

C. Insulation adhesives shall be: Armstrong, Childers, Epolux, Foster, Marathon, or Vimasco.

D. Preformed fittings shall be covered with the PVC jackets and mitered insulation fittings shall be covered with mastic coating.

E. Pre-formed insulating fittings shall be equal thickness and composition to adjacent pipe insulation manufactured by: Hamfab, Performance Insulation Fabricators, or Quality-Fit.

F. Fitting Jackets shall be PVC by: Foster Sealfas/Speedline, Johns Manville, Zeston 2000, or Starr Davis.

G. Coal tar for field coated underground piping shall be self-priming, cold applied type by: Koppers Bitumastic 50.

H. Vapor barriers shall have a maximum permeance of 0.05 perm. (2.9 ng/s·m²·Pa)

PART 3 - EXECUTION

3.1 GENERAL

- A. Except as otherwise specified, material shall be installed in accordance with the manufacturer's written instructions.
- B. Insulation materials shall not be applied until the following have been completed:
 - 1. Rust, scale, dirt and moisture removed from surfaces to be insulated.
 - 2. Required tests
- C. Insulation shall be kept clean and dry. If insulation becomes wet, the insulation shall be removed from the jobsite and replaced with new.
- D. Repair existing insulation to the extent damaged by new work.
- E. Seal vapor barrier joints, breaks, and punctures with tape.

3.2 FIBERGLASS PIPE INSULATION

- A. Insulate fittings, flanges, strainers, unions, and valves with preformed or mitered fiberglass fittings. Wire fittings into place.
- B. For hot pipes, cover with a smoothing coat of insulating cement. Finish with glass fabric embedded into a coat of white breather coating.
- C. For cold pipes, provide vapor barrier with one layer of glass fabric embedded between two 0.063" (1.6 mm) coats of white vapor barrier coating.
- D. Glass fabric shall overlap adjoining insulation at least 2" (50 mm).
- E. Mitered fittings shall be provided with a smoothing coat of insulating cement prior to finishing. Preformed fittings shall be provided with PVC fitting jackets.

3.3 CELLULAR FOAM GLASS INSULATION FOR BELOWGROUND PIPES

- A. Belowground pipe insulation shall be set in a coat of bedding compound as recommended by the manufacturer.
- B. Stainless steel bands, 3/4 inch wide by 0.020 inch (19 mm wide by 0.5080 mm) thick shall be used to secure insulation in place. A minimum of two bands per section of insulation shall be applied. As an option, fiberglass reinforced tape may be used to secure insulation on piping up to 12 inches (300mm) diameter. A minimum of two bands per section of insulation shall be applied.
- C. At point of entry to buildings, insulation shall be terminated 4 inches (100 mm) inside the wall or floor, shall butt tightly against the aboveground insulation and the butt joint shall be sealed with vapor barrier coating.
- D. Flanges, couplings, valves, and fittings shall be insulated with factory premolded, prefabricated, or field-fabricated sections of insulation of the same material and thickness as the adjoining pipe insulation. Insulation sections shall be secured in place with wire,

bore surfaces coated, and joints sealed as specified.

- E. Insulation, including fittings, shall be finished with three coats asphaltic mastic, with 10 by 10 glass mesh reinforcing fabric embedded between coats. Fabric shall be overlapped a minimum of 2 inches (50 mm) at joints. Total film thickness shall be a minimum of 3/16 inch (4.7 mm). As an option, a bituminous laminated jacket, reinforced with 10 by 10-glass fiber mesh, shall be applied to the insulation.

3.4 WEATHERPROOFING

- A. Piping exposed to weather outside the building shall be protected with corrugated aluminum covers. Caulk seams that are perpendicular to the direction of the duct or pipe with waterproof caulking. Locate longitudinal seams on bottom surfaces. Secure covers with 3 aluminum bands per section.

3.5 PIPES PASSING THROUGH SLEEVES AND PREPARED OPENINGS

- A. Where walls are indicated to be sealed, pipe penetrations shall be sealed. Provide aluminum jacket with factory applied moisture barrier over the insulation. The aluminum jacket shall extend 2 inches (50 mm) beyond both sides of the wall and shall be secured on each end with a band.

3.6 PIPES PASSING THROUGH HANGERS

- A. Insulation shall be continuous through hangers.
- B. Insulated pipes shall be supported on hangers with the addition of a protection shield to protect insulation. The shield length shall be 6 inches.
- C. A cellular glass or calcium silicate insulation insert shall be installed under each shield at pipes 2 inches (50 mm) and larger. The insert shall cover not less than the bottom 180° arc of the pipe. Inserts shall be the same thickness as the insulation, and shall extend 2 inches (50 mm) on each end beyond the protection shield.
- D. When insulation inserts are required per the above, and the insulation thickness is less than 1 inch (25 mm) wooden or cork dowels or blocks may be installed between the pipe and the shield to prevent the weight of the pipe from crushing the insulation as an option to installing insulation inserts.
- E. Vertical pipes shall be supported with riser clamps with the addition of two protection shields covering the 360° arc of the insulation. An insulation insert of cellular glass or calcium silicate shall be installed between each shield and the pipe. The insert shall cover the 360° arc of the pipe. Inserts shall be the same thickness as the insulation, and shall extend 2 inches (50 mm) on each end beyond the protection shield. If the insulation thickness is less than 1 inch (50 mm) wooden or cork dowels or blocks may be installed between the pipe and the shield to prevent the hanger from crushing the insulation as an option instead of installing insulation inserts.
- F. The vertical weight of pipe risers shall be supported with hangers located in a horizontal section of the pipe.

- G. Vertical pipe risers longer than 30 feet (9 m), shall be additionally supported with hangers in the vertical run of the pipe which are directly clamped to the pipe, penetrating the pipe insulation. Hangers shall be insulated and the insulation jacket sealed as indicated herein for anchors in a similar service.

- H. Inserts shall be covered with a jacket material of the same appearance and quality as the adjoining pipe insulation jacket, shall overlap the adjoining pipe jacket and shall be sealed as required for the pipe jacket. The jacket material used to cover inserts in flexible cellular insulation shall conform to ASTM C 921, Type 1, and is allowed to be of a different material than the adjoining insulation material.

END OF SECTION 15250

SECTION 15410

PLUMBING PIPING, VALVES AND SPECIALTIES

PART 1 - GENERAL

1.1 RELATED WORK

- A. Hangars and support devices shall be as indicated in Section 15010, PLUMBING GENERAL.
- B. This Section includes plumbing piping systems to a point 5 feet outside the building. Excavation, trenching, and backfilling are specified in another Division.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide components and installation capable of producing piping systems with the following minimum working pressure ratings, except where indicated otherwise:
 - 1. Water Distribution Systems, Below Ground: 150 psig.
 - 2. Water Distribution Systems, Above Ground: 125 psig.
- B. QUALITY ASSURANCE
 - 1. Comply with the provisions of ASME B31.9 "Building Services Piping" for materials, products, and installation.
 - 2. Provide listing/approval stamp, label, or other marking on piping made to specified standards.

1.3 SUBMITTALS

- A. Submit product information for piping and valves to the Architect in accordance with Division 1 and Section 15010 MECHANICAL GENERAL.

PART 2 - PRODUCT

2.1 PIPE AND FITTINGS

- A. Water Distribution Piping Below Ground:
 - 1. Piping: Soft copper tube, ASTM B 88, Type K.
 - 2. Fittings: Cast copper alloy, solder joint pressure fittings with Alloy Sn95 solder, ASME B16.18.
- B. Water Distribution Piping Above Ground:
 - 1. Piping: Hard copper tube, ASTM B 88, Type K.
 - 2. Fittings: Wrought-copper or cast copper alloy pressure fittings; and solder joints with Alloy Sn95 solder, ASME B16.22.
 - 3. Copper Unions: ASME B16.18, cast-copper-alloy body, hexagonal stock, with ball-and-socket joint, metal-to-metal seating surfaces, and solder-joint, threaded, or solder-joint and threaded ends.
 - 4. Bronze flanges: ASME B16.24, Classes 150 and 300;

2.2 VALVES

- A. Unless indicated otherwise, provide valves as follows:
 - 1. Shutoff Duty: Ball valves.
- B. Unless otherwise indicated, valves size shall be same size as upstream pipe.
- C. Operators: Provide the following special operator features:
 - 1. Lever handles, on quarter-turn valves 6" and smaller, except for plug valves.
- D. Extended Stems: Where insulation is indicated or specified, provide extended stems arranged to receive insulation.
- E. Comply with MSS SP-45 for bypass and drain connections.
- F. Provide valves with the following connections types:
 - 1. Solder-Joint for copper tube, 2" and smaller. Comply with ANSI B16.18. Use solder having a melting point below 840 F (449 C) for gate, globe, and check valves; below 421 F (216 C) for ball valves.
- G. BALL VALVES
 - 1. Ball Valves, 1 Inch and Smaller: Rated for 150 psi saturated steam pressure, 400 psi WOG pressure; two-piece construction; with bronze body conforming to ASTM B 62, standard (or regular) port, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout-proof stem, and vinyl-covered steel handle. Provide solder ends for condenser water, chilled water, and domestic hot and cold water service; threaded ends for heating hot water and low-pressure steam.
 - 2. Ball Valves, 1-1/4" to 4": Rated for 150 psi saturated steam pressure, 400 psi WOG pressure; 3-piece construction; with bronze body conforming to ASTM B 62, conventional port, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout proof stem, and vinyl-covered steel handle. Provide solder ends for condenser water, chilled water, and domestic hot and cold water service; threaded ends for heating hot water and low-pressure steam.
 - 3. Ball valves shall be: Conbraco, Crane, Grinnell, Jamesbury, Jenkins, Lunkenheimer, Nibco, Powell, Stockham, or Watts
- H. CHECK VALVES
 - 1. Double Check Valve Assembly (Not for Fire Protection Water Supply):
 - a. The assembly shall meet the requirements of ASSE 1015, AWWA C510.
 - b. Top entry access points for each check assembly.
 - c. Replaceable seats.
 - d. Test cocks.
 - e. Rated 175 psi maximum working pressure with continuous temperature range of 33 to 110°F.

- f. Sizes 2-1/2" through 10" - FDA epoxy coated cast iron body, FDA epoxy coated strainer, upstream and downstream OSY – UL/FM outside stem and yoke resilient seated gate valves, flange connections: Watts Regulator Company Series 709.
 - g. Provide valves capable of being refitted while the valve remains in the line.
 - h. Swing check valves shall be: Crane, Grinnell, Hammond, Jenkins, Lunkenheimer, Milwaukee, Nibco, Powell, or Stockham.
- I. Double Check Valves:
- 1. The Lead Free* Double Check Detector Assembly shall consist of two independent tri-link check modules within a single housing, sleeve access port, four test cocks and two drip tight shutoff valves. Tri-link checks shall be removable and serviceable, without the use of special tools. The housing shall be constructed of 304 Schedule 40 stainless steel pipe with groove end connections. Tri-link checks shall have reversible elastomer discs and in operation shall produce drip tight closure against reverse flow caused by backpressure or backsiphonage. Provide full size strainer on inlet. The bypass assembly shall consist of a meter, which registers in either gallon or cubic measurement, a double check backflow assembly and required test cocks
 - 2. ASSE Standard 1015, double check valve assembly of size indicated for prevention of backflow of hazardous fluids into the potable water supply. Working pressure shall be 175 psig minimum except where indicated otherwise. Working temperature shall be for connections to cold water systems and 110°F continuous and 140°F intermittent. The backflow preventor shall include:
 - a. Two positive seating check valves.
 - b. Service to all internal components through a single access cover.
 - c. Checks shall be accessible for maintenance without removing the device from the line
 - d. 4": Fused epoxy coated cast iron body and flanged connections.
 - e. Top mounted ball valve test cocks.
 - f. Full port gate valves.
 - g. Resilient replaceable bronze seats and bronze ball valve shutoffs.
 - h. Strainer on inlet.
 - 3. Backflow preventers Assemblies shall be: Watts Series LF757DCDA,
- J. Strainers: Y pattern, except where otherwise indicated, full size of connecting piping. Include Type 304 stainless-steel screens with 3/64-inch perforations except where other screens are indicated.
- 1. Pressure Rating: 125-psig minimum steam working pressure except where otherwise indicated.
 - 2. Sizes 2-1/2 Inches and Larger: Cast-iron body, with interior FDA-approved epoxy coating and flanged ends.
 - 3. Y-Type Strainers: Screwed screen retainer with centered blowdown.
 - a. Drain: Pipe plug.
 - b. Drain: Factory- or field-installed, hose-end drain valve.

- A. Water Pressure Regulators:
 - 1. General: ASSE 1003, water pressure regulators, rated for initial working pressure of 150 psig minimum, of size, flow rate, and inlet and outlet pressures indicated. Include integral factory-installed or separate field-installed Y type strainer.
 - a. 2 Inches and Smaller: Bronze body with threaded ends.
 - b. 2-1/2 Inches and Larger: Bronze or cast-iron body with flanged ends.
 - c. Interior Lining: FDA-approved epoxy coating, for regulators with a cast-iron body.
 - d. Interior Components: Corrosion-resistant materials.
 - e. Exterior Finish: Polished chrome plate when used in chrome plated piping system.
 - 2. Single-seated, direct-operated type.
 - 3. Single-seated, direct-operated, integral-bypass type.
 - 4. Pilot-operated type, single- or double-seated, cast-iron body main valve, with bronze-body pilot valve.
 - 5. Water pressure regulators shall be Bermad, A.W. Cash, Cla-Val, Conbraco, G A Industries, Honeywell, Braukmann, Keckley, Spence, Watts, Wilkins, or Zurn.

PART 3 - EXECUTION

3.1 SERVICE ENTRANCE PIPING

- A. Extend water distribution piping and connect to water service piping of size and in location indicated for service entrance to building. Water service piping from meter to double check valve assembly should be ductile iron.
- B. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve, inside building at water service entrance.
- C. Install sleeve and mechanical sleeve seal at service penetrations through foundation wall for watertight installation. Annual spaces between sleeves and pipes in fire-resistant-rated assemblies shall be watertight and tightly packed with an approved, non shrink fire rated material.

3.2 WATER DISTRIBUTION PIPING

- A. Install piping level without pitch.

3.3 CONNECTIONS

- A. Supply Runouts to Fixtures: Install hot- and cold-water supply piping runouts of sizes indicated, but not smaller than required by plumbing code to fixtures.
- B. Mechanical Equipment Connections: Connect hot- and cold-water supply piping system to mechanical equipment as indicated. Provide shutoff valve and union for each connection; provide drain valve on drain connection. Use flanges instead of unions for connections 2-1/2" and larger.

3.4 VALVES

- A. Locate valves for easy access and provide separate support where necessary.
- B. Install valves and unions for each fixture and item of equipment arranged to allow equipment removal without system shutdown. Unions are not required on flanged devices.
- C. Install three-valve bypass around each pressure reducing valve using throttling-type valves.
- D. Install valves in horizontal piping with stem at or above the center of the pipe.
- E. Install valves in a position to allow full stem movement.
- F. Sectional Valves: Install sectional valves close to main on each branch and riser serving 2 or more plumbing fixtures or equipment connections and where indicated. Use gate or ball valves for sectional valves 2" and smaller. Use gate or butterfly valves for sectional valves 2-1/2" and larger.
- G. Shutoff Valves: Install shutoff valves on inlet to each plumbing equipment item, on each supply to each plumbing fixture not having stops on supplies, and elsewhere as indicated. For shutoff valves 2" and smaller, use gate or ball valves; for shutoff valves 2-1/2" and larger, use gate or butterfly valves.
- H. Drain Valves: Install drain valves specified in Division 15 Section "Plumbing Specialties" on each plumbing equipment item located to drain equipment for service and repair. Install drain valve at base of each riser, at low points of horizontal runs, and where required to drain water distribution piping system.
 - 1. Install hose-end drain valves at low points in water mains, risers, and branches.

3.5 PIPING SPECIALTY INSTALLATION

- A. Install backflow preventers of type, size, and capacity indicated, at each water supply connection to mechanical equipment and systems, and to other equipment and systems as indicated. Locate backflow preventer in same room as equipment being connected. Install air-gap fitting on units having atmospheric vent connection and pipe relief outlet drain to nearest floor drain. Do not install bypass around backflow preventer.
- B. Install pressure-regulating valves with inlet and outlet shutoff valves and balance cock bypass. Install pressure gage on valve outlet and install valved bypass where indicated.

3.6 TESTING OF BACKFLOW PREVENTION DEVICES

- A. New backflow prevention devices shall be tested by technicians who are certified for backflow preventer testing and repair by a certification acceptable to the City of Atlanta.

3.7 FIELD QUALITY CONTROL

- A. Inspect water distribution piping as follows:
 - 1. Do not enclose, cover, or put into operation water distribution piping system until it has been inspected and approved by city of Atlanta water inspector.

2. During progress of the installation, notify the plumbing official at least 24 hours prior to time inspection must be made. Perform tests specified below in presence of the plumbing official.
 3. Reinspections: When a plumbing official finds that piping system will not pass test or inspection, make required corrections and arrange for reinspection by the plumbing official.
 4. Reports: Prepare inspection reports signed by plumbing official.
- B. Test water distribution piping as follows:
1. Test for leaks and defects in new water distribution piping systems and parts of existing systems that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of system tested.
 2. Leave uncovered and unconcealed in new, altered, extended, or replaced water distribution piping until it has been tested and approved. Expose work that has been covered or concealed before it has been tested and approved for testing.
 3. Cap and subject the piping system to a static water pressure of 50 psig (345 kPa) above the operating pressure without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for 4 hours. Leaks and loss in test pressure constitute defects that must be repaired.
 4. Repair leaks and defects with new materials and retest system or portion thereof until satisfactory results are obtained.
 5. Prepare reports for tests and required corrective action.
 6. Inspect drainage piping as follows:
 - a. Do not enclose, cover, or put into operation drainage and vent piping system until it has been inspected and approved by the authority having jurisdiction.
 - b. During progress of installation, notify the plumbing official having jurisdiction at least 24 hours prior to time such inspection must be made. Perform tests specified below in presence of the plumbing official.
 - c. Roughing-In Inspection: Arrange for inspection of piping system after system roughing-in, before concealing, and prior to setting fixtures.
 - d. Final Inspection: Arrange for final inspection by plumbing official to observe tests specified below and to ensure compliance with requirements of plumbing code.
 7. Reinspections: Make required corrections and arrange for reinspection by plumbing official when piping system fails to pass test or inspection.
 8. Reports: Prepare inspection reports signed by the plumbing official.

3.8 CLEANING

- A. Clean and disinfect water distribution piping as follows:
1. Purge new potable water distribution piping systems and parts of existing potable water systems that have been altered, extended, or repaired prior to use.
 2. Use purging and disinfecting procedure prescribed by city of Atlanta water inspector or, if a method is not prescribed by that authority, the procedure described in either AWWA C651 or AWWA C652 or as described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Fill system or part thereof with water/chlorine solution containing at least 50 parts per million of chlorine. Isolate (valve off) and allow to stand for 24 hours.

- c. Drain system or part thereof of previous solution and refill with water/chlorine solution containing at least 200 parts per million of chlorine. Isolate and allow to stand for 3 hours.
 - d. Flush system with clean, potable water until chlorine does not remain in water coming from system following allowed standing time.
 - e. Submit water samples in sterile bottles to authority having jurisdiction. Repeat procedure if biological examination made by the authority shows evidence of contamination.
- B. Prepare and submit reports for purging and disinfecting activities.
- C. Clean interior of piping system. Remove dirt and debris as work progresses.

3.9 COMMISSIONING

- A. Fill water systems.
- B. Before operating systems, perform these steps:
- 1. Close drain valves, hydrants, and hose bibbs.
 - 2. Open shutoff valves to full open position.
 - 3. Open throttling valves to proper setting.
 - 4. Remove plugs used during testing of piping systems and plugs used for temporary sealing of piping during installation.
 - 5. Remove and clean strainer screens. Close drain valves and replace drain plugs.
- C. Check plumbing equipment and verify proper settings, adjustments, and operation. Do not operate water heaters before filling with water.
- D. Check plumbing specialties and verify proper settings, adjustments, and operation.

END OF SECTION 15410

SECTION 15440

PLUMBING FIXTURES

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with requirements of ANSI Standard A117.1, "Buildings and Facilities -- Providing Accessibility and Useability for Physically Handicapped People," and Public Law 90-480, "Architectural Barriers Act, 1968," with respect to plumbing fixtures for the physically handicapped.

1.2 DELIVERY, STORAGE, AND HANDLING

- A. Deliver plumbing fixtures in manufacturer's protective packing, crating, and covering.
- B. Store plumbing fixtures on elevated platforms in a dry location.

1.3 SUBMITTALS

- A. Submit product information for plumbing fixtures to the Architect in accordance with Section 15010 PLUMBING GENERAL.

PART 2 - PRODUCTS

2.1

2.2 GENERAL

- A. Furnish, set and connect plumbing fixtures and trim, fittings, other components, and supports as specified hereinafter.
- B. Manufacturers: Fixtures shall be the products of the same manufacturer, except for special types indicated.
- C. Provide chrome-plated finish on exposed supply and waste services.

2.3 FIXTURES

A. Mop Basins:

- 1. Manufacturers: Provide a product of one of the following:
 - a. Just Manufacturing.
 - b. Elka.

Mop Basins P-1: Stainless Steel Single Bowl, Floor Mount Service Sink manufactured with buffed satin finish, Full spray sides and bottom with bottom only pads. Provide drain punch for 3" with two 14 gauge stainless steel wall clips. Sink shall be 304 Stainless Steel 16 gauge material with buffed satin finish with sound deadening and full spray sides and bottom with bottom only pads. Provide 1 bowl and overall sink dimensions: 33" x

21" x 8". Field verify dimensions of sink prior to ordering new sink. Provide with faucet specified and mop hanger and 2' hose adaptable to mop sink faucet.

2. Provide isolation valves and recessed valve box assembly on the hot and cold water service to new mop sink for isolation.

2.4 FIXTURE TRIM

A. Faucets

1. Manufacturers: Provide a product of one of the following:
 - a. American Standard, Inc.
 - b. Chicago Faucet Co.
 - c. Kohler Co.
 - d. Speakman Co.
 - e. T & S Brass and Bronze Works, Inc.
2. General: Unless otherwise specified, provide faucets that are cast brass with polished chrome-plated finish.
3. Mop Sink. Provide with polished chrome plated brass mixing valve, vacuum breaker, top brace assembly with wall flange and mounting screws. Provide with mop hanger and 2' hose adaptable to mop sink faucet. Faucets shall be vandal resistant.

B. Fittings

1. General: Unless otherwise specified, provide fittings fabricated of brass, with a polished chrome plated finish.
2. Escutcheons: Polished chrome-plated, sheet steel wall flange with friction clips.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for potable cold water and hot water supplies and soil, waste, and vent piping systems to verify actual locations of piping connections prior to installing fixtures.
- B. Examine walls, floors, and cabinets for suitable conditions where fixtures are to be installed.
- C. Do not proceed until unsatisfactory conditions have been corrected.

2.1 INSTALLATION OF PLUMBING FIXTURES

- A. Install plumbing fixtures level and plumb, in accordance with fixture manufacturers' written installation instructions, roughing-in drawings, and referenced standards.
- B. Coordinate installation with the new stainless steel wall covering as indicated.
- C. Install floor-mounted, floor-mop sinks with new flanges and gasket seals.
- D. Set mop basins in leveling bed of cement grout.

- E. Install stop valve in an accessible location in each water supply to each fixture.
- F. Install trap on fixture outlet except for fixtures having integral trap.
- G. Install escutcheons at each wall, floor, and ceiling penetration in exposed finished locations and within cabinets and millwork. Use deep pattern escutcheons where required to conceal protruding pipe fittings.
- H. Seal fixtures to walls and floors, using a sanitary-type, one-part, mildew-resistant, silicone sealant. Seal the entire floor perimeter of the floor and wall of the janitor closet. Match sealant color to fixture color.
- I. Stops or valves shall be furnished in hot and cold water supply to each fixture or piece of equipment, whether or not indicated on the drawings or under this Section. Union connections shall be provided on fixture side of stop or gate valve at each fixture.
- J. Fixtures shall be installed as indicated and in conformance with the manufacturers written recommendations. Coordinate actual fixtures provided with all trades.
- K. Fixtures shall be free of leaks, completely finished, trimmed, adjusted, cleaned, and ready for use. Fixtures shall be properly secured to the structure with thru-bolts, backplates, carriers, or toggle bolts.
- L. Mounting holes provided in the fixtures shall be utilized for support.

3.2 ADJUSTING AND CLEANING

- A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.
- B. Adjust water pressure at electric water coolers, and faucets, shower valves, and flushometers having controls, to provide proper flow and stream.
- C. Replace washers of leaking and dripping faucets and stops.
- D. Clean fixtures, fittings, and spout and drain strainers with manufacturers' recommended cleaning methods and materials.

3.3 PROTECTION

- A. Provide protective covering for installed fixtures and fittings.

END OF SECTION 15440

SECTION 15460

DOMESTIC WATER HEATERS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

- A. Provide water heaters and accessories complying with the following:
 - 1. UL 174, "Household Electric Storage Tank Water Heaters."
 - 2. NFPA 70 "National Electrical Code."
- B. Provide water heaters that are listed and labeled.
 - 1. The terms "listed" and "labeled" shall be 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. Provide water heaters and safety relief valves that comply with ASME Boiler and Pressure Vessel Code and that bear the appropriate code symbols.

1.2 WARRANTY

- A. Special Project Warranty: Submit a written warranty, executed by manufacturer, agreeing to repair or replace water heater units that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, tanks, coils, heat exchangers, and burners. This warranty shall be in addition to, and not a limitation of, other rights the Owner may have against the Contractor under the Contract Documents.
- B. Warranty period is 3 years after date of Substantial Completion.

1.3 SUBMITTALS

- A. Submit product information for domestic water heaters to the Architect in accordance with Section 15010 MECHANICAL GENERAL.

PART 2 - PRODUCTS

2.1 ELECTRIC WATER HEATERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Bock Waters Heaters, Inc.
 - 2. Rheem Mfg.
 - 3. State Industries, Inc.
- B. Description: Automatic, commercial, electric; with vertical, ASME labeled, 150 psig rated storage tank, integral controls, drain valve, and relief valve.
 - 1. Insulation: Fiberglass or polyurethane foam, surrounding tank.

2. Jacket: Steel, with baked-on enamel finish.
3. Tank: Glass-lined steel with anode rods and drain valve.
4. Heating Elements: Stainless steel Screw-in or flanged bolt-in immersion type, in multiples of 3 elements.
5. Anode Rod
6. Controls: Adjustable immersion thermostat.
7. Safety Controls: Automatic, high-temperature-limit cutoff and low-water cutoff.
8. Temperature and Pressure Relief Valve: ASME rated and labeled.
9. Vacuum Relief Valve: ANSI Z21.22.
10. Storage Capacity: as scheduled on the drawings.
11. Minimum Recovery Rate: as scheduled on the drawings.
12. Electric Input: as scheduled on the drawings.
13. Electrical Characteristics: coordinate to match existing.
14. Heat Trap: Factory-installed, integral piping arrangement or cold-type inlet and hot-type outlet fittings

2.2 EXPANSION TANK

- A. Furnish and install a pre-charged vertical steel expansion tank with integral FDA approved, heavy duty butyl blend diaphragm and lined dome, for domestic potable water. The tank shall have a NPT system connection, and a charging valve connection (standard tire valve) to facilitate on-site charging of the tank to meet system requirements. The tank must be constructed in accordance with ASME Code Section VIII Division 1. The tank must be designed for a maximum working pressure of 100 PSIG.

PART 3 - EXECUTION

3.1 WATER HEATERS

- A. Install water heaters on concrete bases. Set and connect units in accordance with manufacturer's written installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances. Orient so controls and devices needing servicing are accessible.
- B. Provide seismic restraints on water heaters and anchor to substrate. Fill water heaters with water and charge compression tanks with air as required.
- C. Install thermometers on water heater inlet and outlet piping. Provide thermometers as indicated in Section 15010, PLUMBING GENERAL.

3.1 CONNECTIONS

- A. Install piping adjacent to equipment arranged to allow servicing and maintenance.
- B. Connect hot and cold water piping to units with shutoff valves and unions. Connect hot water circulating piping to unit with shutoff valve, check valve, and union. Extend relief valve discharge to closest floor drain.
- C. Where water heater piping connections are dissimilar metals, make connections with dielectric fittings or dielectric unions.

- D. Install vacuum relief valve in cold water inlet piping.

3.2 DRAIN

- A. Install drain as indirect waste to spill into open drain or over floor drain.
- B. Install drain valve at low point in water piping, for water heaters not having tank drain.

3.3 ELECTRICAL CONNECTIONS

- A. Power wiring and disconnect switches are specified in Division 16.
- B. Grounding: Connect unit components to ground in accordance with the National Electrical Code.

3.4 FIELD QUALITY CONTROL

- A. General: Provide the services of a factory-authorized service representative to test and inspect unit installation, provide start-up service, and demonstrate and train Owner's maintenance personnel as specified below.
- B. Test and adjust operating and safety controls. Replace damaged and malfunctioning controls and equipment.
- C. Train Owner's maintenance personnel on procedures and schedules related to start-up and shutdown, troubleshooting, servicing, and preventative maintenance.
- D. Schedule training with at least 7 days, advance notice.

3.5 COMMISSIONING

- A. Perform the following before start-up final checks:
 - 1. Fill water heaters with water.
 - 2. Piping systems test complete.
 - 3. Check for piping connections leaks.
 - 4. Check for clear vent.
 - 5. Test operation of safety controls and devices.
- B. Perform the following start-up procedures:
 - 1. Energize circuits.
 - 2. Adjust operating controls.
 - 3. Adjust hot water outlet temperature setting.

END OF SECTION 15460

SECTION 16000

ELECTRICAL GENERAL CONDITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. See Division 1 – General Requirements for submittal requirements. Drawings and general provisions of Contract, including General Conditions and Division - 1 specification sections, apply to work of this section.

1.2 QUALITY CRITERIA:

- A. Division 16 and other referenced Divisions of Work. Installers shall be qualified to perform the required tasks.

1.3 SPECIAL REQUIREMENTS:

- A. Completeness of work: All work shall be completed in a workman-like manner in accordance with applicable Codes and Standards. Drawings indicate approximate locations of all electrical equipment
- B. Equipment Access: Installation of panel boards, power panels, transformers, or starters relative to floor or to the structure above, of piping, ductwork and mechanical equipment shall comply with clearances and provisions of the National Electrical Code.

1.4 CODES AND STANDARDS:

- A. American Society of Testing Materials,
- B. Underwriters' Laboratories,
- C. American National Standards Institute,
- D. Federal Specifications,
- E. Federal Occupation Safety and Health Act.
- F. NFPA 70 – National Electrical Code; National Fire Protection Association; 2017 Edition
- G. International Fire Code, Most Recent Edition
- H. NFPA 72 – National Fire Alarm and Signaling Code; Most Recent Edition
- I. NFPA 101 - Life Safety Code, Most Recent Edition International Building Code, Most Recent Edition
- J. All applicable local ordinances and codes.

1.5 SPECIFICATIONS AND DRAWINGS:

- A. The drawings show the general run of conduits, raceways, busways, etc., and the approximate location of apparatus. Do not scale the drawings to determine exact positions and clearances.
- B. Notify the Engineer immediately of any changes in the size or location of the material or equipment which may be necessary in order to meet field conditions, or in order to avoid conflict with the equipment of other Sections. Obtain the Engineer's approval before such deviations are made.

1.6 RECORD DRAWINGS:

- A. Submit upon completion of the Project.
- B. A record of as-built conditions shall be kept throughout the Project

1.7 CONTINUITY OF SERVICE:

- A. Perform work at such time and in such manner as to cause minimum inconvenience to the Owner and as approved by the Engineer. No allowance will be made for lack of knowledge of existing conditions.

1.8 SYSTEM CHARACTERISTICS:

- A. As shown on the Drawings.

1.9 WORKING HOURS:

- A. Figure labor costs based on all work being done during normal working hours.

1.10 RELATED WORK DESCRIBED IN OTHER DIVISIONS:

- A. Cutting, coring, waterproofing, and patching of walls, floors, ceilings, roofs and structure of existing buildings.
- B. Painting, except as specified herein.

1.11 SHOP DRAWINGS:

- A. Mark shop drawings indicating the particular make, model number, accessories, options and specification paragraph numbers.
- B. Submit shop drawings for all equipment, materials and apparatus.

1.12 MAINTENANCE DATA:

- A. Submit three typewritten manuals of Manufacturers' operating and maintenance manuals, including wiring diagrams and parts lists, for each piece of equipment and accessory requiring service or maintenance.

END OF SECTION 16000

SECTION 16060

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.

1.2 RELATED REQUIREMENTS

- A. Section 16120 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
 - 1. Includes oxide inhibiting compound.
- B. Section 16075 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. IEEE 81 - Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System; 2012.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- C. D.NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; International Electrical Testing Association; 2013 (ANSI/NETA ATS).
- E. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017 Edition
- F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Notify Engineer of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

- A. See Division 1 General Requirements - Administrative Requirements for submittals procedures.

- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Field quality control test reports.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to State Fire Marshal.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 GROUNDING AND BONDING REQUIREMENTS

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- D. Bonding and Equipment Grounding:
 - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
 - 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
 - 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
 - 4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
 - 5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
 - 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
 - a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
 - b. Metal gas piping.
8. Provide bonding for interior metal air ducts.

2.2 GROUNDING AND BONDING COMPONENTS

A. General Requirements:

1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in addition to requirements of Section 16120:

1. Use insulated copper conductors unless otherwise indicated.

C. Connectors for Grounding and Bonding:

1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
4. Manufacturers - Mechanical and Compression Connectors:
 - a. Burndy: www.burndy.com.
 - b. Thomas & Betts Corporation: www.tnb.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
5. Manufacturers - Exothermic Welded Connections:
 - a. Burndy: www.burndy.com.
 - b. Cadweld, a brand of Erico International Corporation: www.erico.com.
 - c. ThermOweld, a brand of Continental Industries, Inc: www.thermoweld.com.
 - d. Substitutions: See Division 1 General Requirements - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as shown on the drawings.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install grounding and bonding system components in a neat and workmanlike manner in accordance with NECA 1.
- C. Make grounding and bonding connections using specified connectors.
 - 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 - 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 - 3. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 - 4. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- D. Identify grounding and bonding system components in accordance with Section 16075.

3.3 FIELD QUALITY CONTROL

- A. See Section 16000 – Electrical General Conditions, for additional requirements.
- B. Inspect and test in accordance with NETA ATS except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.13.
- F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION 16060

SECTION 16070

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- A. Section 05500 - Metal Fabrications: Materials and requirements for fabricated metal supports.

1.2 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2013.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2013.
- D. MFMA-4 - Metal Framing Standards Publication; Metal Framing Manufacturers Association; 2004.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- F. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017 Edition

1.3 SUBMITTALS

- A. See Division 1 General Requirements - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, non-penetrating rooftop supports, and post-installed concrete and masonry anchors.
- C. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.
- D. Installer's Qualifications: Include evidence of compliance with specified requirements.

1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70.

- B. Comply with applicable building code.
- C. Installer Qualifications for Powder-Actuated Fasteners (when specified): Certified by fastener system manufacturer with current operator's license.

PART 2 PRODUCTS

2.1 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 150%. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - 5. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
 - 6. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
 - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
 - c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
 - 1. Conduit Straps: One-hole or two-hole type; steel.
 - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
- D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
 - 1. Comply with MFMA-4.
- E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.

F. Anchors and Fasteners:

1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
3. Hollow Masonry: Use toggle bolts.
4. Hollow Stud Walls: Use toggle bolts.
5. Steel: Use beam clamps, machine bolts, or welded threaded studs.
6. Sheet Metal: Use sheet metal screws.
7. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
 - a. Comply with MFMA-4.
 - b. Channel Material: Use galvanized steel.
 - c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.

PART 3 EXECUTION**3.1 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install support and attachment components in a neat and workmanlike manner in accordance with NECA 1.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Engineer, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Engineer, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.

- H. Secure fasteners according to manufacturer's recommended torque settings.
- I. Remove temporary supports.
- J. Identify independent electrical component support wires above accessible ceilings (only where specifically indicated or permitted) with color distinguishable from ceiling support wires in accordance with NFPA 70.

END OF SECTION 16070

SECTION 16075
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.
- C. Wire and cable markers.
- D. Voltage markers.
- E. Warning signs and labels.

1.2 RELATED REQUIREMENTS

- A. Section 16120 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

1.3 REFERENCE STANDARDS

- A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs; 2011.
- B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels; 2011.
- C. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017 Edition
- D. NFPA 70E - Standard for Electrical Safety in the Workplace; Most Recent Edition
- E. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
- B. Sequencing:
 - 1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.

2. Do not install identification products until final surface finishes and painting are complete.

1.5 SUBMITTALS

- A. See Division 1 General Requirements - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.
- C. Shop Drawings: Provide schedule of items to be identified indicating proposed designations, materials, legends, and formats.
- D. Samples:
 1. Identification Nameplates: One of each type and color specified.
 2. Warning Signs and Labels: One of each type and legend specified.
- E. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation and installation of product.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.7 FIELD CONDITIONS

- A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

PART 2 PRODUCTS

2.1 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - a. Enclosed switches, circuit breakers, and motor controllers:
 - 1) Identify voltage and phase.
 - 2) Identify power source and circuit number. Include location when not within sight of equipment.
 - 3) Identify load(s) served. Include location when not within sight of equipment.

2. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
 3. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
 4. Use identification label or handwritten text using indelible marker on inside of door at each motor controller to identify nameplate horsepower, full load amperes, code letter, service factor, voltage, and phase of motor(s) controlled.
- B. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 16120.
 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
 3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
 - a. At each source and load connection.
 - b. Within boxes when more than one circuit is present.
 - c. Within equipment enclosures when conductors and cables enter or leave the enclosure.
- C. Identification for Raceways:
1. Use voltage markers to identify highest voltage present for accessible conduits at maximum intervals of 20 feet.
 2. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify circuits enclosed for accessible conduits at wall penetrations, at floor penetrations, at roof penetrations, and at equipment terminations when source is not within sight.

2.2 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
1. Manufacturers:
 - a. Brimar Industries, Inc: www.brimar.com.
 - b. Kolbi Pipe Marker Co: www.kolbipipemarkers.com.
 - c. Seton Identification Products: www.seton.com.
 - d. Substitutions: See Division 1 General Requirements.
 2. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.

3. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
 - a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
 4. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.
 5. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
 6. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
- B. Identification Labels:
1. Manufacturers:
 - a. Brady Corporation: www.bradyid.com.
 - b. Brother International Corporation: www.brother-usa.com.
 - c. Panduit Corp: www.panduit.com.
 - d. Substitutions: See Division 1 General Requirements.
 2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - a. Use only for indoor locations.
 3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
 2. Legend:
 - a. System designation where applicable.
 - b. Equipment designation or other approved description.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height:
 - a. System Designation: 1/2 inch.
 - b. Equipment Designation: 1/4 inch.
 - c. Exception: Provide minimum text height of 1 inch for equipment located more than 10 feet above floor or working platform.
 5. Color:
 - a. Normal Power System: White text on black background.
- D. Format for General Information and Operating Instructions:
1. Minimum Size: 2 inches by 2.5 inches.

2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 1/4 inch.
 5. Color: Black text on white background unless otherwise indicated.
 - a. Exceptions:
 - 1) Provide white text on red background for general information or operational instructions for fire alarm systems.
 - 2) Provide white text on Blue background for Security System.
- E. Format for Receptacle Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
 2. Legend: Power source and circuit number or other designation indicated.
 - a. Include voltage and phase for other than 120 V, single phase circuits.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 3/16 inch.
 5. Color: Black text on clear background.

2.3 WIRE AND CABLE MARKERS

- A. Manufacturers:
1. Brady Corporation: www.bradyid.com.
 2. HellermannTyton: www.hellermanntyton.com.
 3. Panduit Corp: www.panduit.com.
 4. Substitutions: See Division 1 General Requirements.
- B. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
- C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- D. Legend: Power source and circuit number or other designation indicated.
- E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
1. Do not use handwritten text.
- F. Minimum Text Height: 1/8 inch.
- G. Color: Black text on white background unless otherwise indicated.

2.4 VOLTAGE MARKERS

- A. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.
- B. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.
- C. Minimum Size:
 - 1. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
 - 2. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches.
 - 3. Markers for Junction Boxes: 1/2 by 2 1/4 inches.
- D. Legend:
 - 1. Markers for Voltage Identification: Highest voltage present.
 - 2. Markers for System Identification:
- E. Color: Black text on orange background unless otherwise indicated.

2.5 WARNING SIGNS AND LABELS

- A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- B. Warning Signs:
 - 1. Materials:
 - a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
 - b. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
 - 2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
 - 3. Minimum Size: 7 by 10 inches unless otherwise indicated.
- C. Warning Labels:
 - 1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
 - 2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
 - 3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.1 PREPARATION

- A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
 - 1. Surface-Mounted Equipment: Enclosure front.
 - 2. Flush-Mounted Equipment: Inside of equipment door.
 - 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 - 4. Elevated Equipment: Legible from the floor or working platform.
 - 5. Interior Components: Legible from the point of access.
 - 6. Conduits: Legible from the floor.
 - 7. Boxes: Outside face of cover.
 - 8. Conductors and Cables: Legible from the point of access.
 - 9. Devices: Outside face of cover.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
 - 1. Do not use adhesives on exterior surfaces except where substrate cannot be penetrated.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- F. Secure rigid signs using stainless steel screws.
- G. Mark all handwritten text, where permitted, to be neat and legible.

3.3 FIELD QUALITY CONTROL

- A. See Section 16000 Electrical General Requirements, for additional requirements.

- B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION 16075

SECTION 16120**LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES****PART 1 GENERAL****1.1 SECTION INCLUDES**

- A. Single conductor building wire.
- B. Wiring connectors.
- C. Electrical tape.
- D. Heat shrink tubing.
- E. Oxide inhibiting compound.
- F. Wire pulling lubricant.

1.2 RELATED REQUIREMENTS

- A. Division 7 - Firestopping.
- B. 16060 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 16075 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013.
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011.
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010.
- D. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2010.
- E. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2013.
- F. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.

- G. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; National Electrical Manufacturers Association; 2009 (ANSI/NEMA WC 70/ICEA S-95-658).
- H. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; International Electrical Testing Association; 2013 (ANSI/NETA ATS).
- I. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017 Edition
- J. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- K. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- L. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- M. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
- N. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.
- O. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Engineer of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

- A. See Division 1 General Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
- C. Field Quality Control Test Reports.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to State Fire Marshal.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.8 FIELD CONDITIONS

- A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Engineer and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.1 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.

2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductors for Grounding and Bonding: Also comply with Section 16060.

H. Conductor Material:

1. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
2. Tinned Copper Conductors: Comply with ASTM B33.

I. Minimum Conductor Size:

1. Branch Circuits: 12 AWG.
 - a. Exceptions:
 - 1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
 - 2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.

J. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

K. Conductor Color Coding:

1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
2. Color Coding Method: Integrally colored insulation.
 - a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
3. Color Code:
 - a. 208Y/120 V, 3 Phase, 4 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral/Grounded: White.
 - b. 480/277 V, 3 Phase, 4 Wire System:
 - 1) Phase A: Yellow
 - 2) Phase B: Orange
 - 3) Phase C: Brown
 - 4) Neutral/Grounded: Gray
 - c. Equipment Ground, All Systems: Green.
 - c. Travelers for 3-Way and 4-Way Switching: Pink.
 - e. For control circuits, comply with manufacturer's recommended color code.

2.3 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:

1. Copper Building Wire:
 - a. Cerro Wire LLC: www.cerrowire.com.
 - b. Encore Wire Corporation: www.encorewire.com.

- c. Southwire Company: www.southwire.com.
 - d. Substitutions: See Division 1 General Requirements.
- B. Description: Single conductor insulated wire.
- C. Conductor Stranding:
- 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
 - 2. Control Circuits: Stranded.
- D. Insulation Voltage Rating: 600 V.
- E. Insulation:
- 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
 - a. Size 4 AWG and Larger: Type XHHW-2.

2.4 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Connectors for Grounding and Bonding: Comply with Section 16060.
- C. Wiring Connectors for Splices and Taps:
- 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
 - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
- D. Wiring Connectors for Terminations:
- 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
 - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
 - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
 - 4. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
 - 5. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
 - 6. Conductors for Control Circuits: Use crimped terminals for all connections.

- E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
- F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
- G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
 - 1. Manufacturers:
 - a. 3M: www.3m.com.
 - b. Ideal Industries, Inc: www.idealindustries.com.
 - c. NSI Industries LLC: www.nsiindustries.com.
 - d. Substitutions: See Division 1 General Requirements.
- H. Mechanical Connectors: Provide bolted type or set-screw type.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. IlSCO: www.ilSCO.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Substitutions: See Division 1 General Requirements.
- I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. IlSCO: www.ilSCO.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Substitutions: See Division 1 General Requirements.
- J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. IlSCO: www.ilSCO.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Substitutions: See Division 1 General Requirements.

2.5 WIRING ACCESSORIES

- A. Electrical Tape:
 - 1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant

- to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
 3. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
 4. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
 5. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil; suitable for continuous temperature environment up to 221 degrees F.
 6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.
- B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
- C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
- D. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that work likely to damage wire and cable has been completed.
- B. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- C. Verify that field measurements are as shown on the drawings.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.3 INSTALLATION

- A. Circuiting Requirements:
1. Unless dimensioned, circuit routing indicated is diagrammatic.
 2. When circuit destination is indicated and routing is not shown, determine exact routing required.
 3. Arrange circuiting to minimize splices.
 4. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
 5. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
 6. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
- C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.
- D. Installation in Raceway:
1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 2. Pull all conductors and cables together into raceway at same time.
 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- E. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- F. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
 2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.
- G. Install conductors with a minimum of 12 inches of slack at each outlet.
- H. Neatly train and bundle conductors inside boxes, wireways, Panelboards and other equipment enclosures.

- I. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- J. Make wiring connections using specified wiring connectors.
 - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 - 3. Do not remove conductor strands to facilitate insertion into connector.
 - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
 - 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 - 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- K. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to un-spliced conductors.
 - 1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
 - 2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
 - b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
- L. Insulate ends of spare conductors using vinyl insulating electrical tape.
- M. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.
- N. Identify conductors and cables in accordance with Section 16075.
- O. Install Firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 7.
- P. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.4 FIELD QUALITY CONTROL

- A. Perform inspection, testing, and adjusting in accordance with Section 16600.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
 - 1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.
- D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION 16120

SECTION 16130

CONDUIT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Intermediate metal conduit (IMC).
- C. Flexible metal conduit (FMC).
- D. Liquidtight flexible metal conduit (LFMC).
- E. Electrical metallic tubing (EMT).
- G. Conduit fittings.
- I. Accessories.

1.2 RELATED REQUIREMENTS

- A. Division 7 requirements for Firestopping.
- B. Section 16120 - Low-Voltage Electrical Power Conductors and Cables.
- C. Section 16060 - Grounding and Bonding for Electrical Systems.
 - 1. Includes additional requirements for fittings for grounding and bonding.
- D. Section 16070 - Hangers and Supports for Electrical Systems.
- E. Section 16135 - Boxes.
- F. Section 16075 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2005.
- B. ANSI C80.3 - American National Standard for Steel Electrical Metallic Tubing (EMT); 2005.
- C. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit (EIMC); 2005.

- D. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); National Electrical Contractors Association; 2006.
- F. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); National Electrical Contractors Association; 2003.
- G. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).
- H. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017 Edition
- I. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.
- J. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- K. UL 360 - Liquid-Tight Flexible Steel Conduit; Current Edition, Including All Revisions.
- L. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- M. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.
- N. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
 - 4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
 - 5. Notify Engineer of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.5 SUBMITTALS

- A. See Division 1 General Requirements - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to State Fire Marshal.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Concealed within Masonry Walls: Use electrical metallic tubing (EMT).
- D. Concealed within Hollow Stud Walls: Use electrical metallic tubing (EMT).
- E. Concealed Above Accessible Ceilings: Use electrical metallic tubing (EMT).
- F. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
- G. Exposed, Interior, Not Subject to Physical Damage: Use electrical metallic tubing (EMT).
- H. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
- I. Exposed, Exterior: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or PVC-coated galvanized steel rigid metal conduit.

- J. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
- N. Connections to Vibrating Equipment:
 - 1. Dry Locations: Use flexible metal conduit.
 - 2. Damp, Wet, or Corrosive Locations: Use Liquidtight flexible metal conduit.
 - 3. Maximum Length: 6 feet unless otherwise indicated.
 - 4. Vibrating equipment includes, but is not limited to:
 - a. Motors.

2.2 CONDUIT REQUIREMENTS

- A. Fittings for Grounding and Bonding: Also comply with Section 16060.
- B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Minimum Conduit Size, Unless Otherwise Indicated:
 - 1. Branch Circuits: 1/2 inch (16 mm) trade size.
 - 2. Branch Circuit Homeruns: 3/4 inch (21 mm) trade size.
 - 3. Control Circuits: 1/2 inch (16 mm) trade size.
- E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.3 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Manufacturers:
 - 1. Allied Tube & Conduit: www.alliedeg.com.
 - 2. Republic Conduit: www.republic-conduit.com.
 - 3. Wheatland Tube Company: www.wheatland.com.
 - 4. Substitutions: See Division 1 General Requirements.
- B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- C. Fittings:
 - 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com.
 - b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Substitutions: See Division 1 General Requirements.

2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.
4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.4 INTERMEDIATE METAL CONDUIT (IMC)

A. Manufacturers:

1. Allied Tube & Conduit: www.alliedeg.com.
2. Republic Conduit: www.republic-conduit.com.
3. Wheatland Tube Company: www.wheatland.com.
4. Substitutions: See Division 1 General Requirements.

B. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

C. Fittings:

1. Manufacturers:

- a. Bridgeport Fittings Inc: www.bptfittings.com.
- b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
- c. Thomas & Betts Corporation: www.tnb.com.
- d. Substitutions: See Division 1 General Requirements.

2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.
4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.5 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers:

1. AFC Cable Systems, Inc: www.afcweb.com.
2. Electri-Flex Company: www.electriflex.com.
3. International Metal Hose: www.metalhose.com.
4. Substitutions: See Division 1 General Requirements.

B. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.

C. Fittings:

1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com.
 - b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Substitutions: See Division 1 General Requirements.
2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.

2.6 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Manufacturers:

1. AFC Cable Systems, Inc: www.afcweb.com.
2. Electri-Flex Company: www.electriflex.com.
3. International Metal Hose: www.metalhose.com.
4. Substitutions: See Division 1 General Requirements.

B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

C. Fittings:

1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.

2.7 ELECTRICAL METALLIC TUBING (EMT)

A. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

B. Fittings:

1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.
3. Connectors and Couplings: Use compression (gland) or set-screw type.
 - a. Do not use indenter type connectors and couplings.

2.8 ACCESSORIES

- A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil.
- B. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.
- C. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force.
- D. Sealing Compound for Sealing Fittings: Listed for use with the particular fittings to be installed.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. Install intermediate metal conduit (IMC) in accordance with NECA 101.
- E. Conduit Routing:
 - 1. Unless dimensioned, conduit routing indicated is diagrammatic.
 - 2. When conduit destination is indicated and routing is not shown, determine exact routing required.
 - 3. Conceal all conduits unless specifically indicated to be exposed.
 - 4. Conduits in the following areas may be exposed, unless otherwise indicated:
 - a. Within joists in areas with no ceiling.
 - b. Above 8 feet in storage space.
 - 5. Unless otherwise approved, do not route conduits exposed:
 - a. Across floors.
 - b. Across roofs.
 - c. Across top of parapet walls.
 - d. Across building exterior surfaces.

6. Conduits installed underground or embedded in concrete may be routed in the shortest possible manner unless otherwise indicated. Route all other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
7. Arrange conduit to maintain adequate headroom, clearances, and access.
8. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
9. Arrange conduit to provide no more than 150 feet between pull points.
10. Route conduits above water and drain piping where possible.
11. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
12. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
13. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
 - a. Heaters.
 - b. Hot water piping.
 - c. Flues.
14. Group parallel conduits in the same area together on a common rack.

H. Conduit Support:

1. Secure and support conduits in accordance with NFPA 70 and Section 16070 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
4. Use conduit strap to support single surface-mounted conduit.
 - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
5. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.
6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
7. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.
8. Use of spring steel conduit clips for support of conduits is permitted only as follows:
 - a. Support of electrical metallic tubing (EMT) up to 1 inch (27 mm) trade size concealed above accessible ceilings and within hollow stud walls.
9. Use of wire for support of conduits is not permitted.
10. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with the most stringent requirements.

- I. Connections and Terminations:
 1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Provide drip loops for Liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
 5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 6. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 7. Secure joints and connections to provide maximum mechanical strength and electrical continuity.

- J. Penetrations:
 1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 5. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 6. Install Firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 7.

- K. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
 1. Where conduits cross structural joints intended for expansion, contraction, or deflection.

- P. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
 1. Where conduits pass from outdoors into conditioned interior spaces.

2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
 - Q. Provide pull string in all empty conduits and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.
 - R. Provide grounding and bonding in accordance with Section 16060.
 - S. Identify conduits in accordance with Section 16075.
- 3.3 FIELD QUALITY CONTROL
- A. See Section 16000 Electrical General Conditions, for additional requirements.
 - B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
 - C. Correct deficiencies and replace damaged or defective conduits.
- 3.4 CLEANING
- A. Clean interior of conduits to remove moisture and foreign matter.
- 3.5 PROTECTION
- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION 16130

SECTION 16135

BOXES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

1.2 RELATED REQUIREMENTS

- A. Division 7 - Firestopping.
- B. Division 8 - Access Doors and Panels: Panels for maintaining access to concealed boxes.
- C. Section 16060 - Grounding and Bonding for Electrical Systems.
- D. Section 16070 - Hangers and Supports for Electrical Systems.
- E. Section 16130 - Conduit:
 - 1. Conduit bodies and other fittings.
 - 2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
- E. Section 16075 - Identification for Electrical Systems: Identification products and requirements.
- F. Section 16140 - Wiring Devices:
 - 1. Wall plates.
 - 2. Additional requirements for locating boxes for wiring devices.

1.3 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; National Electrical Contractors Association; 2010.
- C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).

- D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2013 (ANSI/NEMA OS 1).
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2014.
- F. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017 Edition
- G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- I. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.
- J. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Engineer of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

- A. See Division 1 General Requirements, for submittal procedures.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

- C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Division 1 General Requirements, for additional provisions.
 - 2. Keys for Lockable Enclosures: Two of each different key.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to State Fire Marshal.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 BOXES

- A. General Requirements:
 - 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 - 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 - 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 - 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
 - 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 - 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 - 3. Use cast iron boxes or cast aluminum boxes where exposed galvanized steel rigid metal conduit or exposed intermediate metal conduit (IMC) is used.
 - 4. Use raised covers suitable for the type of wall construction and device configuration where required.
 - 5. Do not use "through-wall" boxes designed for access from both sides of wall.

6. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 7. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 8. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes.
 9. Minimum Box Size, Unless Otherwise Indicated:
 - a. Wiring Devices including communications devices: 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
 - b. Ceiling Outlets: 4 inch octagonal or square by 1-1/2 inch deep (100 by 38 mm) trade size.
 10. Manufacturers:
 - a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com.
 - b. Hubbell Incorporated; Bell Products: www.hubbell-bell.com.
 - c. Hubbell Incorporated; RACO Products: www.hubbell-raco.com.
 - d. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
 - e. Thomas & Betts Corporation: www.tnb.com.
 - f. Substitutions: See Division 1 General Requirements .
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 2. NEMA 250 Environment Type, Unless Otherwise Indicated:
 - a. Indoor Clean, Dry Locations: Type 1, painted steel.
 - b. Outdoor Locations: Type 3R, painted steel.
 3. Junction and Pull Boxes Larger Than 100 cubic inches:
 - a. Provide hinged-cover enclosures unless otherwise indicated.
 4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
 - a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.
 - b. Back Panels: Painted steel, removable.
 - c. Terminal Blocks: Provide voltage/current ratings and terminal quantity suitable for purpose indicated, with 25 percent spare terminal capacity.
 5. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.
 6. Manufacturers:
 - a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com.
 - b. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com.

- c. Hubbell Incorporated; Wiegmann Products: www.hubbell-wiegmann.com.
- d. Substitutions: See Division 1 General Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
- E. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- F. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
- G. Box Locations:
 - 1. Locate boxes to be accessible. Provide access panels in accordance with Division 8 as required where approved by the Engineer.
 - 2. Unless dimensioned, box locations indicated are approximate.
 - 3. Locate boxes as required for devices installed under other sections or by others.
 - 4. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
 - 5. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
 - 6. Fire-Resistance-Rated Walls: Install flush-mounted boxes such that the required fire-resistance will not be reduced.
 - 7. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 16130.

8. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Engineer:
 - a. Concealed above accessible suspended ceilings.
 - b. Within joists in areas with no ceiling.
- H. Box Supports:
 1. Secure and support boxes in accordance with NFPA 70 and Section 16070 using suitable supports and methods approved by the authority having jurisdiction.
 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
 3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
 4. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.
- I. Install boxes plumb and level.
- J. Flush-Mounted Boxes:
 1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.
- K. Install boxes as required to preserve insulation integrity.
- L. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- M. Install Firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 7.
- N. Close unused box openings.
- O. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- P. Provide grounding and bonding in accordance with Section 16060.
- Q. Identify boxes in accordance with Section 16075.

3.3 CLEANING

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.4 PROTECTION

- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION 16135

SECTION 16150
EQUIPMENT WIRING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical connections to equipment.

1.2 RELATED REQUIREMENTS

- A. Section 16130 - Conduit.
- B. Section 16120 - Low-Voltage Electrical Power Conductors and Cables (600 V and Less).
- C. Section 16135 - Boxes.

1.3 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017 Edition

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
 - 2. Determine connection locations and requirements.
- B. Sequencing:
 - 1. Install rough-in of electrical connections before installation of equipment is required.
 - 2. Make electrical connections before required start-up of equipment.

1.5 SUBMITTALS

- A. See Division 1 General Requirements, for submittal procedures.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.

- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to State Fire Marshal.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Flexible Conduit: As specified in Section 16130.
- B. Wire and Cable: As specified in Section 16120.
- C. Boxes: As specified in Section 16135.

2.2 EQUIPMENT CONNECTIONS

- A. Rooftop HVAC Equipment with integral disconnect/main breaker:
 - 1. Electrical Connection: Conduit or flexible conduit as permitted by conditions at equipment connection.
 - 2. Provide termination at equipment integral disconnect/main breaker.
- B. Motors and Heaters:
 - 1. Electrical Connection: Flexible conduit.
 - 2. Provide field-installed disconnect switch.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.2 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit where required due to vibration. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION 16150

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SECTION 16440

MODIFICATION OF EXISTING LOW-VOLTAGE PANELBOARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Modifications to loads on existing Panelboards.
- B. Modifications to overcurrent protective devices for existing Panelboards.

1.2 RELATED REQUIREMENTS

- A. Section 16060 - Grounding and Bonding for Electrical Systems.
- B. Section 16075 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; Federal Specification; Revision E, 2013.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards; National Electrical Contractors Association; 2009.
- D. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; National Electrical Manufacturers Association; 2013 (ANSI/NEMA PB 1.1).
- E. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; International Electrical Testing Association; 2013 (ANSI/NETA ATS).
- F. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017 Edition
- G. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
- H. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.
- I. UL 1699 - Arc-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
2. Notify Engineer of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

- A. See Division 1 General Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for overcurrent protective devices, and other installed components and accessories.
- C. Shop Drawings: Indicate voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, and installed features and accessories.
- D. Source Quality Control Test Reports: Include reports for tests designated in NEMA PB 1 as routine tests.
- E. Field Quality Control Test Reports.
- F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- G. Project Record Documents: Record actual installed locations of overcurrent protective devices and actual installed circuiting arrangements.
- H. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.
- I. Maintenance Materials: Furnish for Owner's use in maintenance of project. See Division 1 General Requirements, for additional provisions.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to State Fire Marshal.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store equipment in accordance with manufacturer's instructions. Store in a clean, dry space.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Overcurrent devices and associated components shall be produced by same manufacturer as the existing Panelboards, and be certified by the manufacturer as compatible for installation in the existing Panelboards.

2.2 PANELBOARD COMPONENTS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet.
 - 2. Ambient Temperature:
 - a. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.
- C. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- D. Conductor Terminations: Suitable for use with the conductors to be installed.
- E. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.

2.5 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:
 - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated on the drawings, but not less than:
 - 1) 10,000 RMS symmetrical amperes at 240 VAC or 208 VAC.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 - 3. Conductor Terminations:
 - a. Provide mechanical lugs unless otherwise indicated.
 - b. Provide compression lugs where indicated.
 - c. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 - 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.

- a. Provide field-adjustable magnetic instantaneous trip setting for circuit breaker frame sizes 225 amperes and larger.
- b. Provide interchangeable trip units where indicated.
5. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true RMS sensing trip units.
 - a. Provide the following field-adjustable trip response settings:
 - 1) Long time pickup, adjustable by replacing interchangeable trip unit or by setting dial.
 - 2) Long time delay.
 - 3) Short time pickup and delay.
 - 4) Instantaneous pickup.
 - 5) Ground fault pickup and delay where ground fault protection is indicated.
6. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
7. Provide the following circuit breaker types where indicated:
 - a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
 - b. Ground Fault Equipment Protection Circuit Breakers: Designed to trip at 30 mA for protection of equipment.
 - c. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Combination type listed as complying with UL 1699.
 - d. 100 Percent Rated Circuit Breakers: Listed for application within the Panelboard where installed at 100 percent of the continuous current rating.
8. Do not use tandem circuit breakers.
9. Do not use handle ties in lieu of multi-pole circuit breakers.
10. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.
11. Provide the following features and accessories where indicated or where required to complete installation:
 - a. Handle Pad-Lock Provision: For locking circuit breaker handle in OFF position.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that the ratings and configurations of the existing Panelboards and associated components are consistent with the indicated requirements.
- C. Verify that conditions are satisfactory for installation prior to starting work.
- D. Coordinate with Mechanical Contractor regarding final configuration of replacement rooftop HVAC equipment and final data on minimum circuit ampacity (MCA) and maximum overcurrent protection (MOP) for each HVAC unit. Notify the Engineer if

drawings show MCA exceeding the rated ampacity of branch circuit for any unit and do not proceed until the Engineer provides direction. Notify the Engineer if drawings show overcurrent protection device with rated trip exceeding the MOP for any unit and do not proceed until the Engineer provides direction.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions. Provide filler plates to cover unused spaces in Panelboards.
- B. Provide grounding and bonding in accordance with Section 16060.
- C. Multi-Wire Branch Circuits: Group grounded and ungrounded conductors together in the Panelboard as required by NFPA 70.
- D. Modify directories of existing Panelboards in accordance with changes made in this project. Provide typewritten directories and provide other identification as required in Section 16075.

3.3 FIELD QUALITY CONTROL

- A. Perform inspection, testing, and adjusting in accordance with Section 16600.
- B. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers and circuit breakers larger than 100 amperes. Tests listed as optional are not required.
- C. Ground Fault Protection Systems: Test in accordance with manufacturer's instructions as required by NFPA 70.
- E. Test GFCI circuit breakers to verify proper operation. Test AFCI circuit breakers to verify proper operation.
- F. G. Correct deficiencies and replace damaged or defective components.

3.4 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.5 CLEANING

- A. Clean dirt and debris from Panelboard enclosures and components according to manufacturer's instructions.

END OF SECTION 16440



**FULTON COUNTY
GOVERNMENT CENTER COMPLEX
TOWER BUILDING, PUBLIC SAFETY BUILDING AND
LOW RISE BUILDING
DOMESTIC WATER PIPING REPLACEMENT
PHASE II**

<u>SHEET NO.</u>	<u>SHEET TITLE</u>
GO.1	INDEX
P0.1	PLUMBING NOTES, LEGEND, SCHEDULE AND AREA LOCATOR
P0.2	PLUMBING DETAILS
P1.0	PLUMBING SITE DEMOLITION
P1.1	PLUMBING GROUND AND FIRST FLOOR DEMOLITION
P1.2	PLUMBING ENLARGED CORE FLOOR DEMOLITION
P1.3	PLUMBING GOVERNMENT CENTER TOWER RISER DEMOLITION
P1.0.1	PUBLIC SAFETY BUILDING PLUMBING DEMOLITION
P2.0	PLUMBING SITE PLAN
P2.1	PLUMBING GROUND AND FIRST FLOOR PLAN
P2.2	PLUMBING ENLARGED CORE FLOOR PLAN
P2.3	PLUMBING GOVERNMENT CENTER TOWER RISER PLAN
P2.0.1	PLUMBING PUBLIC SAFETY BUILDING PLAN
P2.0.2	PLUMBING LOW RISE BUILDING PLAN

KHAFRA
PLUMBING ENGINEER
1000 WEST 10TH AVENUE
SUITE 100
DENVER, CO 80202
TEL: 303.733.1111
FAX: 303.733.1112

FOR CONSTRUCTION



REUSE OF DOCUMENTS
THIS DOCUMENT IS NOT TO BE REUSED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN PERMISSION OF THE ORIGINAL AUTHOR.



**FULTON COUNTY
GOVERNMENT CENTER
DOMESTIC WATER PIPING
REPLACEMENT**

NO.	DATE	DESCRIPTION

SCALE: 1/8" = 1'-0"
DRAWN BY: [Name]
CHECKED BY: [Name]
APPROVED BY: [Name]

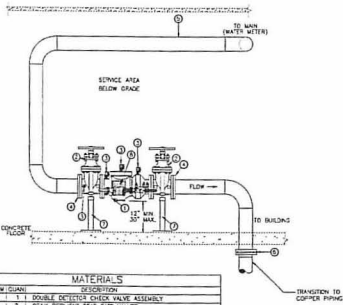
PLUMBING
INDEX

SHEET NO. **GO.1**
OF 14



REV	DATE	DESCRIPTION

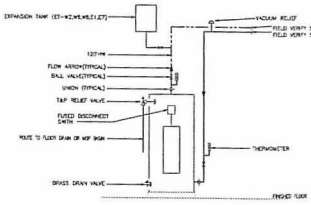
DESIGNED	
CHECKED	
APPROVED	
REVISIONS	
BY	
DATE	



MATERIALS	DESCRIPTION
1	DOUBLE CHECKED VALVE ASSEMBLY
2	CONCRETE
3	STEEL COCKS W/ NO-LEAK GLASS PLUGS
4	INTERFACED TAP VALVE, METAL OR (OR EQUIVALENT)
5	FLUID DISCONNECT
6	1/2" SINK AS FLOW TEST STAND & BACKFLOW TEST FLANGE
7	1/2" SINK AS FLOW TEST STAND & BACKFLOW TEST FLANGE
8	3/4" C-IRIG PI W/ 1/2" CHECK

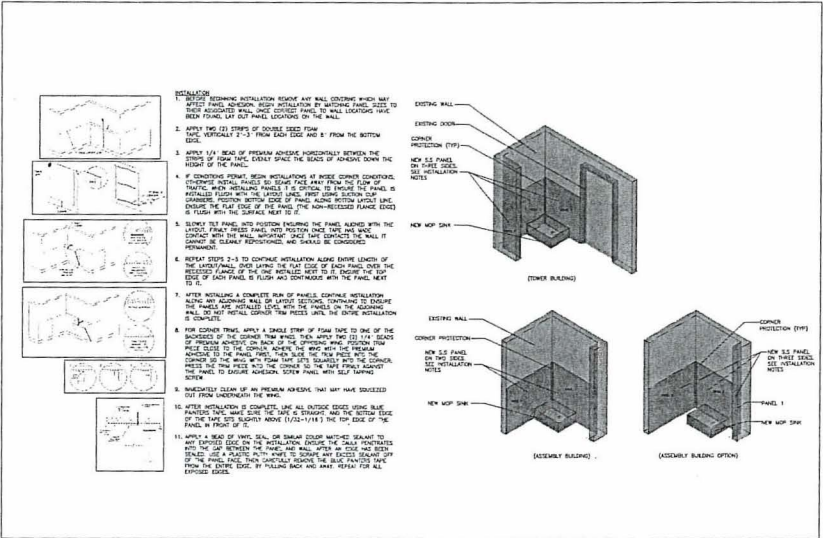
- NOTES:**
- FOR FINAL APPROVAL, UNDER NO CIRCUMSTANCES WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND BACKFLOW PREVENTER. CODE FOR SYSTEM GOVERNMENT BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.
 - IF A PRESSURE MONITOR IS TO BE INSTALLED AS A TEE, VALVE, FITTING, AND MOUNT ON SUPPLY SINK PRIOR TO BACKFLOW PREVENTER, UNDER NO CIRCUMSTANCES SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL BELOW GRADE INSTALLATION
 (4" SIZE)
 1/2" SINK AS FLOW TEST STAND

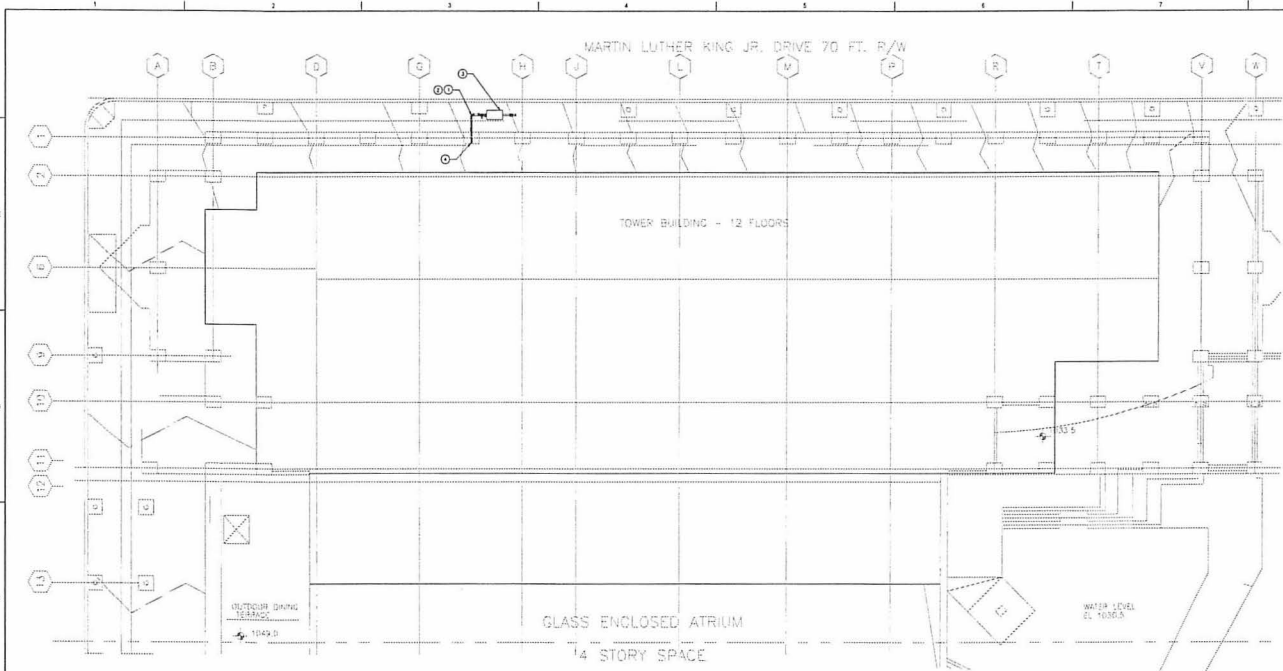


ELECTRIC WATER HEATER
 TYPICAL PIPING DETAIL
 1/2" SINK AS FLOW TEST STAND

ELECTRICAL WORK
1. THE CONTRACTOR IS RESPONSIBLE FOR THE ELECTRICAL WORK FOR NON-WATER HEATING SYSTEM IN ALL PLUMBING DETAILS OF THIS PROJECT.



TOWER AND ASSEMBLY MOP SINK
 STAINLESS STEEL WALL COVERING - TYPICAL
 1/2" SINK AS FLOW TEST STAND



**GOVERNMENT CNTR TOWER - SITE
DOMESTIC COLD WATER - DEMOLITION**

- KEY DEMOLITION NOTES** (APPLY TO THE SHED ONLY)
- 1. EXISTING WATER METERS AND WATER RISER ASSEMBLY TO REMAIN. DEMOLISH EXISTING DOMESTIC SUPPLY AND EXHAUST DRAIN AS REQUIRED TO REMOVE SECTION OF EXISTING 4" DIA. WATER DRAINAGE FROM THE FOUNDATION. REMOVE DOWNSTREAM LOCATED SEWER OF EXISTING WATER TO THE EXISTING WATER SERVICE DRAINAGE LOCATED BELOW EXISTING ATRIUM DRIVE.
 - 2. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD IDENTIFIED EXISTING PIPING MATERIAL. PIPING MATERIAL AND VALVE ARE TO BE REMOVED AND REPLACED WITH PPRC. REPAIRS AND WORK ASSOCIATED WITH PPRC REPLACEMENT DOWNSTREAM OF WATER.
 - 3. EXISTING WATER METERS AND WATER RISER ASSEMBLY TO REMAIN.
 - 4. TO EXISTING ACCESSIBLE WATER SERVICE LOCATED BELOW EXHAUST WITH SHAVE SEE P-1.1 FOR CONFIRMATION.



FOR CONSTRUCTION



BASE OF DOCUMENTS AND LOCATIONS ON THE SHEET ARE FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES AND SERVICES BEFORE ANY EXCAVATION OR OTHER WORK IS PERFORMED.



**FULTON COUNTY
GOVERNMENT
CENTER DOMESTIC
WATER PIPING
REPLACEMENT**

NO.	DATE	DESCRIPTION

SCALE: 1/8" = 1'-0"
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 APPROVED BY: [Name]
 DATE: 5/20/2019

**PLUMBING
SITE DEMOLITION**

PROJECT NUMBER: **P1.0**
 SHEET NUMBER: 3 OF 14

FOR CONSTRUCTION



REUSE OF DOCUMENTS
 NO WARRANTY IS MADE BY THE ARCHITECT FOR ANY REUSE OF THIS DOCUMENT FOR ANY PROJECT OTHER THAN THAT FOR WHICH IT WAS PREPARED.



**FULTON COUNTY
 GOVERNMENT
 CENTER DOMESTIC
 WATER PIPING
 REPLACEMENT**

NO.	DATE	DESCRIPTION

PLUMBING

**GROUND & FIRST
 FLOOR
 DEMOLITION**

PROJECT SHEET
P1.1
 4 OF 12

- KEY DEMOLITION NOTES** (REFER TO THE SHEET ONLY)
- 1 REMOVE EXISTING 4" COLD WATER GALVANIZED PIPE THAT WALL AND HANGERS PIPING LAPPING DOWN FROM FLOOR BELOW INCLUDING BUT NOT LIMITED TO FITTINGS, SUPPORTS, HANGERS, WALL/FLOOR PENETRATION SEAL AND ASSOCIATED APPURTENANCES.
 - 2 REMOVE EXISTING 3/4" HOSE END AND PIPING THAT FLOOR HANGERS, SUPPORTS, PENETRATION SEAL, AND ASSOCIATED APPURTENANCES.
 - 3 SEE SUP-113 FOR CONNECTION TO DOMESTIC WATER BOOSTER PUMP.
 - 4 EXISTING BOOSTER PUMP SYSTEM TO REMAIN. SIZE 3/4" x 1 FOR DOMESTIC DEMOLITION.
 - 5 REMOVE EXISTING 4" GALVANIZED DOMESTIC WATER PIPING DOWNSTREAM (DOWNHOLE SIDE) OF THE EXISTING BOOSTER PUMP INCLUDING FITTINGS, HANGERS, FITTINGS AND ASSOCIATED APPURTENANCES AS REQUIRED FOR NEW COPPER SERVICE.
 - 6 REMOVE EXISTING 6" WASTE SEWER VENT.
 - 7 REMOVE EXISTING 4" GALVANIZED DOMESTIC WATER PIPING THAT DRAIG UP SERVICE. SEE ALSO ALL WASTE SEWER INCLUDING HANGERS, FITTINGS, FITTINGS AND ASSOCIATED APPURTENANCES AS REQUIRED FOR NEW COPPER SERVICE.

1
 GOVERNMENT CNTR TOWER - FIRST LEVEL
 DOMESTIC COLD WATER - DEMOLITION
 SCALE: 3/8" = 1'-0"

2
 GOVERNMENT CNTR TOWER - GND FLOOR
 DOMESTIC COLD WATER - DEMOLITION
 SCALE: 3/8" = 1'-0"

3
 ISOLMETRIC VIEW
 BOOSTER PUMP DEMOLITION
 SCALE: 1/8" = 1'-0"



NOTE: IF DIMENSIONS ARE SHOWN ON THE SHEET AND CONFLICT WITH THE FIELD OR AN INSTRUMENTED SURVEY, THE FIELD OR INSTRUMENTED SURVEY SHALL BE THE BASIS FOR CONSTRUCTION.



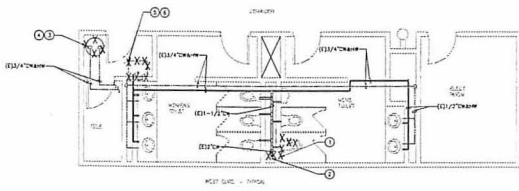
**FULTON COUNTY
 GOVERNMENT CENTER
 DOMESTIC
 WATER PIPING
 REPLACEMENT**

REV	DATE	DESCRIPTION

DESIGNED BY	
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PROJECT NO.	
SCALE	
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PROJECT NO.	
SCALE	

**PLUMBING
 ENLARGED CORE
 DEMOLITION**

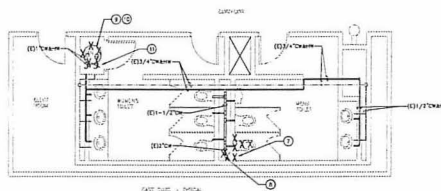
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 SHEET NO: 5 OF 14



1
 GOVERNMENT CENTER TOWER WEST CORE
 ENLARGED TOILET ROOM PLUMBING DEMOLITION
 SCALE: 1/4" = 1'-0"

KEY DEMOLITION WEST CORE NOTES (APPLY TO THIS SHEET ONLY)

1. WEST CORE - SECOND FLOOR, THIRD FLOOR - TEMPORARILY REMOVE EXISTING WATER CLOSET AND TEMPORARILY ISOLATE WATER, SEW AND DOMESTIC WATER PIPING SERVING BATHROOM GROUP. REMOVE WALL TILE, CEILING BOARD AND SUPPORTS FROM FLOOR TO CEILING. BRING MC AS REQUIRED TO ALLOW ACCESS TO PLUMBING CHASE.
2. WEST CORE - SECOND FLOOR, THIRD FLOOR - REMOVE EXISTING 4" GALVANIZED DOMESTIC WATER PIPING FROM THE SECOND FLOOR UP TO THE THIRD FLOOR SERVING TOILET FIXTURES ON EACH FLOOR TO ACCOMMODATE NEW COPPER PIPING.
3. WEST CORE FLOORING TWO, SIX AND SEVEN - ISOLATE EXISTING CHASE PIPING SERVING EXISTING EXISTING WATER HEATER. REMOVE SECTION OF CHASE PIPING AS REQUIRED TO ACCOMMODATE NEW ELECTRIC WATER HEATER. REMOVE EXISTING ELECTRIC WATER HEATER, ELECTRICAL POWER, CONTROL CONTROLS SUPPORTS AND ASSOCIATED APPURTENANCES. DISCONNECT TO SEWER AND DISPOSE.
4. WEST CORE FLOORING THREE, FIVE AND SIX - EXISTING ELECTRIC WATER HEATER TO REMAIN. REMOVE SECTION OF PIPING TO ACCOMMODATE NEW EXPANSION TANK.
5. WEST CORE FLOORING ONE, TWO, THREE, FOUR, SIX, SEVEN, EIGHT, NINE AND TEN - TEMPORARILY ISOLATE CH, HW, WASTE AND VENT PIPING SERVING EXISTING WATER HEATER. REMOVE SECTION OF WALL BOARD, EXISTING WAP SH, BRING VALVE AND ASSOCIATED APPURTENANCES AS REQUIRED FOR NEW FUTURE.
6. WEST CORE FLOORING ONE - EXISTING WAP SH TO REMAIN. TEMPORARILY ISOLATE CH, HW, WASTE AND VENT PIPING SERVING EXISTING WATER HEATER. REMOVE SECTION OF WALL BOARD, EXISTING WAP SH, BRING VALVE AND ASSOCIATED APPURTENANCES AS REQUIRED FOR NEW FUTURE.

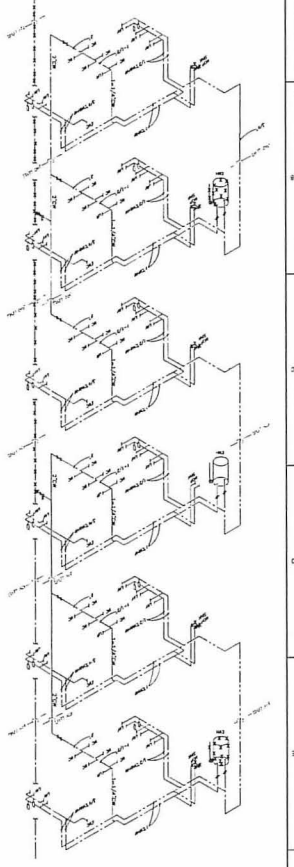


2
 GOVERNMENT CENTER TOWER EAST CORE
 ENLARGED TOILET ROOM PLUMBING DEMOLITION
 SCALE: 1/4" = 1'-0"

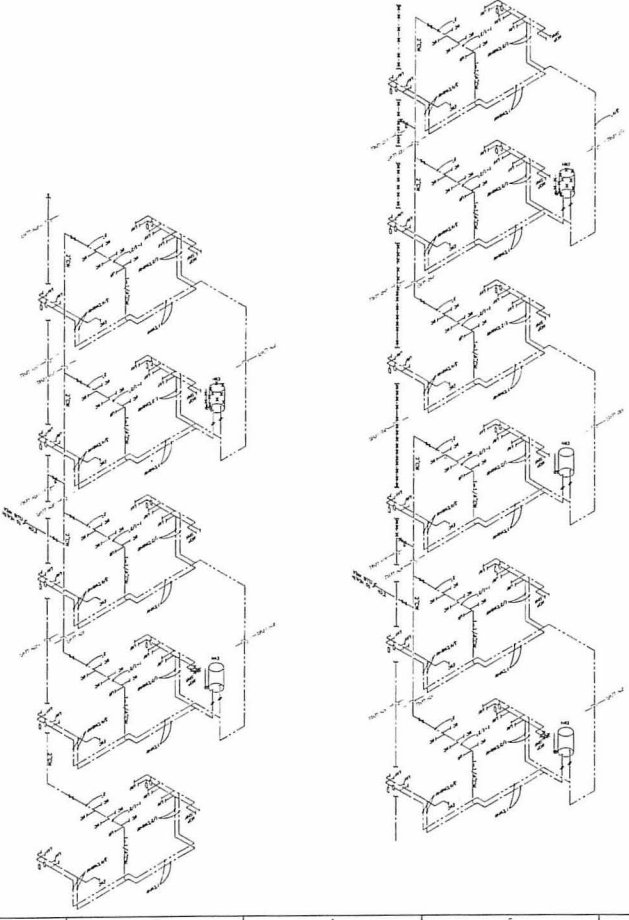
KEY DEMOLITION EAST CORE NOTES (APPLY TO THIS SHEET ONLY)

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2. EAST CORE - SECOND FLOOR, THIRD FLOOR - REMOVE EXISTING 4" GALVANIZED DOMESTIC WATER PIPING FROM THE SECOND FLOOR UP TO THE THIRD FLOOR SERVING TOILET FIXTURES ON EACH FLOOR TO ACCOMMODATE NEW COPPER PIPING.
3. EAST CORE FLOORING ONE AND SEVEN - ISOLATE EXISTING CHASE PIPING SERVING EXISTING EXISTING WATER HEATER. REMOVE SECTION OF CHASE PIPING AS REQUIRED TO ACCOMMODATE NEW ELECTRIC WATER HEATER. REMOVE EXISTING ELECTRIC WATER HEATER, ELECTRICAL POWER, CONTROL CONTROLS SUPPORTS AND ASSOCIATED APPURTENANCES. DISCONNECT TO SEWER AND DISPOSE.
4. EAST CORE FLOORING THREE, FIVE AND SIX - EXISTING ELECTRIC WATER HEATER TO REMAIN. REMOVE SECTION OF PIPING TO ACCOMMODATE NEW EXPANSION TANK.
5. EAST CORE FLOORING ONE AND SEVEN - TEMPORARILY ISOLATE CH, HW, WASTE AND VENT PIPING SERVING EXISTING WATER HEATER. REMOVE SECTION OF WALL BOARD, EXISTING WAP SH, BRING VALVE AND ASSOCIATED APPURTENANCES AS REQUIRED FOR NEW FUTURE.

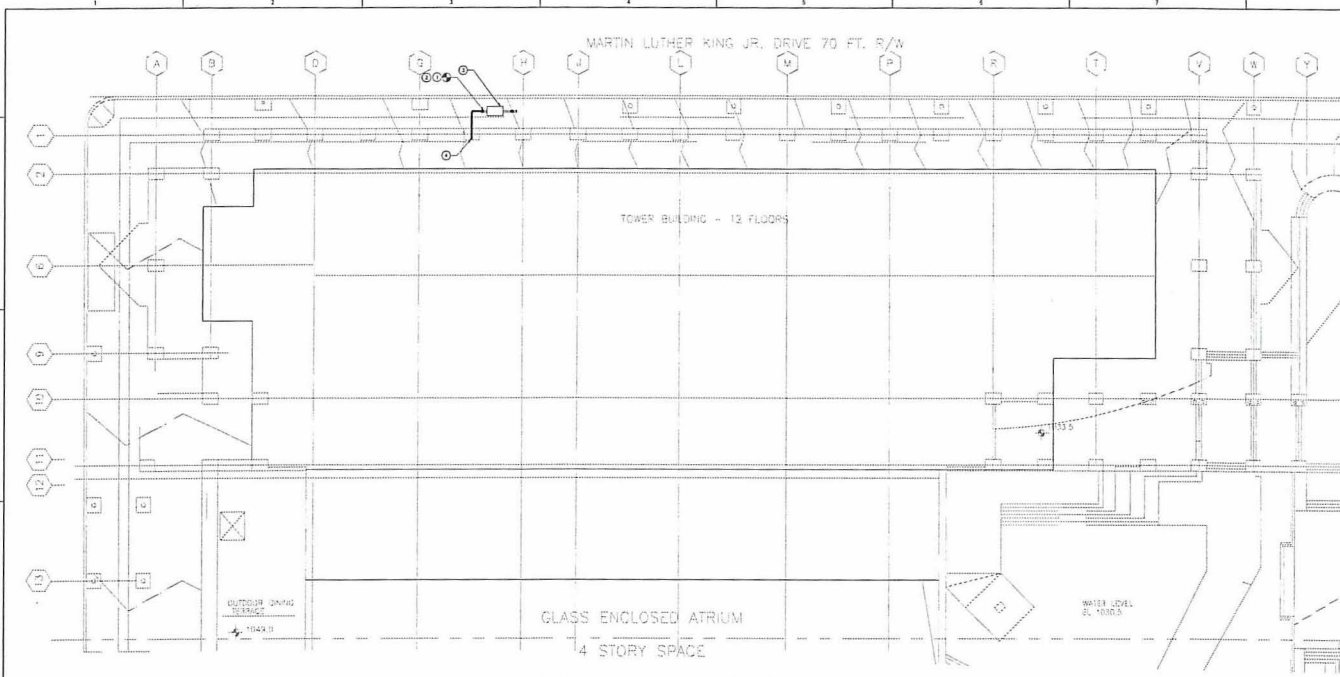
1
GOVERNMENT CENTER TOWER
PLUMBING RISER PLAN - WEST DEMOLITION
SCALE: AS SHOWN



2
GOVERNMENT CENTER TOWER
PLUMBING RISER PLAN - EAST DEMOLITION
SCALE: AS SHOWN



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FULTON COUNTY CENTER DOMESTIC WATER PIPING REPLACEMENT	
DATE	9/20/2019
DESCRIPTION	PLUMBING
SCALE	AS SHOWN
PROJECT NO.	15044
PROJECT NAME	GOVERNMENT CENTER TOWER DEMOLITION
DATE PLOTTED	9/20/2019 1:44:05 PM
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GOVERNMENT CNTR TOWER - SITE DOMESTIC COLD WATER - NEW PLAN

- KEY PLAN NOTES**
- 1. EXISTING WATER METER AND METER BOX ASSEMBLY TO REMAIN. CONNECT TO EXISTING WATER MAIN AND SERVICE AND INSTALL NEW 1/2" DOMESTIC COLD WATER SERVICE FROM METER AND SERVICE AND FROM AN ABOVE GROUND WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING.
 - 2. EXISTING WATER METER AND METER BOX ASSEMBLY TO REMAIN. CONNECT TO EXISTING WATER MAIN AND SERVICE AND INSTALL NEW 1/2" DOMESTIC COLD WATER SERVICE FROM METER AND SERVICE AND FROM AN ABOVE GROUND WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING.
 - 3. EXISTING WATER METER AND METER BOX ASSEMBLY TO REMAIN. CONNECT TO EXISTING WATER MAIN AND SERVICE AND INSTALL NEW 1/2" DOMESTIC COLD WATER SERVICE FROM METER AND SERVICE AND FROM AN ABOVE GROUND WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING.
 - 4. EXISTING WATER METER AND METER BOX ASSEMBLY TO REMAIN. CONNECT TO EXISTING WATER MAIN AND SERVICE AND INSTALL NEW 1/2" DOMESTIC COLD WATER SERVICE FROM METER AND SERVICE AND FROM AN ABOVE GROUND WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING. PROVIDE 1/2" DOMESTIC COLD WATER SERVICE TO THE BUILDING FROM THE EXISTING WATER MAIN TO THE BUILDING.

FULTON COUNTY GOVERNMENT CENTER DOMESTIC WATER PIPING REPLACEMENT

REV	DATE	DESCRIPTION

SCALE: AS SHOWN
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 DESIGNED BY: [Name]
 APPROVED BY: [Name]

PLUMBING SITE FLOOR PLAN

PROJECT NO. P2.0
 SHEET NO. 8 OF 11



FOR CONSTRUCTION



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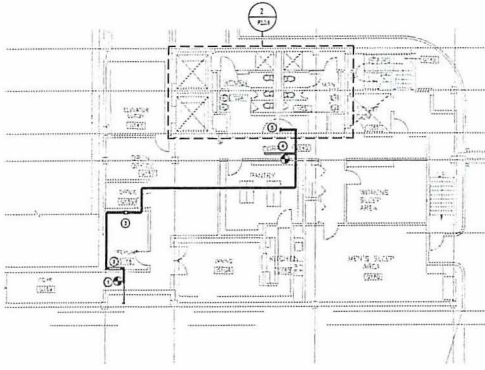


FULTON COUNTY
GOVERNMENT
CENTER DOMESTIC
WATER PIPING
REPLACEMENT

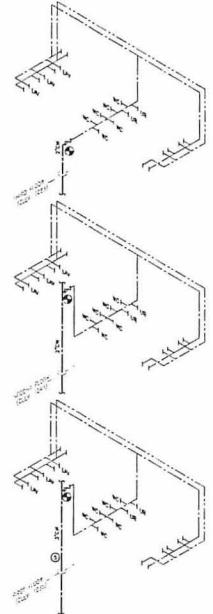
NO.	DATE	REVISIONS

PLUMBING
PUBLIC SAFETY
BUILDING
PLAN

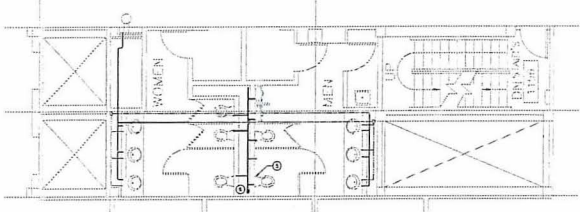
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3 OF 11



1 PUBLIC SAFETY BUILDING - GND
DOMESTIC COLD WATER - NEW PLAN
SCALE: 1/4" = 1'-0"

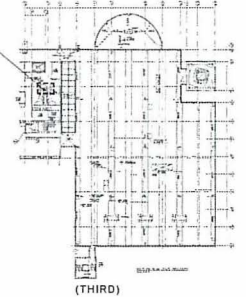
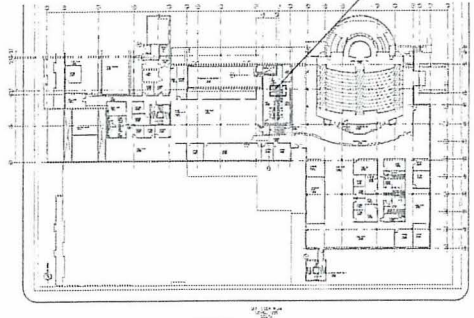
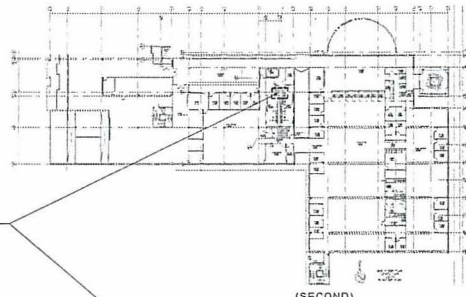
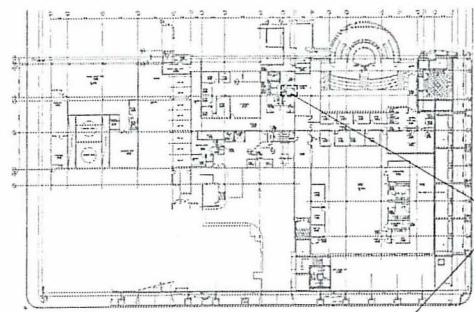


3 PUBLIC SAFETY BUILDING - RISER
DOMESTIC COLD WATER - NEW PLAN
SCALE: 1/4" = 1'-0"



2 ENLARGED - TYPICAL CORE
DOMESTIC COLD WATER - NEW PLAN
SCALE: 1/4" = 1'-0"

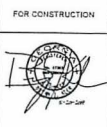
- KEY PLAN NOTES** REFER TO THE SHEET IND.
- 1 EXISTING 1/2" PIPING TO WATER METER TO REMAIN. CONNECT TO EXISTING 1/2" COLD WATER PIPE WITH 1/2" GALV. STEEL. REMOVE AND REMOVE FULL SIZE OF EXISTING 1/2" PIPING FROM BLDG. REPAIR OR REPLACE WITH 1/2" GALV. STEEL. REPAIR OR REPLACE WITH 1/2" GALV. STEEL.
 - 2 FURNISH AND MOUNT 1/2" DOMESTIC WATER BACKFLOW PREVENTION ASSEMBLY MOUNTED TO FIRE PUMP WALL.
 - 3 FURNISH AND INSTALL NEW 1/2" GALV. STEEL 1/2" ASSEMBLY ABOVE CEILING FULL SIZE OF CONNECTION.
 - 4 EXIST. CEILING THROUGH FLOOR - FURNISH AND INSTALL NEW 1/2" GALV. STEEL THROUGH FLOOR TO EXIST. CEILING. REMOVE AND REMOVE FULL SIZE OF EXISTING 1/2" PIPING FROM BLDG. REPAIR OR REPLACE WITH 1/2" GALV. STEEL. REPAIR OR REPLACE WITH 1/2" GALV. STEEL. REPAIR OR REPLACE WITH 1/2" GALV. STEEL.
 - 5 EXIST. CEILING THROUGH FLOOR - FURNISH AND INSTALL NEW 1/2" COPPER THROUGH FLOOR TO EXIST. CEILING. REMOVE AND REMOVE FULL SIZE OF EXISTING 1/2" PIPING FROM BLDG. REPAIR OR REPLACE WITH 1/2" COPPER. REPAIR OR REPLACE WITH 1/2" COPPER.



**LOW RISE BUILDING
AREA LOCATOR - MOP SINK WALL PROTECTION**

KEY PLAN NOTES APPLY TO THE SHEET ONLY

① REMOVE AND INSTALL NEW WALL, VALVE, COUPLER AND ACCESS PANELS
 BELOW EXISTING AND NEW EXPOSED PIPING. PROVIDE LOCKABLE STAINLESS
 STEEL MOP SINK ACCESS PANELS. 1/2" MIN. FOR ACCESS TO ACCESS
 PIPING AND NORMAL STAINLESS STEEL WALL SENDING FROM PACKAGES
 FROM TO NOT ABOVE FINISH FLOOR. SEE DETAIL DRAWING FOR MORE
 INFORMATION. THIS IS FINAL FOR SIG. 1ST, 2ND AND 3RD FLOORS.



FULTON COUNTY
GOVERNMENT
CENTER DOMESTIC
WATER PIPING
REPLACEMENT

REV.	DATE	DESCRIPTION

PLUMBING

LOW RISE
BUILDING
PLAN

P2.0.2

DATE PLOTTED: 1/20/2019
3 of 14

EXHIBIT G

EXHIBITS

SECTION 10

APPENDICES

Exhibit A – Safety and Health Management Process

Exhibit B – Contractor Rules and Regulations

FULTON COUNTY CONTRACTOR SAFETY AND HEALTH MANAGEMENT PROCESS

1.0 INTRODUCTION

Every Contractor performing construction related services shall follow the procedures outlined in this document.

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 and 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 effective, the most stringent rule or regulation will be enforced by the Contractor, Sub-Contractors 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 Sub-Contractors, all employees on the project, and the general public and complying with all governmental regulations and requirements (OSHA, EPA, DOT, state, local).

The Contractor is responsible for:

1. Implementing a safety, health and loss prevention process and program that meets or exceeds all the requirements in the Contract Documents and the safety, health and loss prevention guidelines referenced in the Contract Documents;
2. Reporting all accidents, incidents and near misses as required in the safety guidelines;
3. Coordinating the investigation of major accidents and incidents with the Project Manager;
4. Designating an employee on the site to be responsible for the Contractor's safety program; and
5. Implementing corrective action plans to address safety, health and loss prevention findings identified on the work site.

Nothing contained herein shall relieve the Contractor or any Sub-Contractor of such responsibility or liability.

4.0 PROCEDURE

- 4.1 The Contractor and each Sub-Contractor must implement a written safety and health prevention process and program following the guidelines contained in this document and in any other relevant portion of the Contract Documents. This program must be accepted by Fulton County or its Representatives prior to Notice to Proceed.
- 4.2 The Contractor and each Sub-Contractor must implement a drug and alcohol policy following the guidelines contained in this document and in the bid specific actions. This program must be accepted by Fulton County or its Representatives prior to Notice to Proceed.
- 4.3 The Contractor must designate a person responsible for site safety. Each Sub-Contractor must designate a person responsible for site safety.
- 4.4 Not Used.
- 4.5 Contractor is responsible for providing all necessary safety supplies and personal protective equipment required to protect its employees, Sub-Contractors, and the 'general public.
- 4.6 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.
- 4.7 Contractor shall maintain a competent person at the construction site at all times with 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.
- 4.8 The status of project safety shall be included in the Contractor's agenda, which is required in Progress Meetings.

5.0 DRUG AND ALCOHOL POLICY

The Contractor and each Sub-Contractor must implement a drug and alcohol policy 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 and each Sub-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 ACCIDENT AND INCIDENT INVESTIGATION AND REPORTING

- 8.1 The Contractor is responsible for reporting all accidents and incidents on the project site to the County's designated Representative within (1) business day. Accidents or incidents resulting in a fatality, property loss in excess of \$5,000, or involvement with the general public must be reported immediately to Fulton County's designated Representative and the investigation of the accident or incident coordinated with Fulton County Safety staff.
- 8.2 The Contractor will maintain a log of all injuries 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 on this project, Contractor shall perform a thorough investigation of the incident and document the information.
- 8.5 A written accident investigation report containing the following information a minimum must be forwarded to the Fulton County's designated Representative within 24 hours of 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 and each Sub-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 and each Sub-Contractor must implement a procedure to assure that written safety and health audits or inspections are conducted at least biweekly (every 2 weeks). Safety checklists used by Fulton County's designated Representative may be used. The Contractor may use this checklist or an equivalent approved by Fulton County's designated Representative.
- 10.1.2 Each written safety audit must be filed on the site and a copy forwarded to Fulton County designated Representative.

10.2 NOT USED

10.3 INSPECTIONS BY REGULATORY AGENCIES

- 10.3.1 The Contractor must notify the Fulton County designated Representative whenever a 051-IA compliance officer, health inspector, or EPA or Georgia Environmental Protection Division Representative arrives at the project site to conduct an inspection.
- 10.3.2 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.
- 10.3.3 These records will be reviewed with Fulton County designated Representative and included in the Construction Project files.

10.4 SAFETY INSPECTION AND AUDIT FOLLOW UP

- 10.4.1 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.
- 10.4.2 After this review the findings may identify areas needing improvement.
- 10.4.3 A copy of the audit and any areas identified, as needing improvement will be forwarded to the Contractor's senior management.
- 10.4.4 For findings that indicate major loss potential or serious concerns about site safety, the areas identified as needing improvement and the overall performance may be reviewed by Fulton County's designated Representative A written action plan to address the Contractor's performance issues may be developed.
- 10.4.5 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.
- 10.4.6 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 accidents 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 Subcontractor 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

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 Return to Work Policy*

The Contractor and each Sub-Contractor will be required to establish a transitional work program for employees injured at work, which provides modified duty within the employee's physical limitations.

13.2 Fire Prevention Program*

The Contractor and each Sub-Contractor will be 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.

13.3 Hazard Communication (HAZCOM)*

The Contractor and each Sub-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).

13.4 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 65 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 may be exposed to dust and/or chemicals in excess of the OSHA permissible exposure limits.

- * Long pants are required.

13.5 Confined Space Entry

If the project work involves permit required confined spaces, a permit required confined space entry program that meets 051-iA 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

13.6 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 and each Sub-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-Contractor 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; and
- 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 051-IA 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 stops 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 (Jig) 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 stored separately or separated in accordance with the appropriate code.
- 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 and each Sub-Contractor who has employees exposed to noise levels exceeding 85 dBA 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 and each Sub-Contractor who has employees who wear respiratory protection 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 flaggers

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 overhead 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

**Fulton County
Government Center
Atlanta, GA 30303**

CONTRACTOR RULES AND REGULATIONS

The purpose of these Contractor Rules and Regulations is to provide additional resources when working at the Fulton County Government Center in downtown Atlanta, GA.

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Fulton County
Government Center
Atlanta, GA 30303

CONTRACTOR RULES AND REGULATIONS

This document covers in detail how the Contractor is to handle most situations encountered during construction.

1. AIR BALANCE REPORTS

If the Property Manager or Chief Engineer deems necessary, where partitions are installed, moved, removed or altered, which can affect airflow, air supply requirements shall be supplied and an air balance check performed at completion of work to ensure proper airflow.

Prior to the commencement of any air balancing work, the mechanical contractor shall request HVAC design specifications for the building. The Contractor must also provide a detailed summary of the proposed work along with a full set of mechanical plans for review prior to the start of the construction.

Contractor, at the completion of the installation work, shall balance and adjust all air moving equipment and air distribution equipment to within ten (10) percent of the design CFM's and submit a full balancing report. Air balance reports will be submitted prior to final acceptance and release. The air balance contractor shall be certified by the National Environmental Balancing Bureau.

2. BLINDS AND DRAPERIES

During construction, the Contractor shall protect the existing window treatment, i.e., shades/blinds/draperies, so as not to damage them, their appearance or proper operation. All blinds must be clean, in proper working order and properly re-installed at the conclusion of the tenant improvements.

3. BUILDING EQUIPMENT

The loan to Contractor of building equipment is discouraged by property management.

4. BUILDING TIE-INS

Any connections or "tie-ins" that are made to the building systems (plumbing, mechanical, electrical, fire alarm, sprinkler, etc.) must be coordinated with the Property Manager and Chief Engineer in advance.

The Contractor must provide advance written notice to Property Management and Chief Engineer 48 hours or two business days, whichever is greater, in advance for all "tie-in" work.

Building Tie-ins request can be sent via email to Charles.Lyons@fultoncountyga.gov or Vijay.Nair@fultoncountyga.gov.

Authorization for building “tie-ins” that have the potential to impact building operations may have a longer lead time and will be discussed at the pre-construction meeting. Property Management will determine the best time of the day for all building tie-ins that have the potential to impact other building operations.

5. CARPET

Prior to demolition, if carpet is to remain in suite, it is to be protected by a heavy plastic cover and cleaned daily at the end of each work; otherwise it should be removed, stored and re-laid. Additionally, public area corridor carpet is to be protected by plastic runners or a series of walk-off mats from elevator to suite under reconstruction (including carpet in the elevators) and must be cleaned daily as well.

All construction areas that impede or are accessed through public areas will be cleaned daily to meet the standards of a Class “A” office building. If cleanup beyond vacuuming is required daily, the Property Manager will meet with the Contractor to address the matter. The cost of this additional cleaning will be an expense to the Contractor.

6. CONCRETE CUTTING and CORE DRILLING REQUIREMENTS

Prior to any concrete cutting/drilling, a plan must be submitted to the Property Manager, Project Manager and/or Chief Engineer for review showing the proposed extent of slab removal. The plan may also include the following information when requested.

1. Dimensions showing the length and the width of the slab removal.
2. The slab removal shall not begin until the proposed slab removal plan is approved by the building’s structural engineer when designated by the Property or Project Manager.
3. There shall not be any overcutting of the concrete slab during slab removal.
4. All corners or intersecting saw cuts shall be core drilled.
5. The contractor is responsible for repair work associated with all overcutting.
6. The extent of the repair will be as required and approved by the Property or Project Manager.
7. The Contractor shall, prior to any cutting, x-ray the existing concrete to familiarize himself with existing conditions. All films are to be available for the structural engineer to review and all floor penetration locations are to be marked for review by the structural engineer prior to removal when required by the Property or Project Manager.
8. The Property Manager must be notified at least seventy-two (72) hours prior to commencement of work.

The Property and/or Project Manager will discuss these requirements as well as provide copies of the required work permits at the pre-construction meeting. Property Management will determine

the best time of the day for all concrete cutting work that will have the potential to impact building operations.

7. CONCRETE DEMOLITION/POURING & SCHEDULING

All structural work must be approved by the building's designated structural engineer, prior to starting structural work when required by the Property or Project Manager.

Jack hammering and/or hammer drilling must be approved Property Management prior to scheduling work. The Contractor must provide advance notice to Property Management 48 hours or two business days, whichever is greater, in advance for all concrete demolition/pouring work. Notice must be in written form and must be 48 hours or two business days whichever is greater in advance for all concrete work.

Contractor shall be responsible to repair any existing construction that may be damaged as the result of demolition and will be financially responsible for any additional operating expense incurred who may be affected by the damage.

Authorization for concrete demolition/pouring that has the potential to impact other building operations may have a longer lead time and will be discussed at the pre-construction meeting. Property Management will discuss these requirements as well as provide copies of the required work permits at the pre-construction meeting between the Contractor and Property Management. All approved designated times for this work will be determined by Property Management.

Final structural engineer approval is required prior to scheduling concrete pouring when required by the Property Manager. All concrete specifications are to meet existing base building design conditions.

8. CONDENSATION DRAIN LINES

Condensation drain lines from A/C units must be labeled and piped to a wet stack and not to a sink.

9. CONSTRUCTION INSPECTIONS

Contractor is to perform a thorough inspection of all common areas prior to construction to document any existing building deficiencies. Upon completion of work, contractor shall return these areas to match the original condition in which they were originally viewed. Any damages caused by the Contractor shall be corrected at the cost of the Contractor.

10. DATA SHEETS

The Contractor must submit to Property Management and Chief Engineer a manufacturer's data sheet for any major electrical or mechanical equipment to be installed and tied into base building systems.

Copies of all Operations & Maintenance documents are to be submitted with the as-built plans to the Project Manager along with any associated Material Safety Data Sheets.

11. DELIVERIES & ACCESS TO JOB SITE

Contractor's personnel must not access any floors other than the ones where they are assigned to work. Any large deliveries, removal of materials, activities affecting the operations of the building, or access to electrical or telephone closets must be coordinated through the Property and/or Project Manager with minimum two-day advance notice.

Carrying tools and equipment on the passenger elevators and in lobbies will require special permission by the Property Manager. The Contractor will be provided access to the freight elevator to be used for deliveries. Extended use of freight elevators must be coordinated with the Property Manager.

Contractors must use the freight elevator for all deliveries and movement through the building. Construction workers are not allowed to enter or exit the building through the lobby except when required by or permitted by the Sheriff Department. The loading dock area entry must be used at all times. Since the ability to move material is dependent on the final destination floor of the material and the height dimension of the service doors and freight elevator, Property Management and Project Manager request that all contractors conduct a pre-delivery route inspection at the time of the pre-construction meeting.

All deliveries will be made through the loading dock unless otherwise approved by the Property Manager. All deliveries will either be made by a scheduled appointment through the Property Manager or Project Manager 48 hours or two business days, whichever is greater, in advance of the anticipated delivery date.

It is the Contractor's responsibility to verify what size vehicles can be accommodated in the loading dock. Any damage to the loading dock caused by negligence or the lack of proper due diligence by the tenant's Contractor will be the responsibility of the Contractor to repair. Parking in the loading dock is not allowed. Blocking the building's dumpster is prohibited.

Vehicles are prohibited from idling in the loading dock. The engines of all vehicles entering the loading dock must be turned off immediately following entrance (except when lift gates are in operation) and contractors must exit the dock immediately after turning on an engine.

12. LOADING DOCK RULES AND REGULATIONS

The loading dock area, which is accessed from Mitchell Street, serves the office portions of the building. Strict adherence to these Contractor Rules and Regulations is required to ensure the most efficient management and cooperative use of the loading dock.

The loading dock operation will commence at 6:00 a.m. and will close down each evening at 5:00 p.m., Monday thru Friday, excluding observed holidays. The dock access is controlled by the Security Guard on duty.

No delivery through the Loading Dock will exceed the maximum allotted time of 30 minutes unless scheduled ahead of time. All large-scale deliveries (i.e., furniture moves, electronics deliveries, large inventory deliveries) and all after-hours deliveries must be scheduled with the Property Management office. The advance notice requirement for construction material is at least 48 hours or 2 business days, whichever is greater, in advance for deliveries. Special deliveries of this nature that have not been pre-scheduled will be turned away.

Upon arrival to the dock, before any delivery commences, all delivery personnel must sign in with the Security Guard and produce valid identification. Additional information required will be name, company they are representing, time in, anticipated delivery time, and tenant in whose name delivery is being made.

Under no circumstances will the loading dock be used for storage of items to be picked up or for temporary storage. Contractor shall become familiar with the Building, with special attention to the size and capacity of the freight elevator and any other building system, building access, utilities, or any other element of the facility, which may present a limitation to the construction process proposed by Contractor.

13. INSURANCE

Refer to the Contract Documents for additional information on Insurance requirements.

14. DUCT WORK

The base building HVAC system shall contain a ducted supply and return air system to maintain occupant comfort. All HVAC work must conform to building design criteria and be approved by the Chief Engineer.

15. DUMPSTERS

The Contractor is responsible for the removal and hauling of trash and construction debris. Trash dumpsters may be placed after 7:00 a.m. on Saturday and must be removed by 6:00 a.m. Monday morning, and weeknights after 6:00 p.m. and must be removed before 6:00 a.m. The location of the dumpster is to be determined by Property Management and Contractor must obtain Property Manager's approval before placing dumpster. The building compactor cannot be used for any construction trash. No trash shall be left anywhere in the building (including elevators and freight vestibules) at any time. Any damage caused by the placement, use, servicing or removal of dumpsters will be the responsibility of the Contractor and repairs to Property Management's satisfaction.

16. DUSTY WORK

Activities that create excessive dust (i.e., sheet rock cutting, sanding, etc.), or smoke (i.e., burning or welding), or noise (drilling, saw-cutting) must be coordinated with Property Management with 48 hours prior written notice and must be performed between the hours of 8:00 pm and 6:00 am. Notice must be in written form by way of the Work Permit and must be sent 48 hours or two business days, whichever is greater, in advance for all dusty work. All areas that are impacted by the dusty work including but not limited to telecom rooms, electrical room, mechanical rooms, stairwells, etc. will be the responsibility of the Contractor to clean on a regular basis.

Authorization for dusty work that may have the potential to impact other building operations may have a longer lead time and will be discussed at the pre-construction meeting.

In areas where there will be dust generated, it is the Contractor's responsibility to bag the smoke detectors in the area prior to commencing work and remove the bags at the end of the day.

Prior to starting work on any floor, Contractor shall replace existing HVAC filters with a set of pre-approved filters (specification to be supplied by Chief Engineer) that prevent dust from entering the HVAC ducting and replace with new filters at the conclusion of the project.

See also: Welding and Soldering

17. EMERGENCY PROCEDURES

All Contractor personnel are to be familiar with emergency procedures and are required to follow instructions of the Floor Fire Warden, including fire drills.

18. EXISTING BUILDING EQUIPMENT AND FIXTURES

The Contractor will be responsible for repairing any existing building equipment and fixtures damaged as a result of alteration work. This includes ceiling tiles, barrier paper system, light fixtures, carpet, elevators, walls, floors, doors, induction units, grilles, registers and any other fixtures not specifically mentioned. If alteration work requires the relocation of space temperature sensors, thermostats or other building equipment, such relocation will be solely at the Contractor's expense.

It is the Contractor's responsibility to provide Masonite to protect common area floor when bringing in materials and to remove it at the end of each workday.

It is the Contractor's responsibility to protect all core areas on the floors being worked: covering existing doors and walls, not accessing restrooms, and protecting other completed finishes and equipment. The disassembly of door props and door closures are not authorized.

19. FIRE STOPPING MATERIALS

OSHA-approved fire stopping materials are required for any wall, floor, or ceiling penetrations. Any breach of existing materials is required to be resealed by same products. Any penetration through Fire Rated partitions/floors must be pre-approved by the Property Manager and caulked using approved Fire Caulking

20. FLAMMABLES

Contractor must file MSDS sheets for all chemicals used during construction with the Property Manager, prior to performing the work. In addition, flammable liquids should be stored in and dispensed from approved safety cans, flammable rags must be stored in airtight containers, and flammable liquid dispensers of the plunger type should be used for wiping cloths.

21. FOOD & DRINK

All food and drinks are to be consumed only in designated contractor eating areas. No food or drinks are to be carried on passenger elevators, over carpet, or in employee break rooms, or finished office space.

22. HOURS

Building

Property Management must be notified, in advance per the time frames included in the pertinent sections of this document, of any work that may disrupt normal business operations, (i.e., drilling or cutting of the concrete floor slab, use of nail guns, electric saws). Property Management reserves the right to determine what construction work is considered inappropriate for normal business hours and to issue a stop-work order upon receipt of complaint/concern by other occupants in the building.

Engineering

The Engineering staff's hours are from 7:30 a.m. until 5:00 p.m., Monday through Friday. All after-hours work must be coordinated through the Property Manager and/or Chief Engineer.

23. HOUSEKEEPING

All trash must be removed from the windowsills, including but not limited to lunch, trade tools, and equipment. All lunch trash must be disposed of by the Contractor at the end of each work day. The Contractor must remove all trash by way of the freight elevator. All trash removal times will be coordinated with Property Management at the pre-construction meeting.

All clean up and trash removal from the building premises is the sole responsibility of the Contractor. The building dumpster will not be used for construction debris.

The Contractor shall be responsible for cleaning the interior of the windows and sills prior to substantial completion. All common areas used by the Contractor are to be cleaned and vacuumed at the end of each workday. Contractor shall keep its work area, including the loading area, in an orderly condition.

The premises must be secured and the doors to the work area, mechanical and electrical rooms, and stairwells must be closed and the lights turned off at the end of each day. Upon construction completion, the Contractor shall remove all debris and surplus material and thoroughly clean the area.

24. ISOLATION VALVES

Equipment isolation valves shall be installed on all A/C units to facilitate maintenance and to allow the unit to be removed without interfering with the building operation as approved by the Chief Engineer. Contractor must include adequate provision for maintenance access at any isolation valves they may install.

25. KEYS AND ACCESS PASSES

When necessary to perform the Work, Contractor may be issued a key/access pass to existing mechanical/electrical equipment spaces (and other spaces as required) by the Property Management or designed representative. These keys/passes shall be returned at the end of each work period for which they are issued, and reissued on succeeding days, if necessary.

The fee for lost keys is \$25.00 and for a lost access card is \$100.00. Said fee is due and payable within five days of billing.

26. LIFE SAFETY SYSTEMS

Contractor, under no circumstances, will be allowed to disconnect, tamper with, delete, obstruct, relocate or add-on any life safety, fire detection, notification suppression unit or devices, except as indicated on the drawings approved by the Fire Department Authority having jurisdiction.

Any work involving the building's sprinkler or life safety systems must be arranged in advance through the Property Manager, Project Manager and/or Chief Engineer. The system must be back in operation at the end of the workday. Under no circumstances shall the sprinkler or fire alarm system be left inoperative overnight without a fire watch approved by AHJ.

All work that may, in any way, affect the main building fire alarm system and/or building operations must be noted on the Work Permit and communicated through the Property Manager. Management reserves the right to require additional security measures in the event of repeated false alarms.

Contractor must assist the Property Manager and/or Fulton County Safety Officer in preparing "System Impairment Notification" to Fulton County's Insurance Carrier prior to disabling any

Fire Alarm or Fire Suppression component in the building. Such notifications must be promptly removed when impairment situation is resolved.

Permits for "Hot Work" are to be obtained from Property Management. All "Hot Work" (cutting, welding, and soldering) is to be performed only after a Work Permit has been obtained for the particular area or job and the following is provided: (i) fire extinguishers, (ii) non-combustible covering, (iii) screening of arc welding operations, (iv) smoke detection system disconnected, and (v) posting of Permit in conspicuous location.

All fire protections systems, including sprinklers, must be fully operational at night unless previously arranged by Work Permit with Property Management.

One half hour before systems are reactivated, Contractor shall notify the Security Supervisor and Property Management.

Fire Alarm Voice Annunciation Speakers will not be removed, disconnected or relocated without permission of Property Management. Requests to do any work interfering with this system must be expressed to Property Management in writing by Contractor with 48 hours or two business days, whichever is greater. Contractor in turn must have written response from Property Management only, before any work is permitted.

Contractor shall arrange with Property Management for protection of all fire alarm devices. All sprinkler/fire system work including testing or inspection of the fire alarm system or the sprinkler system must be coordinated with Property Management upon 72 hours' written notice.

Contractor must not block fire exits or fire corridors or use these areas for storage.

27. NEW-HEATING, VENTILATION AND AIR CONDITIONING

All new HVAC equipment installed must have a service disconnect located within sight of the unit when required by the Chief Engineer. Gauges and thermometers must be installed in both the supply and return airside and waterside of new equipment when required by the Chief Engineer. Copies of all required balancing reports must be submitted to Property Management and Chief Engineer.

28. NOISE/ODORS

The floors above and below the area of contract work may be occupied. Contractor shall exercise reasonable restraint and control of work to minimize noise and spread of odors. Contractor shall execute the work in its Contract as quickly as practical to avoid unnecessary disturbances to occupants within the premises.

Contractor is only permitted to perform work that produces an odor (e.g., use of cleaners, stains, paints, adhesives) during normal business hours upon written notice to and prior approval by Property Manager so building air systems can be adjusted. Contractor must use chemicals (including paints, thinner, cleaning liquids) of low Volatile Organic Content (Low VOC) and

must have readily available the MSDS related to the chemical used. Contractor will include temporary ventilation and/or other safety measures as necessary to protect work crew, tenants, and the public.

29. NOISY WORK

Property Management must be notified 48 hours in advance of any work that may disrupt normal business operations (e.g., drilling or cutting of the concrete floor slab, placing studs for party-wall drywall), as outlined in the project schedule.

Contractor shall identify in weekly progress meetings upcoming work which may be noisy. Property Management may be forced to stop excessive noisy work for the duration of the work day.

Any operation that cause noise such as drilling, saw cutting, hammering, etc will not be allowed during normal courthouse operating hours. Such operations will be allowed only on weekends or after 5PM on working days.

Should Property Management receive complaints from tenants in other building in the complex due to noisy operations, Contractor's on-site representative will meet with the Property Manager and work out an alternate schedule.

30. NON-CONSTRUCTION AREAS & NORMAL LIMITS OF OPERATIONS

The Contractor is totally responsible to protect existing finishes, furniture, etc. for any work necessary in an occupied or unoccupied space. Damages in these spaces or in the common areas or elevators will be the sole responsibility of the Contractor. Repairs will be done to the reasonable satisfaction of Property Management. If those reasonable repairs are not made, Property Management will cause the repairs to be made and the cost of doing so will be charged to the Contractor.

Contractor's normal limit of operations shall be confined within the Limits of Work Area as designated on the approved drawings.

The Contractor will prohibit his unauthorized personnel and visitors from using other areas.

Property Management, its consultants, and other contractors performing work within these Limits of Work Areas shall be allowed regular access through security as necessary for construction to proceed at pre-scheduled time (except as may be restricted by Property Management as noted above).

When it becomes necessary for Contractor to work in areas other than the work area, at least 24 hours' written notice shall be given to Property Management.

It is the Contractor's responsibility to ensure that all work shall be done in accordance with O.S.H.A. regulations, all applicable city, state and federal building codes.

31. OTHER CONTRACTORS

Contractor is hereby notified there may be other contractors working in the Building. Some of these contractors may be affiliated with labor unions and some will not. It is Contractor's responsibility to maintain a harmonious relationship between his employees, his subcontractors, and subcontractor's employees in the entire building.

Contractor will be notified in writing if his employees in any way impede the work of any contract within the building within 24 hours. If the situation is not corrected immediately, Contractor's employees will be removed from the premises.

32. OUTAGES

Any outages affecting areas outside of the Limits of Work Areas shall be noted no later than the pre-construction meeting. Any requests by the Property Manager or Chief Engineer for additional information, communication or meetings will be honored by Contractor.

Utility (electric, water, gas or oil) and service outages shall be kept to a minimum and will be permitted only with a Work Permit issued. All requests for outages shall be made in writing 72 hours in advance of their need. There will need to be an exception for emergency situations.

Requests for outages will not be considered unless they include the identification of all areas that will be affected by the proposed outage.

33. OWNER'S REPRESENTATIVES AND MANAGEMENT

Contractor shall abide by the directions of the Property Manager and/or the Chief Engineer in matters affecting the operation, safety and security of the premises, its employees, and its visitors.

Contractor shall abide by all directions in matters affecting HVAC systems, fire safety, and fire prevention measures.

All oral instructions given to Contractor's Superintendent by Property Manager and Chief Engineer shall be implemented by Contractor's Superintendent within a reasonable time.

All personnel employed by Contractor, including subcontractors and their employees, shall be instructed by Contractor to abide by all published regulations, and all directives of Property Management.

34. PARKING

There is no parking allowed in the loading dock area or other designated parking areas by contractors unless authorized by Property Management. Any unauthorized vehicles blocking the

loading dock or other designated parking areas will be towed. Property Management will arrange parking guidelines at the pre-construction meeting.

35. PERSONNEL ID AND DAILY SIGN IN/SIGN OUT

Contractor ID Badges

All contractors shall wear I.D. badges or uniforms showing company name.

The identification badges shall be conspicuously fixed to outer garments above elbow level and issued by Property Management for the duration of the project, upon completion of work, the badge will be returned.

Any of Contractor's personnel or subcontractor's personnel who do not comply with this requirement at all times will be denied access to the Building or will be escorted off the premises, failure to comply with this requirement will be reported to the Contractor's on-site representative and Project Manager

Badges are to be returned to Contractor's Superintendent at the end of that person's need for a badge. Contractor shall notify Security Supervisor should anyone no longer be authorized to work on site and who has not returned their badge and shall keep a list of unauthorized badge numbers on hand at the check-in point for the job site.

Sign In and Out

The Contractor will submit a log of personnel working in the Building by 10:00 a.m. each day to the Security Supervisor.

Personnel List

Contractor will provide Security Supervisor and Property Management with a complete list of all Contractor and subcontractor personnel authorized to access the job site. The list shall contain full name, company, phone number, and floors authorized for access. The list must be kept updated, as only listed personnel will be allowed access to the job site. All changes must be made in writing to the Security Supervisor 8 hours prior to new personnel accessing the site.

36. PERMITS

City Permits

All permits pertaining to the job must be posted in a conspicuous place in the construction office. A copy of the permit must also be submitted to Property Management prior to any work being performed.

37. PHONES

Contractor needs to provide their own construction phones. The building has no phones, pay or otherwise, available to the Contractor.

38. PIPING

All piping in proper sizes, including sinks, kitchen units, water closets, water heater and condensation piping should be copper (use of plastic pipe in plenum ceilings is strictly prohibited).

39. POSTING OF RULES & REGULATIONS

A copy of these Rules and Regulations acknowledged and accepted by the Contractor shall be posted on the job site for all parties to observe. Contractor is responsible for instructing all of his personnel, subcontractors and suppliers to comply with these regulations.

40. PROBLEMS, DISRUPTIONS, ALTERATIONS

All problems, disruptions, and emergency alterations must be reported to the Property Manager/Chief Engineer at 410-547-3500.

41. SAFETY, GENERAL GUIDELINES

Adequate measures should be taken to protect building employees, visitors and occupants from construction activities and hazards, such as: blocking off area, proper handling of materials, storage of same removal of building debris and general good housekeeping practices.

42. SECURITY

Contractor personnel are required to be on-site for off-hour material deliveries.

Upon request by Building Security, contractors may be required to submit to an inspection of bags, boxes, and other items leaving the building.

43. SERVICING OF MECHANICAL EQUIPMENT

No walls or ceilings shall be installed that inhibit the access to a variable air volume terminal unit. The unit shall be relocated or an additional unit installed on the opposite side of the wall. In addition, no walls shall be constructed across a ceiling light fixture, which would inhibit changing of lamps or servicing the light fixtures when necessary. At the conclusion of the project, it is the Contractor's responsibility to ensure that access to all building equipment is available. If access panels will be required to access building equipment, then it is the responsibility of the Contractor to install such access panels.

44. SIGNAGE

Contractor or subcontractor signage may not be displayed in the building common areas or on any of the window glass.

45. SMOKING

This is a Non-Smoking building. Please be aware that the penalty for not abiding by this regulation is dismissal from the site. Please notify your subcontractors, suppliers, and any other persons expected to use the site of this Fulton County policy. (Refer FC Policy Number 300-4 attached)

Smoking will be allowed in the areas outside of the 25 feet radius requirement of the building entrances, outdoor air intakes and any building penetrations that may provide outside air to the building.

46. STAIRWELLS

Contractor shall coordinate all work in stairwells with Property Manager with special attention to fire issues. Safe egress must be maintained at all times for workers and tenants.

47. SUPERVISOR/GENERAL CONTRACTOR

The Contractor shall furnish a Construction Superintendent for 100% of the job.

All questions are to be directed to the Property Manager and/or Chief Engineer via the Contractor's Construction Superintendent.

The Contractor will be responsible for general protection of the Building in the areas he or his subcontractors use or travel through and for securing the construction area daily.

48. TELEPHONE/ELECTRIC CLOSETS

Common area telephone/electric closets are the property of the building. No telephone/electrical material will be allowed to be stored in these closets.

No device shall be attached to existing telephone/electrical equipment or installed within the telephone/electric closets without written permission from the Property Manager.

Electrical receptacles within the confines of the telephone/electric closet are strictly for telephone equipment and building operations use. Nothing shall be plugged into or unplugged from those receptacles by Contractor.

49. TURNOVER

At the completion of construction and in addition to other Contract requirements, the Contractor shall deliver to Property Management for internal distribution four (4) copies of the following:

- Photocopies of all warranties
- All operating manuals and final specifications
- EMS (Data link for zones) shall be complete
- Labeling (annunciator, panels, etc.) shall be complete
- Complete set of as-built plans including hard and soft copies. Soft copies should be in AutoCad format and PDF format.
- Letter of Compliance relating to fire sprinkler heads.
- Copy of all approved submittals, including finish/color selection chart.
- Attic Stock Materials that are extra (flooring, paint, lights etc) and / or as required in the contract

50. UNUSED MATERIALS

Any and all existing materials removed and not reused in the construction, except as directed by the Property Manager, shall be disposed of by the Contractor as waste or unwanted materials. Contractor shall keep areas outside its demised premises free at all times from waste material, rubbish and debris, and shall remove all material on a daily basis.

51. UTILITY CONSUMPTION

Omitted.

52. UTILITY LINES

Before any drilling, core boring or other structural work is performed; the Contractors will verify the locations of the building's utility lines so as not to damage them. Contractors are required to take all possible precautions to protect utility lines.

53. VALVES

Any domestic, high temperature, chill or condenser water connections made to the building's piping system must have good quality isolation, brass body gate-type valves and adequate system drain valves installed as approved by the Chief Engineer. All valves must be easily accessible and not concealed in a finished ceiling. All valves must be identified through appropriate signages.

54. WALK-OFF MATS

Temporary walk-off mats are to be provided by the Contractor on the public corridor side of entrance doors during construction.

55. WATER AND ELECTRICITY

Water will be furnished to the Contractor without cost, in reasonable quantities for use in construction (exclusive of drinking water).

Electricity shall be supplied to the Contractor through electrical service located and approved by the Chief Engineer. The Contractor shall make all connections, furnish any necessary extensions, and remove same upon completion of work.

56. WELDING AND SOLDERING

The Property Manager and Chief Engineer must be contacted 48 hours prior to use of any welding torches, burning rigs or other heat producing items so that the fire alarm systems can be disabled.

The Contractor must provide advance notice 48 hours or two business days, whichever is greater, in written form by way of a Work Permit for all welding and soldering work. Authorization for welding or soldering work that may have the potential to impact other building operations may have a longer lead time and will be discussed at the pre-construction meeting.

Property Management will discuss these requirements and provide standard form Work Permits at the pre-construction meeting. All approved designated times for this work will be determined by Property Management.

Neither open-flame burning, nor welding, nor arc welding will be permitted without the Contractor having secured an appropriate Work Permit from Property Management. The Property Manager and/or Chief Engineer have the right to stop any work at any time if he or she determines that unsafe conditions may exist. Contractor shall correct all such unsafe conditions as directed and obtain the approval by Property Management of such corrections prior to commencing further work.

Contractor shall keep a portable hand fire extinguisher of the appropriate class within reach at ALL times during welding or burning. Contractor shall also keep all required exit corridors, and the like, clear and unobstructed at all times when working in such areas. All flammable materials shall be removed to a location not closer than 35 feet from all burning and welding operations. All workmen shall be instructed as to the location of the nearest fire alarm device. All fixed flammable items shall be completely covered with fireproof blankets. Arc welding shall be screened from vision of all passers-by.

Contractor shall be required to maintain a "Fire Watch" security effort during, and for a minimum of 30 minutes at, the completion of each welding operation.

57. WINDOWS

During construction, contractor is to make every effort to protect window treatments, and not store tools or materials on the window ledges.

58. WORK SCHEDULES

Property Management will be notified of all work schedules for all workmen on the job and will be advised, in writing, of the names of personnel who may be working in the building before or after standard building operating hours.

59. WORKER CONDUCT

Contractors and subcontractors personnel shall be respectful of occupants, visitors, and building staff and shall not permit its employees to use foul language (FC Policy 100-30 against verbal harassment attached), smoke, exhibit rude behavior, commit vandalism, use alcohol, illegal drugs or exhibit improper appearance. It will be the responsibility of the Contractor to enforce this regulation on a day-to-day basis. Individuals violating this rule will be removed from the building and will not be allowed to return.

Lounging in the elevator or main lobbies or building areas is forbidden.

Contractor Personnel

- Must obey all safety procedures and participate in all drills or other life safety exercises.
- Must wear shirts and shoes at all times.
- Clothing must not display obscene language or graphics.
- Must not access any floor other than the one where they are assigned to work.
- Must not use abusive and offensive language.
- Must not discharge bodily fluids (e.g., spitting or urinating) except in proper facilities
- Shall use only the restrooms designated for Contractor use.
- Must not litter or abuse the designated restrooms.
- Must only eat or drink in assigned areas.

Playing of radios or musical instruments is not permitted in the Building. Use of earphones for playing of radios or other musical listening devices is also prohibited for safety reasons.

Work on occupied floors shall be conducted in such a manner as to cause as little disruption to occupants and building operations as possible.

60. AMENDMENT

Property Management has the sole right to amend these Contractor Rules and Regulations as the situation warrants at any time. Any questions regarding these rules and regulations must be brought to the Property Manager's attention immediately.

EXHIBIT H
PURCHASING FORMS

**FORM A: GEORGIA SECURITY AND IMMIGRATION CONTRACTOR AFFIDAVIT
AND AGREEMENT**

Instructions:

Contractors must attest to compliance with the requirements of O.C.G.A 13-10-91 and the Georgia Department of Labor Rule 300-10-01-.02 by executing the Contractor Affidavit provided.

STATE OF GEORGIA

COUNTY OF FULTON

FORM A: GEORGIA SECURITY AND IMMIGRATION CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services¹ under a contract with [insert name of prime contractor] J Squared Plumbing Co. Inc. on behalf of Fulton County Government has registered with and is participating in a federal work authorization program*,² in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services to this contract with Fulton County Government, contractor will secure from such subcontractor(s) similar verification of compliance with O.C.G.A. 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the Fulton County Government at the time the subcontractor(s) is retained to perform such service.

406419

EEV/Basic Pilot Program* User Identification Number

J Squared Plumbing Co. Inc.

BY: Authorized Officer of Agent
(Insert Contractor Name)

Pres/CEO

Title of Authorized Officer or Agent of Contractor

Broderick Jackson

Printed Name of Authorized Officer or Agent

Sworn to and subscribed before me this 30th day of October, 2019.

Notary Public Hope Hill

County: DEKALB

Commission Expires: 11-08-2021



¹O.C.G.A. § 13-10-90(4), as amended by Senate Bill 160, provides that "physical performance of services" means any performance of labor or services for a public employer (e.g., Fulton County) using a bidding process (e.g., ITB, RFQ, RFP, etc.) or contract wherein the labor or services exceed \$2,499.99, except for those individuals licensed pursuant to title 26 or Title 43 or by the State Bar of Georgia and is in good standing when such contract is for service to be rendered by such individual.

²*[Any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603].

**FORM B: GEORGIA SECURITY AND IMMIGRATION SUBCONTRACTOR
AFFIDAVIT**

Instructions:

In the event that your company is awarded the contract for this project, and will be utilizing the services of any subcontractor(s) in connection with the physical performance of services pursuant to this contract, the following affidavit must be completed by such subcontractor(s). Your company must provide a copy of each such affidavit to Fulton County Government, Department of Purchasing & Contract Compliance with the proposal submittal.

All subcontractor affidavit(s) shall become a part of the contract and all subcontractor(s) affidavits shall be maintained by your company and available for inspection by Fulton County Government at any time during the term of the contract. All subcontractor(s) affidavit(s) shall become a part of any contractor/subcontractor agreement(s) entered into by your company.

STATE OF GEORGIA

COUNTY OF FULTON

FORM B: GEORGIA SECURITY AND IMMIGRATION SUBCONTRACTOR
AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services³ under a contract with **[insert name of prime contractor]** N/A behalf of **Fulton County Government** has registered with and is participating in a federal work authorization program*,⁴ in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

N/A
EEV/Basic Pilot Program* User Identification Number

N/A
BY: Authorized Officer of Agent
(Insert Subcontractor Name)

N/A
Title of Authorized Officer or Agent of Subcontractor

N/A
Printed Name of Authorized Officer or Agent

Sworn to and subscribed before me this _____ day of _____, 20__.

Notary Public: N/A
County: N/A
Commission Expires: _____

³O.C.G.A. § 13-10-90(4), as amended by Senate Bill 160, provides that "physical performance of services" means any performance of labor or services for a public employer (e.g., Fulton County) using a bidding process (e.g., ITB, RFQ, RFP, etc.) or contract wherein the labor or services exceed \$2,499.99, except for those individuals licensed pursuant to title 26 or Title 43 or by the State Bar of Georgia and is in good standing when such contract is for service to be rendered by such individual.

⁴*[Any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603].

FORM C1: CONTRACTOR'S GEORGIA UTILITY LICENSE CERTIFICATION

Contractor's Name: _____

Utility Contractor's Name: _____

Expiration Date of License: _____

N/A

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed: _____

Date: _____

N/A

(ATTACH COPY OF LICENSE)

**FORM C2: CONTRACTOR'S GEORGIA GENERAL CONTRACTOR'S LICENSE
CERTIFICATION**

Contractor's Name: _____

General Contractor's License Number: _____

Expiration Date of License: _____

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed: _____

Date: _____

(ATTACH COPY OF LICENSE)

FORM C3: GEORGIA PROFESSIONAL LICENSE CERTIFICATION

NOTE: Please complete this form for the work your firm will perform on this project.

Contractor's Name: J Squared Plumbing Co. Inc. Brodard Jackson


Performing work as: Prime Contractor Sub-Contractor

Professional License Type: Master - Unrestricted Plumber

Professional License Number: MP 209551

Expiration Date of License: 11/30/20

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed:  _____

Date: 10/22/19 _____

(ATTACH COPY OF LICENSE)

PROFESSIONAL LICENSING

GEORGIA SECRETARY OF STATE

Licensee Details

Licensee Information

Name: Broderick Dwayne Jackson

Address: 245 N. Highland Ave.

Ste 230 PMB 315

Atlanta GA 30307

Primary Source License Information

Lic #:	MP209551	Profession:	Plumbers	Type:	Master Plumber - Non-Restricted
Secondary:		Method:	Examination	Status:	Active
Issued:	5/9/2006	Expires:	11/30/2020	Last Renewal Date:	9/28/2018

Associated Licenses

No Prerequisite Information

Public Board Orders

Please see Documents section below for any Public Board Orders

Other Documents

No Other Documents

Data current as of: November 29, 2018 10:58:36

This website is to be used as a primary source verification for licenses issued by the Professional Licensing Boards. Paper verifications are available for a fee. Please contact the Professional Licensing Boards at 478-207-2440.

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;

Circle One: YES NO

(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

Circle One: YES NO

(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.

Circle One: YES NO

2. Have you or any member of your firm or team to be assigned to this engagement ever been indicted or convicted of a criminal offense within the last five (5) years?

Circle One: YES NO

3. Have you or any member of your firm or team been terminated (for cause or otherwise) from any work being performed for Fulton County or any other Federal, State or Local Government?

Circle One: YES NO

4. Have you or any member of your firm or team been involved in any claim or litigation adverse to Fulton County or any other federal, state or local government, or private entity during the last three (3) years?

Circle One: YES NO

5. Has any offeror, member of offeror's team, or officer of any of them (with respect to any matter involving the business practices or activities of his or her employer), been notified within the five (5) years preceding the date of this offer that any of them are the target of a criminal investigation, grand jury investigation, or civil enforcement proceeding?

Circle One:

YES

NO

If you have answered "YES" to any of the above questions, please indicate the name(s) of the person(s), the nature, and the status and/or outcome of the information, indictment, conviction, termination, claim or litigation, the name of the court and the file or reference number of the case, as applicable. Any such information should be provided on a separate page, attached to this form and submitted with your proposal.

NOTE: If any response to any question set forth in this questionnaire has been disclosed in any other document, a response may be made by attaching a copy of such disclosure. (For example, said Offeror's most recent filings with the Securities and Exchange Commission ("SEC") may be provided if they are responsive to certain items within the questionnaire.) However, for purposes of clarity, Offeror should correlate its responses with the exhibits by identifying the exhibit and its relevant text.

Disclosures must specifically address, completely respond and comply with all information requested and fully answer all questions requested by Fulton County. Such disclosure must be submitted at the time of the bid or proposal submission and included as a part of the bid/proposal submitted for this project. Disclosure is required for Offerors, joint venture partners and first-tier subcontractors.

Failure to provide required disclosure, submit officially signed and notarized documents or respond to any and all information requested/required by Fulton County can result in the bid/proposal declared as non-responsive. 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 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 ⁴⁴² ~~11~~ day of November, 20 19

J Squared Plumbing Co. Inc. ^{11/4/19}
(Legal Name of Proponent) (Date)

[Signature] ^{11/4/19}
(Signature of Authorized Representative) (Date)

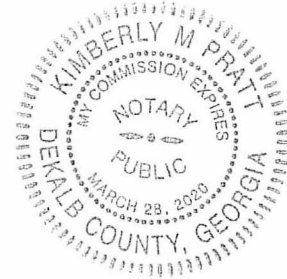
Pres / Leo
(Title)

Sworn to and subscribed before me,

This 10th day of JANUARY, 20 20

Kimberly M. Pratt
(Notary Public) (Seal)

Commission Expires 03-28-2020
(Date)



END OF SECTION

EXHIBIT I

OFFICE OF CONTRACT COMPLIANCE

FORMS

SECTION 7

CONTRACT COMPLIANCE REQUIREMENTS

NON-DISCRIMINATION IN PURCHASING AND CONTRACTING

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 without regard to the race, color, gender or national origin of the ownership of any such business. 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 or vendors seeking to obtain contracts with Fulton County.

Implementation of Equal Employment Opportunity (EEO) Policy

Pursuant to Fulton County Code section §102-391, Equal Opportunity Clause, the County effectuates Equal Employment Opportunity. This policy considers racial and gender workforce availability. The availability of each workgroup is derived from the work force demographics set forth in the 2010 Census EEO file prepared by the United States Department of Commerce for the applicable labor pool normally utilized for the contract.

Monitoring of EEO Policy

Upon award of a contract with Fulton County, the successful bidder/proposer must complete Exhibit B, Equal Employment Opportunity Report ("EEOR"), describing the racial and gender make-up of the firm's work force. If the EEOR indicates that the firm's demographic composition indicates underutilization of employee's of a particular ethnic group for each job category, the EEOR will be submitted to the Division of Diversity and Civil Rights Compliance for further action.

Title VI Non-Discrimination Policy (600-71)

The Fulton County Board of Commissioners is committed to compliance with Title VI of the Civil Rights Act of 1964 as amended and all related regulations and directives. In this regard, Fulton County assures that no person shall on the basis of race, color or national origin, as provided by Title VI of the Civil Rights Act of 1964, as amended and the Civil Rights Restoration Act of 1987 (P.L. 100.259) be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity. Fulton County further assures every effort will be made to ensure nondiscrimination in all of its programs and activities, whether or not those programs and activities are federally funded. In addition, Fulton County will take reasonable steps to provide meaningful access to services for persons with Limited English Proficiency at no additional cost.

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*.

DETERMINATION OF GOOD FAITH EFFORTS

In accordance with Fulton County Code Section §102-426, the Prime Contractor **must** demonstrate that they have made all efforts reasonably possible to ensure that Minority and Female Business Enterprises (MFBE) have had a full and fair opportunity to compete and win subcontracts on this project. The Prime Contractor is required to include all outreach attempts that would demonstrate a "Good Faith Effort" in the solicitation of sub-consultants/subcontractors.

Written documentation demonstrating the Prime Contractor's outreach efforts to identify, contact, contract with or utilize Minority or Female owned businesses shall include holding pre-bid conferences, publishing advertisements in general circulation media, trade association publications, minority-focused media, and the County's bid board, as well as other efforts.

Include a list of publications where the advertisement was placed as well as a copy of the advertisement. Advertisement shall include at a minimum, scope of work, project location, location(s) of where plans and specifications may be viewed or obtained and trade or scopes of work for which subcontracts are being solicited.

PROMPT PAYMENT

The prime contractor must certify in writing and must document 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 payment within ten days (10) of receipt of payment from Fulton County. In no event shall a subcontractor, sub-consultant or supplier be paid later than ten (10) days as provided for by state regulation.

REQUIRED FORMS (To be submitted with Technical Proposal)

In order to be compliant with the intent and provisions of the Fulton County Non-Discrimination in Purchasing and Contracting Policy, bidders/proposers **must** submit the following completed documents with their Technical Proposal.

- Exhibit A – Promise of Non-Discrimination
- Exhibit C – Schedule of Intended Subcontractor Utilization

The following documents must be completed as instructed if awarded the project:

- Exhibit B – Equal Employment Opportunity Report (EEOR)
- Exhibit D – Letter of Intent to Perform as a Subcontractor or Provide Materials or Services **(To be submitted only by subcontractor/sub-consultant/suppliers of winning Prime prior to contract execution)**
- Exhibit E – Prime Contractor's Subcontractor Utilization Report **(To be submitted monthly with pay applications)**

All Contract Compliance documents Exhibits A, C and the EBO Plan are to be placed in a **separate sealed envelope** clearly marked "**CONTRACT COMPLIANCE**". These documents are considered part of and must be submitted with the Technical Proposal.

EXHIBIT A – PROMISE OF NON-DISCRIMINATION

"Know all persons by these presents, that I/We (Broderick Jackson),
Name

Pres / CEO
Title

J Squared Plumbing Co. Inc.
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 Purchasing & Contract Compliance pursuant to Section 102.436 of the Fulton County Non-Discrimination in Purchasing and Contracting Policy.

NAME: Broderick Jackson TITLE: Pres. / CEO

SIGNATURE: 

ADDRESS: 5365 Dividend Dr Ste A.
Decatur, GA 30035

PHONE NUMBER: 404-545-7295 EMAIL: info@j2plumbing.com

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** submit Letter(s) of Intent (Exhibit D) for all subcontractors who will be utilized under the scope of work/services prior to contract execution.

Prime Bidder/Proposer Company Name J Squared Plumbing Co. Inc.

ITB/RFP Name & Number: 19 ITB 654321 K - JAJ Domestic Wtr Replacement Phase 2

1. My firm, as Prime Bidder/Proposer on this scope of work/service(s) is NOT , is a minority African American (AABE) ; Asian American (ABE); Hispanic American (HBE); Native American (NABE); White Female American (WFBE); **If yes, please attach copy of recent certification. (Check the appropriate box/es)

Indicate below the portion of work, including, percentage of bid/proposal amount that your firm will carry out directly:
 \$ _____ or 100 %

2. This information below must be completed and submitted with the bid/proposal if a **joint venture (JV)** approach is to be undertaken. Please provide JV breakdown information below and attach a copy of the executed Joint Venture Agreement.

JV Partner(s) information:

<u>Business Name</u>		<u>Business Name</u>		<u>Business Name</u>	
(a.)		(b.)		(c.)	
% of JV		% of JV		% of JV	
Ethnicity	<u>N/A</u>	Ethnicity	<u>N/A</u>	Ethnicity	<u>N/A</u>
Gender		Gender		Gender	
Phone#		Phone#		Phone#	

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

SUBCONTRACTOR NAME: Noland
 ADDRESS: 4084 Presidential Pkwy
Atlanta, GA - 30340
 EMAIL ADDRESS: etaycedo@noland.com PHONE: 770-458-2111
 CONTACT PERSON: Eric Caycedo
 ETHNIC GROUP*: _____ COUNTY CERTIFIED** _____
 WORK TO BE PERFORMED: Supplier
 DOLLAR VALUE OF WORK: \$ TBD PERCENTAGE VALUE: TBD %

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

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

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


SUBCONTRACTOR NAME: _____
ADDRESS: _____
EMAIL 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, please attach copy of recent certification.

Total Dollar Value of Subcontractor Agreements: (\$) est. \$150,000

Total Percentage of Subcontractor Value: (%) 35.51%

CERTIFICATION: The undersigned certifies that he/she has read, understands and agrees to be bound by the Bid/Proposer 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/Proposer 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/Proposer 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: Pres. / CEO

Business or Corporate Name: J Squared Plumbing Co. Inc

Address: 5365 Dividend Dr Ste A
Decatur, GA 30035

Telephone: (404) 545-7295

Fax Number: (678) 418-3500

Email Address: info@j2plumbing.com

EXHIBIT J

**RISK MANAGEMENT INSURANCE
PROVISIONS FORMS AND CERTIFICATE**

Insurance and Risk Management Provisions Domestic Water Piping Replacement Phase II

The following is the minimum insurance and limits that the Contractor/Vendor must maintain. If the Contractor/Vendor maintains broader coverages and/or higher limits than the minimum shown below, Fulton County Government requires and shall be entitled to coverage for the higher limits maintained by the Contractor/Vendor.

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/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).
- A combination of specific policies written with an umbrella policy covering liabilities in excess of the required limits is acceptable to achieve the applicable insurance coverage levels.

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. Evidence of said insurance coverages shall be provided on or before the initiation date of the Contract.

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.
Employer's Liability Insurance	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	Operations		Aggregate
Limit	-		\$2,000,000
Personal	and		Advertising
Injury	Limits	-	\$1,000,000
Damage	to		Rented
Premises	Limits	-	\$100,000

their activities/operations in conjunction with the Contract and/or Scope of Work.

USE OF PREMISES

Contractor/Vendor 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 (where applicable).

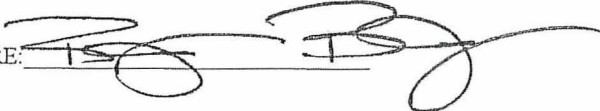
PROTECTION OF PROPERTY

Contractor/Vendor 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/Vendor 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/Vendor 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 (where applicable).

THE RESPONDENT ACKNOWLEDGES HAVING READ, UNDERSTANDING, AND AGREES TO COMPLY WITH THE ABOVE STATEMENTS, AND IS AUTHORIZED TO SIGN CONTRACTS ON BEHALF OF THE RESPONDING COMPANY.

COMPANY: J Squared Plumbing SIGNATURE: 

NAME: Brodnick Spoken TITLE: Pres / CEO

DATE: 11/4/19



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
02/03/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Integrated Insurance Group 1407 Robinson Rd Old Hickory TN 37138-2809		CONTACT NAME: Cathy LeSure Harris PHONE (A/C, No, Ext): 615-541-7676 FAX (A/C, No): 866-302-4028 E-MAIL ADDRESS: cathyli@integratedinsurancegrp.com															
INSURED J Squared Plumbing 5365 Dividend Dr Decatur GA 30035-3834		<table border="1"> <thead> <tr> <th>INSURER(S) AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> </thead> <tbody> <tr> <td>INSURER A : Liberty Mutual Insurance Company</td> <td>23043</td> </tr> <tr> <td>INSURER B : The Ohio Casualty Insurance Company</td> <td>24082</td> </tr> <tr> <td>INSURER C : Metropolitan Property&Casualty Insurance Co</td> <td>26298</td> </tr> <tr> <td>INSURER D :</td> <td></td> </tr> <tr> <td>INSURER E :</td> <td></td> </tr> <tr> <td>INSURER F :</td> <td></td> </tr> </tbody> </table>		INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A : Liberty Mutual Insurance Company	23043	INSURER B : The Ohio Casualty Insurance Company	24082	INSURER C : Metropolitan Property&Casualty Insurance Co	26298	INSURER D :		INSURER E :		INSURER F :	
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COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

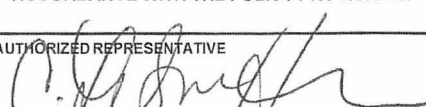
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS												
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	X		BKS59259813	11/16/2019	11/16/2020	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 15,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$												
C	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> AUTOS ONLY <input checked="" type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY	X		CA036296P2019	01/21/2020	01/21/2021	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$												
B	<input type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$	X		ESO59259813	11/16/2019	11/16/2020	EACH OCCURRENCE \$ 2,000,000 AGGREGATE \$ 2,000,000 \$												
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		Y/N <input type="checkbox"/>	N/A			<table border="1"> <thead> <tr> <th></th> <th>PER STATUTE</th> <th>OTHER</th> </tr> </thead> <tbody> <tr> <td>E.L. EACH ACCIDENT</td> <td></td> <td>\$</td> </tr> <tr> <td>E.L. DISEASE - EA EMPLOYEE</td> <td></td> <td>\$</td> </tr> <tr> <td>E.L. DISEASE - POLICY LIMIT</td> <td></td> <td>\$</td> </tr> </tbody> </table>		PER STATUTE	OTHER	E.L. EACH ACCIDENT		\$	E.L. DISEASE - EA EMPLOYEE		\$	E.L. DISEASE - POLICY LIMIT		\$
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E.L. EACH ACCIDENT		\$																	
E.L. DISEASE - EA EMPLOYEE		\$																	
E.L. DISEASE - POLICY LIMIT		\$																	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

CANCELLATION

Fulton County Government 130 Peachtree Street Ste.1168 Atlanta GA 30303	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 
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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
01/27/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER CORPORATE INSURANCE SOLUTIONS LLC 1000 MILLER CT W NORCROSS, GA 30071 (888) 661-3938	CONTACT NAME: PHONE (A/C, No, Ext): (888) 661-3938		FAX (A/C, No): (877) 872-7604
	E-MAIL ADDRESS: service.center@travelers.com		
INSURED J SQUARED PLUMBING, INC 5365 DIVIDEND DR STE A DECATUR, GA 30035		INSURER(S) AFFORDING COVERAGE INSURER A: TRAVELERS CASUALTY AND SURETY COMPANY	NAIC #
		INSURER B:	
		INSURER C:	
		INSURER D:	
		INSURER E:	
		INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 191649057101720 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	<input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:						EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	\$ \$ \$ \$ \$ \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	\$ \$ \$ \$
	<input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE AGGREGATE	\$ \$ \$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		UB-1N791179-19	07/03/2019	07/03/2020	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER	E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER FULTON COUNTY GOVERNMENT 130 PEACHTREE STREET SUITE 1168 ATLANTA, GA 30303	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <i>Mazy Kuckelman</i>
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