FULTON COUNTY

INVITATION TO BID 16ITB102576K-JAJ

MODIFICATIONS OF VICTIM ASSISTANCE DEPARTMENT

FOR

SOLICITOR GENERAL STATE COURT
OF
FULTON COUNTY GOVERNMENT

BID ISSUANCE DATE: May 2, 2016
BID DUE DATE AND TIME: June 3, 2016 11:00 A.M.
PRE-BID CONFERENCE DATE: May 17, 2016
PURCHASING CONTACT: James A. Jones
E-MAIL: james.jones@fultoncountyga.gov

LOCATION: FULTON COUNTY DEPARTMENT OF PURCHASING
130 PEACHTREE STREET, S.W., SUITE 1168
ATLANTA, GA 30303

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INVITATION TO BID
16ITB102576K-JAJ MODIFICATIONS TO VICTIM ASSISTANCE DEPARTMENT SUITE

Sealed Bids for furnishing all materials, labor, tools, equipment and appurtenances necessary for [Insert brief project scope] will be received by the Fulton County Department of Purchasing and Contract Compliance at 130 Peachtree Street, S.W. Suite 1168 Atlanta, GA 30303, **no later than 11:00 a.m.**, local time, on **June 3, 2016.**

SCOPE OF WORK

Fulton County Government is soliciting proposal from qualified professional vendors for interior renovation services. The project consists of the construction for modifications to the Fulton County Solicitor General Victim Assistance Department Suite located on the second floor of the Fulton County Court House. The total square footage is 3, 187 sq. ft. The modifications consist of Private Offices, Open Office Space, Reception Space, Waiting Room with Child Play Area, a Conference Room, Processing Area, Break Room, Copier / Storage Room, Dressing Room and Toilet spaces as described in the detailed scope of work and technical specifications outlined in the Division of Work Section 01 10 00, Project Summary and Scope of Work of this bid document. The renovation will not impede daily Court House operations.

II. Background Information

The work includes demolition and new construction. The demolition work includes the following but not limited to: demolition of existing partitions, exiting suspended ceiling grid system and ceiling tiles, existing floor finishes, existing doors and door frames, existing shelving and wood paneling, existing millwork, existing plumbing fixtures, existing mechanical diffusers/ grilles, existing HVAC air distribution ductwork, existing light fixtures, and existing electrical wiring / outlets / switches.

The new construction work includes the following: metal framed drywall partitions, glazed aluminum storefront partitions with frosted pattern film, suspended ceiling grid system with acoustical ceiling tiles, solid core wood doors, aluminum door frames, door hardware, sliding glass doors, architectural woodwork / millwork (i.e. cabinets and solid surface and plastic laminate counter tops) , new interior finishes (i.e. new porcelain floor and wall tile, wood bases, wall covering, painting), toilet accessories, FF&E (i.e. furnishings), signage, plumbing fixtures with associated piping, fire protection, mechanical systems, electrical systems, LED lighting, telephone / data, and communication fire alarm system.

III. Services Required

The Contractor shall be required to provide Construction Services for the demolition work and construction of the new architectural, plumbing, mechanical and electrical modifications work. The Contractor shall be required to coordinate its construction sequencing and operations activities with Fulton County and the County's building security and access procedures.

METHOD OF SOURCE SELECTION

This procurement is being conducted and the specific method of source selection in accordance with all applicable provisions of the Georgia Local Public Works Construction Law, O.C.G.A. §36-91-1 through 36-91-95 when a public works construction project cost exceeds $100,000.

PERMITS

All latest federal, state, and local permits necessary for the work shall be secured and paid by the Contractor.

RIGHTS OF WAY/EASEMENTS

The owner will provide as indicated in the Contract Document and prior to Notice to Proceed, the lands/ space upon which the work 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 associate activities to the easement and other areas designates 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 easement 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.

BID DOCUMENTS

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

The Bid Documents and Drawings for this project may be examined and copies obtained at a cost of $64.04 per set at the following location(s):

Action Blueprint
2705 Monroe Drive
Atlanta, Georgia 30324
(404) 885-1433
E- Mail Address: action @actiondis.com

A viewing copy **(FOR VIEWING PURPOSES ONLY) of the Drawings** will be available in the Department of Purchasing & Contract Compliance Plan Room located at 130 Peachtree Street, S.W. Suite 1168, Atlanta, Georgia 30303.

PURCHASING CONTACT

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

Fulton County Government
Department of Purchasing & Contract Compliance
Attn: James A. Jones
Fulton County Public Safety Building
130 Peachtree Street, S.W. Suite 1168
Atlanta, GA 30303
Email: james.jones@fultoncountyga.gov
Reference Bid #: 16ITB102576K-JAJ

PRE-BID CONFERENCE

Date: May 17, 2016
Time: 11:00 A.M.
Location: Department of Purchasing & Contract Compliance 130 Peachtree Street Suite 1168

Inquiries regarding the solicitation either technical or otherwise may be submitted in writing prior to the pre-bid conference and will be addressed at the pre-bid conference.

Any additional questions asked at the Pre-Bid Conference must be submitted in written form at the Pre-Bid conference and will be responded to in the form of an addendum with the County's official responses.

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

Fulton County does not discriminate on the basis of disability in the admission or access to its programs or activities. Any requests for reasonable accommodations required by individuals to fully participate in any open meeting, program or activity of Fulton County Government should be directed to Rholanda Stanberry, Contract Compliance Administrator at (404) 612-6304 or email: rholanda.stanberry@fultoncountyga.gov.

BONDING REQUIREMENTS

Each Bid must be accompanied by a Bid Bond, prepared on the Bid Bond provided in this Bid Document or a Surety Company's Standard Bid Bond, duly executed by the Bidder as principal and having as surety, a surety company licensed to do business in the State of Georgia by the Georgia Insurance Commissioner and listed in the latest issue of U.S. Treasury Circular 570, in the amount of fiver percent of the Bid.

The successful Bidder for this Contract will be required to furnish a satisfactory Performance and Payment Bond each in the amount of 100 percent of the Bid, and proof of insurance in accordance with the requirements set forth in Section 5 of this Bid Document.

END OF SECTION

OWNER - CONTRACTOR AGREEMENT

16ITB102576K-JAJ Modifications of Victim Assistance Department Suite

Contractor: _____ Project No. _____

Address: _____ Telephone: _____

Contact: _____ Facsimile: _____

THIS AGREEMENT is effective as of the _____ day of _____, 20 , 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 **[INSERT CONTRACT AMOUNT IN WORDS],** ($**[INSERT CONTRACT AMOUNT IN NUMBERS]**) 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: 16ITB102576K-JAK

Modifications of Victim Assistance Department Suite

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 **[INSERT CONTRACT DURATION]** 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.

*[**Insert if applicable** For each calendar day that any work remains uncompleted after the time allowed for completion of the work, the Contractor shall pay the County the sum of $ 500.00 not as a penalty but as liquidated damages, which liquidated damages the County may deduct from any money due the contractor. At the County's convenience and not to it prejudice the County may provide written notice of the commencement of the assessment of liquidated damages].*

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 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. **[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 [Insert approval date and item number].

[SIGNATURES NEXT PAGE]

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:

FULTON COUNTY, GEORGIA

John H. Eaves, Commission Chair
Board of Commissioners

ATTEST:

Mark Massey
Clerk to the Commission (Seal)

APPROVED AS TO FORM:

Office of the County Attorney

APPROVED AS TO CONTENT:

[Insert Department Head Name]
[Insert Department Head Title]

CONTRACTOR:

[Insert Contractor COMPANY NAME]

[Insert Name & Title of person authorized to sign contract]

ATTEST:

Secretary/
Assistant Secretary

(Affix Corporate Seal)

END OF SECTION

INSTRUCTIONS TO BIDDERS

1. CONTRACT DOCUMENTS

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

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

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

2. BID PREPARATION

Bidders shall **SUBMIT ONE (1) ORIGINAL, SIGNED AND DATED, AND TWO (2) COPIES** on the forms provided in the Bid Document.

All bids must be made on the bid forms contained herein and shall be subject to all requirements of the Agreement Documents. All bids must be regular in every respect and no interlineations, excisions, or special conditions shall be made or included in the bid by the Bidder.

Lump sum, unit price and extensions of unit prices must be entered in the appropriate spaces provided on the Bid Schedule/Bid Form. Unit prices shall include an appropriate allocation of overhead and other indirect costs so that the summation of unit price extensions and lump sum items represents the total bid amount. All blank spaces must be typed or hand written in blue ink on the "Original". All dollar amounts must be BOTH in writing and figures and represent prices for the published scope of work without exceptions.

The County may, in its sole discretion, reject any bid determined as irregular, a conditional bid or any bid on which there is an alteration of, or departure from the Bid Schedule attached.

Erasures or other changes in the bids must be explained or noted over the signature of the Bidder. All corrections to any entry must be lined out and initialed by the Bidder. Please do not use correction tapes or fluid. Failure to do so shall render the Bidder as non-responsive and cause rejection of the bid.

Failure to execute the Bid Schedule/Bid Form documents may result in Bidder being deemed non-responsive and cause rejection of the bid.

3. RECEIPT AND OPENING OF BIDS

Sealed bids will be received by the Fulton County Department of Purchasing & Contract Compliance at Fulton County Public Safety Building, 130 Peachtree Street, S.W., Suite 1168 Atlanta, Georgia 30303. All submitted bids shall be time and date stamped according to the clock at the front desk of the Fulton County Department of Purchasing & Contract Compliance. The original signed Bid with three (3) copies shall be submitted in a sealed envelope, addressed to the Department of Purchasing and Contract Compliance and labeled **16ITB102576K-JAJ Modifications to Victim Assistance Department Suite.**

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

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

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

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

4. ADDENDA AND INTERPRETATIONS

No interpretations of the meaning of the Drawings, Specifications or other pre-bid documents will be made to any Bidder orally.
Bidders requiring clarification or interpretation of the Contract Documents shall make a request in writing, either by mail, hand delivery, e-mail or fax, to the Purchasing Agent at the address below. To be given consideration, requests must be received no later than **2:00 PM, May 23, 2016**. The County will not respond to any requests, oral or written, received after this date. Telephone inquiries will not be accepted.

Department of Purchasing and Contract Compliance
Attn: James A. Jones, Assistant Purchasing Agent

Fulton County Public Safety Building
130 Peachtree Street, S.W., 1168
Atlanta, GA 30303
james.jones@fultoncountyga.gov
Bid # 16ITB1025756K-JAJ

Only communications from firms that are in writing and signed will be recognized by the County as duly authorized expressions on behalf of proposers/bidders. Any and all such interpretations and any supplemental instructions will be in the form of written Addenda to the Specifications which, if any addend are issued to this Invitation to Bid.

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

5. SITE EXAMINATION

There will be a site visit for this project. It will be held immediately following the Pre-bid conference. Bidders **are** required to attend.

6. BIDDER'S MODIFICATION AND WITHDRAWAL OF BIDS

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

7. BID AND CONTRACT SECURITY

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

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

Any bid bond, performance bond, payment bond, or security deposit required for public works construction contract shall be approved and filed with purchasing

agent. At the option of the County, if the surety named in the bond is other than a surety company authorized by law to do business in this state pursuant to a current certificate of authority to transact surety business by the Commissioner of Insurance, such bond shall not be approved and filed unless such surety is on the United States Department of Treasury's list of approved bond sureties.

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

Whenever, in the judgment of the County:

(1) Any surety on a bid, performance, or payment bond has become insolvent;
(2) Any corporation surety is no longer certified or approved by the Commissioner of Insurance to do business in the state; or
(3) For any cause there are no longer proper or sufficient sureties on any or all the bonds

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

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

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

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

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

8. SURETY BONDS

The submission of surety bonds subsequent to the Bid submission shall be:

a. Any surety bond submitted in accordance with the Bid or Agreement requirements must be issued by a corporate surety company satisfactory to the Commission and authorized to act as such in the State of Georgia;

b. Such bonds shall conform to the forms provided with the Bid Documents and be completed in accordance with the instructions thereon; and

c. In accordance with Georgia law, and upon award of the Agreement, separate performance and payment bonds shall be required of the successful Bidder, each in an amount not less than the total amount payable under the Agreement. The performance bond shall remain in effect for one (1) year after final acceptance of the Work or the guaranty period under the Agreement, whichever is the larger.

The payment bond shall remain in effect for the period required under Georgia law for the payment bonds on public construction agreements. Reference is made to the bond forms and the Agreement Documents for additional particulars of the terms required in the bonds. In the case of any inconsistency between the Bond Forms and Georgia law, the law shall control. Alterations, extension of the time allowed for performance, extra and additional Work, and other changes authorized under the Agreement may be made without notice to or consent of the surety or sureties.

9. INSURANCE REQUIREMENTS

The Contractor shall procure and maintain during the life of this Agreement, Workmen's Compensation, Public Liability, Property Damage, Automobile Liability insurance and any other insurance necessary to satisfy the requirements of the Agreement Documents. At the time of award, a copy of the successful Bidder's Certificate of Insurance must be provided through the County's online insurance compliance system.

The County has implemented an online insurance compliance system designed to make the experience of submitting and retrieval of insurance information quick and easy. This system is designed to be used by insurance brokers and agents on behalf of their insurance clients for submittal of Certificates of Insurance ("COI") directly to the Fulton County Department of Purchasing. Instructions will be provided to the successful bidder.

10. RIGHT TO REJECT BIDS

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

receipt of bids. Telegraphic or written requests for withdrawal must be in the possession of the County prior to the closing time for receipt of bids.

11. APPLICABLE LAWS

All applicable laws and regulations of the State of Georgia and ordinances and regulations of Fulton County shall apply. Protestors shall seek resolution of their complaints in the manner provided in the Fulton County Purchasing Code §102-488 et. seq., which is incorporated by reference herein.

12. EXAMINATION OF CONTRACT DOCUMENTS

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

13. BID EVALUATION

a. Each Bid timely received and in the County's hands at the time set forth for the Bid opening shall constitute an offer to perform the Agreement on the terms and conditions thereof, in strict accordance with the Agreement documents, and all other requirements, all for the Bid total. For good cause and valuable consideration, the sufficiency of which is acknowledged by submittal of a Bid, each Bidder promises and agrees that its Bid shall be irrevocable for a period of ***sixty calendar days*** after the Bid opening and will not be withdrawn or modified during that time. The County may accept any Bid by giving the Bidder Written Notice of acceptance during that time. If necessary, the period of time specified may be extended by written agreement between the County and the Bidder or Bidders concerned.

b. After the Bids have been opened and before any award is made, the County will evaluate the Bid process, the Bid total, the supplements to the Bid form, Bidder's experience, proposed Subcontractors and equipment manufacturers and other data relating to Bidders' responsibility and qualifications to perform the Agreement satisfactorily.

c. All extension of the unit prices shown and the subsequent addition of extended amounts may be verified by the County. In the event of a discrepancy between the unit price bid and the extension, the unit price will be deemed intended by the Bidder and the extension shall be adjusted. In the event of a discrepancy between the sum of the extended amounts and the bid total, the sum of the extended amounts shall govern.

d. Bidder may be required to submit, in writing, the addresses of any proposed Subcontractors or Equipment manufacturers listed on the Bid, and to submit other material information relative to proposed Subcontractors or Equipment manufacturers. The County reserves the right to disapprove any proposed Subcontractor or Equipment manufacturers whose technical or financial ability or resources or whose experience are deemed inadequate.

e. The County reserves the right to reject any Bid the prices of which appear to be unbalanced, and to reject any or all Bids, or parts thereof, if it determines, in its sole discretion, that such rejection is in the best interest of the County. Where only a single responsible and responsive Bid is received, the County may in its sole discretion, elect to conduct a price or cost analysis of the Bid. Such Bidder shall cooperate with such analysis and provide such supplemental information as may be required. The determination whether to enter into an Agreement with such sole Bidder shall be solely within the County's discretion and not dependent upon performance of a price or cost analysis.

f. Bids will be evaluated on the basis of determining the lowest Bid total of a Bidder, not including alternates, whose Bid is responsive to the Invitation to Bid and who is determined to be technically, financially and otherwise responsible to perform the Agreement satisfactorily, and to meet all other requirements of the Bidding Documents relating thereto. Any Bid may be rejected if it is determined by the County to be non-responsive, provided, however, that the Commission reserves the right to waive any irregularities or technicalities which it determines, within its sole discretion, to be minor in nature and in the interest of the public. Furthermore, any Bid may be rejected if it is determined by the County, in its sole discretion, that the Bidder is not capable of performing the Agreement satisfactorily based upon review of its experience and technical and financial capabilities, or the failure of such bidder to provide information requested relating to such determination. Additionally, the County reserves the right to disqualify Bids, before and after the bid opening, upon evidence of collusion with intent to defraud or other illegal practices upon the part of any Bidder(s).

g. The County intends to award the Agreement at the earliest practicable date to the lowest responsive, responsible Bidder(s), provided that the Bid is within the funds available for the project. In addition, the County reserves the right to reject all Bids if it determines, in its sole discretion, that the public interest will be best served by doing so.

h. A Pre-award Conference may be conducted with the apparent low Bidder(s) to review general requirements of the Bidding Documents.

14. AWARD CRITERIA

Award will be made after evaluating the prices, responsiveness and responsibility of each Bidder.

A. **Responsiveness:** The determination of responsiveness will be determined by the following:

a. The completeness of all material, documents and/or information required by the County;
b. Whether the bidder has submitted a complete Bid form without irregularities, excisions, special conditions, or alternative bids for any item unless specifically requested in the Bid form.

B. **Responsibility:** The determination of the bidder's responsibility will be determined by the following

a. The ability, capacity and skill of the Bidder to perform and/or provide the Work required;
b. The County reserves the right to reject any bid if the evidence submitted by, or investigation of, the bidder fails to satisfy the County that he/she is properly qualified to carry out the obligations of the Contract;
c. The character, integrity, reputation, judgment, experience and efficiency of the Bidder;
d. The quality of performance of work on previous contracts or work; Maintains a permanent place of business individually or in conjunction with the prime contractor.
e. Has the appropriate and adequate technical experience necessary to perform the Work;
f. Has adequate personnel and equipment to do the Work expeditiously;
g. Has suitable financial means to meet obligations incidental to the work.

15. DISQUALIFICATION OF BIDDERS

Any of the following may be considered as sufficient for disqualification of a Bidder and the rejection of the Bid:

a. Submission of more than one Bid for the same work by an individual, firm, partnership or Corporation under the same of different name(s);

b. Evidence of collusion among Bidders;

c. Previous participation in collusive bidding on Work for the County;

d. Submission of an unbalanced Bid, in which the prices quoted for same items are out of proportion to the prices for other items;

e. Lack of competency of Bidder. The Agreement will be awarded only to a Bidder(s) rated as capable of performing the Work.

16. BASIS OF AWARD

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

17. PROFESSIONAL LICENSES *(APPLICABLE)*

The State of Georgia requires that the following professions are required by state law to be licensed:

1. Electricians
2. Plumbers
3. Conditioned Air Contractors
4. Low voltage Contractors

Bidders and any sub-contractors performing any of the above described work must provide a copy of their license for the work they will perform on this project. Bidders must complete Form C3: Georgia Professional License Certification in Section 6, Purchasing Forms Failure to provide the required license may deem your bid non-responsive.

18. WAGE CLAUSE

Pursuant to 102-413, Each Contractor shall agree that in the performance of the Contract he will comply with all lawful agreements, if any, which the Contractor had made with any association, union, or other entity, with respect to wages, salaries, and working conditions, so as not to cause inconvenience, picketing, or work stoppage.

19. NOTICE OF AWARD OF CONTRACT

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

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

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

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

20. EXECUTION OF CONTRACT DOCUMENTS

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

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

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

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

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

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

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

21. INVOICES AND PAYMENT TERMS

Invoices are to be mailed to the County department specified on the resulting purchase order or master agreement. All invoices must include the purchase order number or master agreement number. Failure to comply may result in delayed payments. The County payment terms are Net 30 days unless a cash discount is allowed for payment within not less than twenty (20) days. The payment term shall begin on the date the merchandise is inspected, delivered and accepted by the County.

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. Itemization of Services Provided/Commodity Units

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

22. EQUAL EMPLOYMENT OPPORTUNITY ("EEO") IN PURCHASING AND CONTRACTING

To be eligible for award of this Agreement, the Bidder must certify and fully comply with the requirements, terms, and conditions of the County's Non Discrimination in Contracting and Procurement.

23. JOINT VENTURE

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

24. CONTRACTORS COMPLIANCE WITH ALL ASSURANCES AND/OR PROMISES MADE IN RESPONSE TO PROCUREMENT

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

25. GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT

This Invitation to Bid is subject to the Georgia Security & Immigration Compliance Act. Effective July 1, 2013, bidders and proposers are notified that all bids/proposals for services that are to be physically performed within the State of Georgia must be accompanied by proof of their registration with and continuing and future participation in the E-Verify program established by the United States Department of Homeland Security. Physical performance of services means any performance of labor or services for a public employer using a bidding process or by contract wherein the labor or services exceed $2,499.99 99 (except for services performed by an individual who is licensed pursuant to Title 26, Title 43, or the State Bar of Georgia).

A completed affidavit must be submitted on the top of the bid/proposal at the time of submission, prior to the time for opening bids/proposals. Under state law, the County cannot consider any bid/proposal which does not include a completed affidavit. It is not the intent of this notice to provide detailed information or legal advice concerning the Georgia Security & Immigration Compliance Act. All bidders/proposers intending to do business with the County are responsible for independently apprising themselves and complying with the requirements of that law and its effect on County procurements and their participation in those procurements. For additional information on the E-Verify program or to enroll in the program, go to: https://e-verify.uscis.gov/enroll.

The Director of Purchasing & Contract Compliance is authorized to conduct random audits of a contractor's or subcontractors' compliance with the Illegal Immigration Reform and Enforcement Act and the rules and regulations of the Georgia Department of Labor.

See Section 00420, Purchasing Forms & Instructions for declarations and affidavits.

26. SUBCONTRACTING OPPORTUNITIES

Potential prime contractors submitting a bid on this project for Fulton County and are seeking subcontractors and/or suppliers can advertise those subcontracting opportunities on the County's website, http://www.fultoncountyga.gov under "Subcontracting Bid Opportunities".

27. TERM OF CONTRACT

The term of the Agreement shall be for a period of one hundred and sixty calendar days, or as may be amended under the Agreement to comprise the Agreement Time. Contractor shall commence the Work within ten calendar days after receipt of Notice to Proceed and shall substantially complete the Work within one hundred (100) calendar days from issuance of the Notice to Proceed and finally complete the Work within one hundred and sixty calendar (160) days of issuance of the Notice to Proceed.

28. NO CONTACT PROVISION

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

A. No person, firm, or business entity, however situated or composed, obtaining a copy of or responding to this solicitation, shall initiate or continue any verbal or written communication regarding this solicitation with any County officer, elected official, employee, or designated County representative, between the date of the issuance of this solicitation and the date of the County Manager's recommendation to the Board of Commissioners for award of the subject contract, except as may otherwise be specifically authorized and permitted by the terms and conditions of this solicitation.

B. All verbal and written communications initiated by such person, firm, or entity regarding this solicitation, if same are authorized and permitted by the terms and conditions of this solicitation, shall be directed to the Purchasing Agent.

C. Any violation of this prohibition of the initiation or continuation of verbal or written communications with County officers, elected officials, employees, or designated County representatives shall result in a written finding by the Purchasing Agent that the submitted Bid or proposal of the person, firm, or

entity in violation is "non-responsive", and same shall not be considered for award.

29. AUTHORIZATION TO TRANSACT BUSINESS

If the Contractor is a corporation or corporations combined to form a joint venture, the corporation or members of the joint venture team, prior to Agreement execution, must submit documentary evidence from the Secretary of State that the corporation is in good standing and that the corporation is authorized to transact business in the State of Georgia.

30. PRE-CONSTRUCTION CONFERENCE

A pre-construction conference may be held with the successful Bidder and all known Subcontractors at a time and place set by the County.

31. SUBSTITUTIONS

See Special Conditions Article.

32. RIGHT TO PROTEST

Any actual bidder or offeror that has submitted a bid/proposal for a particular procurement and is aggrieved in connection with the solicitation or award of the contract shall protest in writing to the purchasing agent after the date that the specific bid or proposal is submitted. No protest will be accepted or considered prior to the date the specific bid or proposal is submitted; it will be considered untimely. All protests shall set forth in full detail the factual and legal bases for the protest and specific relief sought by the protestor. Protests arising from factual or legal bases that the protestor knew or should have known prior to the submission of the bid/proposal must be submitted within three business days of the submission of the bid/proposal. Protests arising from factual or legal bases that the protestor knew or should have known subsequent to the date the bid/proposal was submitted must be submitted within ten business days after the protestor knew or should have known of such bases, but in no event shall any protest be submitted more than ten business days after the award of the contract. Untimely protests will not be considered by the purchasing agent and will be simply denied as untimely. Decisions on timeliness by the purchasing agent are not appealable. An oral protest or a protest to an official, employee, User Department, or other person apart from the Director of Purchasing & Contract Compliance does not comply.

33. BID GENERAL CONDITIONS

1. A Bid may be withdrawn upon receipt of a written request prior to the stated due date and time. If a firm seeks to withdraw a nif after the due date and time, the firm must present a notarized statement indicating that an error was made, with an explanation of how it occurred. The withdrawal request must be accompanied by documentation supporting the claim. Prior to

approving or disapproving the request, an opinion will be obtained from the County Attorney's Office indicating whether the firm is bound by its Bid.

Bids for projects that are solicited pursuant to the Georgia Local Government Public Works Construction Law (O.C.G.A. § 36-91-1 et seq.) may be withdrawn as follows:

The County must advise Offerors in the solicitation of the number of days that Offerors will be required to honor their Bid. If an Offeror is not selected within 60 days of opening the Bids, any Offeror that is determined by the governmental entity to be unlikely of being selected for contract award will be released from the Bid.

2. Fulton County shall be the sole judge of the quality and the applicability of all Bids. Design, features, overall quality, local facilities, terms and other pertinent considerations will be taken into account in determining acceptability.

3. The successful Offeror must assume full responsibility for delivery of all goods and services proposed.

4. The successful Offeror must assume full responsibility for replacement of all defective or damaged goods and/or performance of contracted services within thirty (30) days' notice by the County of such defect, damage or deficiency.

5. The successful Offeror must assume full responsibility for providing warranty service on all goods, materials, or equipment provided to the County with warranty coverage. Should a vendor be other than the manufacturer, the vendor and not the County is responsible for contacting the manufacturer. The Offeror is solely responsible for arranging for the service to be performed.

6. The successful Offeror shall be responsible for the proper training and certification of personnel used in the performance of the services proposed.

7. The successful Offeror shall not assign, transfer, convey, sublet, or otherwise dispose of any contract resulting from the Bid or of any of its rights, title or interest therein without prior written consent of the Fulton County Board of Commissioners.

8. In case of default by the successful Offeror, Fulton County may procure the articles or services from another source and hold the successful Vendor responsible for any resultant excess cost.

9. All proposals and Bids submitted to Fulton County are subject to the Georgia "Open Records Act", Official Code of Georgia, Annotated (O.C.G.A.) § 50-18-70 et seq.

10. All proposals and Bids submitted to Fulton County involving Utility Contracting are subject to the Georgia law governing licensing of Utility Contractors, O.C.G.A. §43-14-8.2(h).

34. SUBMITTALS

The following submittals must be completed and submitted with the Bid Submittal. This checklist is provided to ensure that the Bidder submits certain required information with its Bid.

	Bid Submittal Check Sheet	Check (√)
1.	Georgia Security and Immigration Contractor Affidavit(s) and Agreements	
2.	Georgia Security and Immigration Subcontractor Affidavit(s)	
3.	Bid Form	
4.	Acknowledgment of Addenda	
5.	Bid Bond	
6.	Non-Collusion Affidavit	
7.	Certificate of Acceptance of Request for Bid	
8.	Georgia Utility Contractor's License (if applicable)	
9.	Georgia General Contractors License (if applicable)	
10.	Georgia Professional License (if applicable)	
11.	Certificate Regarding Debarment	
12.	Disclosure Form and Questionnaire	
13.	Office of Contract Compliance Requirements (submitted in a separate envelope)	
14.	Proof of Insurance Coverage	

END OF SECTION

BID FORM

Submitted To: Fulton County Government

Submitted By: _____

For: **16ITB102576K-JAJ Modifications of Victim Assistance Department Suite**

Submitted on _____, 20__.

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

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

The Bidder proposes and agrees, if this Bid is accepted, to contract with the Board of Commissioners of Fulton County, Atlanta, Georgia, in the form of contact 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 sixty (60) days following the receipt of bids.

BASE BID AMOUNT

$_____

(Dollar Amount In Numbers)

_____

(Dollar Amount in Words)

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.

BASE BID AMOUNT

General Conditions

Item No.	Spec No.	Item Description	Est Quantity	Item	Estimated Unit Price	Extended Item Cost
1		General Conditions			$	$
	Total Amount (line 1)				$	$

Division 06

2	06 40 00	Carpentry- Labor (Allowance)	1	LS	$	$
3	06 40 00	Base Cabinetry / Laminates	80	L.F.	$	$
4	06 40 00	Wall Cabinetry / Laminates	43	L.F.	$	$
5	06 40 00	Cabinets (2- x 8')	2	Ea.	$	$
6	06 61 16	Solid Surface Counters	60.71	L.F.	$	$
7	06 40 00	Wood Wall Base	600	L.F.	$	$
8	Total Amount (lines 2- 7)				$	$

Division 08

9	08 14 16	Interior Doors SC Wood- New	6	Ea	$	$
10	08 71 00	Door Hardware	6	Ea	$	$
11	08 71 00	Door Hardware- Sliding (Allowance)	1	Ea	$	$
12	08 12 16	Aluminum Storefront / Glass Partitions / Including Door & Hardware	910	S.F.	$	$
13	08 41 13	Aluminum Door Frames Allowance	6	Ea	$	$
14	08 83 00	Mirrors	3	Ea		
15	Total Amount (lines 9 -14)				$	$

Division 09

16	09 65 00	Misc Floor Prep (Allowance)	1	LS	$	$
17	09 29 00	Drywall Partitions	3216	S.F.	$	$
18	09 29 00	Drywall	2376	S.F.	$	$
19	09 29 00	Gyp. Bd. Ceilings	148	S.F.	$	$
20	09 29 00	3" Sound Attenuation Blanket	1691	S.F.	$	$
21	09 22 26	Suspended Acoustical Ceiling System	2800	S.F.	$	$
22	09 30 13	Porcelain Tile Wall F inish	204	S.F.	$	$
23	09 30 13	Porcelain Floor Tile	141	S.F.	$	$
24	09 90 00	Interior Paint	3187	S.F.	$	$
25	09 95 00	Vinyl Wall Covering	1008	S.F.	$	$
26	Total Amount (lines 16-25)				$	$

Division 10

27	10 28 00	Toilet Accessories	1	LS	$	$
28	10 14 00	Signage (Allowance)	1	LS	$	$
29	Total Amount (lines 27-28)				$	$

Division 22

30	22 40 00	Plumbing -Slab Cores	1	LS	$	$
31	22 40 00	Plumbing Rough	6	Fix	$	$
32	22 40 00	Plumbing Finish	6	Fix	$	$
33	22 44 00	Plumbing Fixtures	6	EA	$	$
34	Total Amount (lines 30-33)				$	$

Division 23

35	23 07 16/23 30 00	HVAC	3187	S.F.	$	$
36	Total Amount (line 35)				$	$

Division 26

37	26 05 00	Electrical Rough	3187	S.F.	$	$
38	26 27 26	Electrical Finish	3187	S.F.	$	$
39	26 51 00	Electrical Lighting 1 x 4 (Allowance)	53	Ea	$	$
40	26 51 00	Electrical Lighting Can Fixtures (Allowance)	10	Ea	$	$
41	Total Amount (lines 37-40)				$	$

Division 28

42	28 31 64	Fire Sprinkler System Head Adjustments Allowance	1	LS	$	$
43	Total Amount (line 42)				$	$
44	Owner Controlled Contingency					$45,000.00
Total Base Bid Amount (Lines 1 thru 44)						$

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.

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

_____Dollars

($_____) according to the conditions of "Instructions to Bidders" and provisions

eof.

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 # _____ DATED _____

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

END OF SECTION

BID BOND

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

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

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

BID BOND

16ITB102576K-JAJ Modifications of Victim Assistance Department Suite
FULTON COUNTY GOVERNMENT

KNOW ALL MEN BY THESE PRESENTS, THAT WE_____

_____

hereinafter called the PRINCIPAL, and _____

_____

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

WHEREAS the PRINCIPAL has submitted to the COUNTY, for **16ITB102576K-JAJ Modifications of the Victim Assistance Department Suite ,** a Bid;

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

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

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

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

_____Dollars

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

(SIGNATURES ON NEXT PAGE)

IN TESTIMONY THEREOF, the PRINCIPAL and SURETY have caused these presents to be duly signed and sealed this _____day of _____, 20__

ATTEST:

_____
PRINCIPAL

_____ BY_____

(SEAL)

CERTIFICATE AS TO CORPORATE PRINCIPAL

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

_____
SECRETARY

(CORPORATE SEAL)

_____
SURETY

_____ BY_____
(SEAL)

END OF SECTION

PAYMENT BOND

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

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

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

PAYMENT BOND

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

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

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

1. A "Claimant' shall be defined herein as any subcontractor, person, party, partnership, corporation or the entity furnishing labor, services or materials used, or reasonably required for use, in the performance of the Contract, without regard to whether such labor, services or materials were sold, leased or rented, and without regard to whether such Claimant is or is not in privity of contract with the Principal or any subcontractor performing work on the Project, including, but not limited to, the following labor, services, or materials: water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. In the event a Claimant files a lien against the property of the Owner, and the Principal fails or refuses to satisfy or remove it promptly, the Surety shall satisfy or remove the lien promptly upon written notice from the Owner, either by bond or as otherwise provided in the Contract.

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

4. The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment or modifications to the Contract, so as to bind the Principal and Surety, jointly and severally, to the full payment of any Claimant under the Contract, as amended or modified, provided only that the Surety shall not be liable for more than the penal sum of the Bond, as specified in the first paragraph hereof.

5. This Bond is made for the use and benefit of all persons, firms, and corporations who or which may furnish any materials or perform any labor for or on account of the construction-type services to be performed or supplied under the Contract, and any amendments thereto, and they and each of them may sue hereon.

6. No action may be maintained on this Bond after one (1) year from the date the last services, labor, or materials were provided under the Contract by the Claimant prosecuting said action.

7. This Bond is intended to comply with O.C.G.A. Section 13-10-1, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the Owner beyond that contemplated by O.C.G.A. Section 13-10-1, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes. **IN WITNESS WHEREOF,** the Principal and Surety have hereunto affixed their corporate seals and caused this obligations to be signed by their duly authorized representatives this _____of _____, _____.

_____(SEAL)
(Principal)

By:_____

Attest:

_____
Secretary

_____(SEAL)
(Surety)

By: _____

Attest:

_____
Secretary

_____
(Address of Surety's Home Office)

_____
(Resident Agent of Surety)

PERFORMANCE BOND

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

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

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

PERFORMANCE BOND

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

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

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

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

1. Complete the Contract in accordance with its terms and conditions; or, at the sole option of the Owner,

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

3. Allow Owner to complete the work and reimburse the Owner for all reasonable costs incurred in completing the work.

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

incurred by the Owner in making good any such failure of performance on the part of the Principal.

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

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

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

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

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

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

_____(SEAL)
(Principal)

By_____

Attest:

_____
Secretary

_____(SEAL)
(Surety)

By:_____

Attest:

_____
Secretary

_____

(Address of Surety's Home Office)

_____
(Resident Agent of Surety)

END OF SECTION

SECTION 4

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

SPECIFICATIONS
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SECTION 03 54 00
SELF-LEVELING UNDERLAYMENT

PART 1 – GENERAL

1.01 SUMMARY

A. Work of this section includes Self-Leveling Underlayment Concrete for use over specified interior substrates

1.02 QUALITY ASSURANCE

A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.

B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by manufacturer's representative

C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations

1.03 DELIVERY, STORAGE, AND HANDLING

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

C. Condition the specified product as recommended by the manufacturer

1.04 JOB CONDITIONS

A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 40°F (5°C) and rising.

B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material

1.05 SUBMITTALS

A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

B. Submit copy of Certificate of Approved Contractor status by manufacturer

1.06 WARRANTY

A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. Basis of Design: Sika Level-315, as manufactured by Sika Corporation

B. Other acceptable products provided they conform to the requirements of this specification.
   1. USG Corporation, Durock Brand
   2. H.B. Fuller Construction Products, Inc. ProSpec

2.02 MATERIALS

A. The cement-based self-leveling underlayment shall be Sika Level-315 Self-Leveling Underlayment Concrete or approved equal.
B. Primer for standard absorbent concrete shall be manufacturer's recommended Level - 01 Primer
C. Primer for standard absorbent concrete shall be manufacturer's recommended Level - 02 Primer

2.03 PERFORMANCE CRITERIA

A. Properties of the cured polymer-modified portland cement coating:
   1. Yield Approximately 0.46 cu. ft. per 50 lb bag
   2. Color Concrete gray
   3. Density {wet mix} (ASTM C-185) 130lbs/cu.ft
   4. Mixing Ratio 9.0 – 9.5 pints of water per 50 lb (22.7 kg) bag
   5. Application Thickness Min 1/25 in. (1.0mm); Max 1 in. (25mm)
   6. Application Temp Min 50°F (10°C) ; Max 95°F (35°C)
   7. Working Time 25 to 30 mins at 3/16 in (5mm) thickness
   8. Setting Times (ASTM C-266)
      Initial Set – 40-60 min.
      Final Set – 60-80 min.
   9. Compressive Strength (ASTM C-109), psi
      1 days @ 73°F (23°C) 2,750 (18.9 MPa)
      3 days @ 73°F (23°C) 3,250 (22.4 MPa)
      7 days @ 73°F (23°C) 3,875 (26.7 MPa)
      28 days @ 73°F (23°C) 4,750 (32.8 MPa)
   10. Flexural Strength 28 days (ASTM C-580) 1,500 psi (10.34 MPa)
   11. Final Drying Time Foot Traffic ~ 2-3 hours
   12 .Pull-Out Strength (ACI 503) 3/16 in. (5mm) >290 psi (2.0 MPa)

Note: Tests above were performed with the material and curing conditions @ 71oF – 75oF and 45-55%relative humidity

PART 3 – EXECUTION

3.01 SURFACE PREPARATION

A. Substrate All concrete and cement substrates must be primed using manufacturer's recommended Level -01 Primer and all difficult-to- bond-to substrates, including wood subfloors, ceramic, quarry and vinyl tiles and cut back adhesive must be primed using manufacturer's recommended Level-02 Primer in accordance with manufacturer's product applications requirements.
B. The substrate must be dry, clean and stable before priming and applying the underlayment materials. Remove all existing treatments such as coatings, sealers, wax, latex compounds, impregnations and curing agents, together with all contaminants i.e. dirt, dust, laitance, grease, oils, and foreign matter, which will interfere with the penetration of manufacturer's recommended Primer

and the adhesion of self-leveling underlayment..

C. Concrete & Dense Substrates
Prepare concrete, cement and dense substrates,, including ceramic, quarry and vinyl tiles by mechanical means, such as shotblasting, sandblasting, waterjetting, scarifying, or other appropriate methods, to achieve an open-textured, fine-gripping surface (ICRI - CSP 3 minimum). Weak concrete should be removed and surface defects such as blowholes and spalls fully exposed and repaired as recommended by self leveling underlayment manufacturer prior to priming and levelling. In accordance with manufacturer's recommendations all cracks and holes should be similarly filled to prevent seepage of the primer through to lower areas.

3.02 MIXING AND APPLICATION

A. Pour 9.0 – 9.5 pints of cool, potable water into a suitably sized and clean mixing container, using a calibrated measuring jug, or similar, to ensure strict control of the water content (avoid over-watering). Cool water 70°F (21°C) serves to maximize the working time; if available water is not at this temperature, then consideration should be given to cooling the water. Add self-leveling underlayment powder to the water, while slowly stirring, adding the complete contents of the 50 lb sack. Once all the powder has been added, continue mixing until a lump-free and uniform consistency is achieved. This should typically take no more than 5 minutes.

B. If mixing in a barrel or similar container, employ the water to powder ratio as stated above and use a low speed electric mixer (at about 600 rpm) and egg beater style mixing paddle to blend water and powder for a minimum of 3 minutes, until a uniform mix has been produced.

C. When pump-mixing, ensure that the mechanical mixers and pumps are in sound working order. Pre-clean and test the equipment, checking that the mixing and pumping elements are fully functional and that meshes are in place to prevent foreign matter from entering the hopper or being dispensed onto the floor.

D. Prior to placing the underlayment, ensure that all sources of premature drying or direct sunlight are blocked off to avoid accelerated curing and reduced physical properties. The stated ambient and substrate application temperatures are to be achieved before installation and should be maintained for a period of at least 3 days thereafter. Should colder conditions prevail, make allowances for the use of indirect and vented heaters to achieve and maintain the application temperatures required. Where temperatures exceed 86°F (30°C), refer to and follow ACI hot weather application and protection guidelines.

E. Before laying the material, organize labor to operate most effectively, ensuring that installers can maintain a continuous flow of material and avoid creating cold joints. The dimensions of the pour, in terms of width, should also be set accordingly.

3.03 CLEANING

A. Use personal protective equipment (chemical resistant gloves/ goggles/clothing). Without direct contact, sweep up spilled or excess product and place in suitable sealed container. Dispose of excess product and container in accordance with applicable local, state, and federal regulations. Hardened material may have to be manually or mechanically removed.

END OF SECTION
03 54 00

SECTION 06 40 00
ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.01 DESCRIPTION

A. Extent of each type of architectural woodwork is indicated on drawings and in schedules.

B. Types of architectural woodwork include the following:
   1. Base cabinets and wall cabinets

C. Wood doors are specified in Section 08 14 16.

D. Related work specified elsewhere:
   1. Section 06 60 20 Plastic Laminate
   2. Section 06 61 16 Solid Surfacing

1.02 QUALITY ASSURANCE

A. AWI Quality Standards: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI), except as otherwise indicated.

B. Installer Qualifications: Arrange for installation of architectural woodwork items by same firm which fabricated them.

C. Allowable Tolerances:
   1. Variation in component size: ± 1/8 inch (3 mm).
   2. Location of openings: ± 1/8 inch (3 mm) from indicated location.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's data for each product and process specified as work of this section and incorporated into items of architectural woodwork during fabrication, finishing and installation.

B. Quality Certification: Submit woodwork manufacturer's (Fabricator's) certification, stating that the fabricated work complies with quality grades and other requirements indicated.

C. Shop Drawings: Submit shop drawings showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components for the following:
   1. All interior cabinetry.
   2. Wood door frames, moldings, wood base, chair rail and chased opening trim.

D. Samples: Submit the following samples.
   1. Wood veneer faced panel products, with or for transparent finish, finished, 8" x 10", for each species and cut.
   2. Plastic laminate for each type, color, pattern and surface finish for the designer's selection.
   3. All cabinet hardware, one unit of each type and finish.

E. Maintenance Data: Submit manufacturer's care and maintenance data, including repair and cleaning instructions for solid plastic material. Include in project close-out documents.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B.

B. Do not deliver woodwork, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, woodwork must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.04 PROJECT CONDITIONS

A. Conditioning: Woodwork Manufacturer and Installer shall advise Contractor of temperature and humidity requirements for woodwork installation and storage areas. Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

B. Maintain temperature and humidity in installation area as required to maintain moisture content of installed woodwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. Require Woodwork Manufacturer to establish optimum moisture content and required temperature and humidity conditions.

1.05 WARRANTY

A. Provide manufacturer's warranty against defects in plastic laminate material. Warranty shall provide for replacement material and labor for a period of one year, beginning at Date of Substantial Completion.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Basis of Design is Wilsonart.Corp. and Formica Corp. Subject to compliance with requirements, provide plastic laminate products from one of the following:

1. Wilsonart Corp.
2. Formica Corp.
3. Laminart Corp

2.02 FABRICATION, GENERAL

A. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber at time of fabrication and relative humidity conditions in the installation areas.

B. Cabinets shall be all plywood construction. Fabricate woodwork to dimensions, profiles and details indicated with openings and mortises pre-cut, where possible, to receive hardware and other items and work.

C. Ease edges to a 1/6" radius, edges of solid wood members less than 1" in nominal thickness,1/8" radius for edges of rails and similar members over 1" in nominal thickness.

D. Complete fabrication, assembly, finishing, hardware application and other work before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming and fitting.

E. Pre-Cut Openings: Fabricate architectural woodwork and plastic laminate materials as required with pre-cut openings, where possible, to receive hardware, appliances, plumbing, fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutoffs and, where located in counter tops and similar exposures seal edges of cutoffs with a water-resistant coating.

F. Measurements: Before proceeding with fabrication of woodwork required to be fitted to other construction, obtain field measurements and verify dimensions and shop drawings details as required for accurate fit.

G. Form joints for plastics laminate between components using manufacturer's standard joint adhesive; without conspicuous joints.

H. Where sequence of measuring substrates before fabrication would delay the project, proceed with fabrication (without field measurements) and provide ample borders and edges to allow for subsequent scrubbing and trimming of woodwork for accurate fit.

2.03 FASTENERS AND ANCHORS

A. Screws: Select material, type, size and finish required for each use. Comply with FS FF-S-111 for applicable requirements. For metal framing supports, provide screws as recommended by metal framing manufacturer.

B. Anchors: Select material, type, size and finish required by each substrate for secure anchorage. Provide non-ferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion-resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry for subsequent woodwork anchorage.

2.04 FACTORY FINISHING OF INTERIOR ARCHITECTURAL WOODWORK

A. Quality Standard: Comply with AWI Section 1500, unless otherwise indicated.

B. General: The entire finish of interior architectural woodwork is work of this section, regardless of whether factory-applied or applied after installation.

C. Factory Finishing: The extent to which the final finish is applied to architectural woodwork at factory is Contractor's option, except factory-apply at least prime/base coat to greatest extent possible prior to delivery.

D. Preparations for Finishing: Comply with referenced quality standard for sanding, filling

countersunk fasteners, sealing of concealed surfaces and similar preparations for finishing of architectural woodwork, as applicable to each unit of work.

E. Transparent Finish for Open Grain Woods: Comply with requirements indicated below for grade: finish system, staining, effect and sheen.
   1. Grade: Premium.
   2. Finish: AWI Finish System #5 catalyzed polyurethane.
   3. Staining: To match Architect's sample.
   4. Effect: Open grain.
   5. Semi-gloss

PART 3 EXECUTION

3.01 PREPARATION

A. Condition plastics and woodwork to average prevailing humidity conditions in installation areas prior to installing.

B. Prior to installation of plastic laminates and architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

3.02 SOLID SURFACE INSTALLATION

A. Install components plumb and level, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

B. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Keep components and hands clean when making joints.

C. Adhere undermount sinks/bowls to counter tops using manufacturer's recommended adhesive and mounting hardware.

D. Adhere to countertops using manufacturer's standard color-matched silicon sealant.

E. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Keep clean until Date of Substantial Completion. Replace stained components.

F. Make plumbing connections to sinks in accordance with Division 15, Mechanical

G. Protect Surfaces from damage until Date of Substantial Completion. Repair work or replace damaged work that cannot be repaired to Architect's satisfaction.

3.03 WOODWORK INSTALLATION

A. Install woodwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including tops); and with no variation in flushness of adjoining surfaces.

B. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

C. Wood Storage Shelving: Complete the assembly of units and install in the areas indicated, including hardware and accessories as indicated

3.04 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

A. Repair damaged and defective plastic and woodwork where possible to eliminate defects functionally and visually; where not possible to repair, replace work. Adjust joinery for uniform appearance.

B. Clean, lubricate and adjust hardware. Clean plastic and woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

B. Complete the finishing work specified as work of this section, to whatever extent not completed at shop prior to installation of plastic laminate and woodwork.

D. Provide final protection and maintain conditions, in a manner acceptable to Fabricator and Installer, which ensures plastic laminate and woodwork being without damage of deterioration at time of substantial completion.

END OF SECTION
06 40 00

SECTION 06 60 20
LAMINATED PLASTIC

PART 1 GENERAL

1.01 DESCRIPTION

A. Work included: Provide laminated plastic where shown on the Drawings, specified herein, and needed for a complete and proper installation.

B. Related Work:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
   2. Section 06 40 00: Architectural Woodwork.
   3. Section 06 61 16: Solid Surfacing

1.02 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.03 SUBMITTALS

A. Comply with pertinent provisions of Section 01 30 00.

B. Product Data: Within 10 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
   1. Materials list of items proposed to be provided under this Section.
   2. Manufacturer's specifications and other data needed to demonstrate compliance with the specified requirements.
   3. Samples of the full range of colors and patterns available in each of the specified grades from the proposed manufacturer.
   4. Manufacturer's recommended methods of installation which, when approved by the Architect, will become the basis for acceptance or rejection of actual installation procedures used on the Work.

1.04 PRODUCT HANDLING

A. Comply with pertinent provisions of other Sections.

PART 2 PRODUCTS

2.01 LAMINATED PLASTICS

A. Acceptable Manufacturers:
   1. Wilsonart Division of Ralph Wilson Plastics
   2. Laminart
   3. Formica

B. Color and Patterns: Basis of design is Wilsonart, Burnished Chesnut 4796-60 and Formica, Neutra White 918-SP and Laminart 5050-T Beige edgewave textured finish as designated on drawings. Provide and match colors and finish patterns selected by

the Architect from standard colors and finishes of the approved manufacturer.

C. Qualities and Types: Provide general purpose type, 0.050" thick, complying with NEMA LD3.

2.02 ADHESIVES

A. For installation of laminated plastic, use only "rigid set" (urea-resin) or "semi-rigid set" (PVC acetate) adhesives. Do not use so-called "contact" adhesives.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install the approved laminated plastic in strict accordance with the manufacturer's recommendations as approved by the Architect.

END OF SECTION
06 60 20

SECTION 06 61 16
SOLID SURFACING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work described in this section:
   1. Solid surfacing for counter tops as indicated, including trim and material needed for a complete installation.
   2. Adhesives and sealants

1.02 RELATED WORK

A. Work of this section is related to work specified in the following sections:
   1. Section 06 40 00 Architectural Woodwork
   2. Section 06 60 20 Laminated Plastic
   3. Division 23 20 00 Plumbing Sections
   4. Division 26 00 00 Electrical Sections

1.03 REFERENCES

A. Reference Standards: In addition to requirements, comply with applicable provisions of the following design, materials, fabrications, and installation of component parts:
   1. ISSFA-2, Classification and Standards Publication of Solid Surfacing Material
   2. ANSI Z 124-3 for vanities and ANSI Z124-6 for kitchen sinks.
   3. NSF/ ANSI Standard 51 for uses in both splash and food service areas.
   4. ASTM C 834: Standard Specification for Latex Sealants
   5. ASTM C 920: Standard Specification for Elastomeric Joint Sealants
   6. ASTM D256: Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
   7. ASTM D 570: Standard Test Method for Water Absorption of Plastics
   8. ASTM D 638: Standard Test Method for Tensile Properties of Plastics
   9. ASTM D696: Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C with a Vitreous Silica Dilatometer.
   10. ASTM D 790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
   11. ASTM D 792: Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
   12. ASTM D 2583: Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
   13. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials
   14. ASTM G 21: Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
   15. ASTM G 22: Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Bacteria
   16. ASTM G 155: Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
   17. NEMA LD-3: High Pressure Decorative Laminates
   18. SCAQMD Rule 1168: Adhesive and Sealant Applications
   19. ANSI Z124-6-5.2 1997: Stain Resistance

1.04 SUBMITTALS

A. Shop drawings: Indicate design parameters, adjacent construction, materials, dimensions, components thick and sizes, fabrication details, tolerances, jointing methods, method of support, anchorages attachment provisions, integration with electrical equipment and coordination requirements with adjacent work.

B. Samples: Submit minimum 2" x 2" samples. Indicate full range of color and pattern variation. Approved samples will be retained as a standard for work.

C. Product data: Submit product data for each specified product including manufacturer's technical literature indicating physical properties and performance criteria for solid surfacing material and related components. Indicate product description, fabrication information and compliance with specified performance requirements.

D. Maintenance data: Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in project closeout documents.

1.05 REGULATORY REQUIREMENTS

A. Accessibility Requirements: Comply with the US Architectural & Transportation Barriers Compliance Board ADA-ABA Accessibility Guidelines for Buildings and Facilities and Georgia Accessibility Code, ADA 2010

B. Applicable standards: Standards of the following, as referenced herein:

1. American National Standards Institute (ANSI).
2. American Society for Testing and Materials (ASTM).
3. National Electrical Manufacturers Association (NEMA).

C. Adhesives, Sealants, and Sealant Primers:

1. SCAQMD (South Coast Air Quality Management District) Rule 1168.

1.06 QUALITY CRITERIA

A. Applicable standards: Standards of the following, as referenced herein:

1. American National Standards Institute (ANSI).
2. American Society for Testing and Materials (ASTM).
3. National Electrical Manufacturers Association (NEMA).

B. Fabricator / Installer Qualifications: Company specializing in fabricating and installing solid surfacing fabrications similar in complexity to those required in this project, including specific requirements indicated.

C. Installer Qualifications: Minimum three years documented installation experience for projects similar in scope and complexity to this Project, and currently certified by the manufacturer as an acceptable installer.

D. Source Limitations: Obtain solid surfacing fabrications through one source.

E. Fire-Test Response Characteristics: Provide soldi surfacing fabrications with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL 723 or another testing and inspecting agency acceptable to authorities having jurisdiction:

- Flame Spread Index: 25 or less
- Smoke Developed Index: 450 or less

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver no components to project site until areas are ready for installation. Store indoors.

B. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

C. Deliver, store, handle, and protect materials in accordance with manufacturers' written instructions. Provide protective coverings of suitable material. Take special precautions at corners.

1.08 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install solid surfacing fabrications until wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at design level during the remainder of the construction period.

B. Field Measurements: Verify actual measurements and openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.09 SEQUENCING

A. Sequence work to permit installation of adjacent affected construction, plumbing rough-in, and electrical.

B. Coordinate sizes and locations of plumbing, cut-outs electrical and other related work specified in other sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.10 WARRANTY

Provide manufacturer's warranty 10 year commercial limited warranty against defects in solid surfacing materials.

PART 2 PRODUCTS

2.01 PRODUCTS AND MANUFACTURERS

A. Acceptable product and manufacturers:

1. Staron Solid Surfaces by Samsung Chemical USA, Inc.
2 CORIAN by Du Pont de Nemours & Co., Inc.
3. Formica Solid Surfacing by the Formica Corporation
4. Wilsonart Solid Surface by Wilsonart LLC

B. Material: Homogeneous solid sheets of filled plastic resin complying with ISSF A-2 , ANSI Z124.3, ASTM G21 and G22, and NEMA LD-3
Through the body color for the full thickness of sheet material.

C. Material thickness: ½ inch, nominal

D. Color and Patterns: **Basis of Design** is Staron Solid Surfaces, Bronzestar, Glimmer and Horizon. Provide and match color and pattern as selected by Architect from manufacturer's full range of colors and patterns.

E. Countertops: Adhesively joined with not exposed seams. Edge details as indicated on the Architect's drawings. Provide complete with backsplash of size shown on the Architect's drawings.

2.02 ACCESSORY PRODUCTS

A. Joint adhesive: Manufacturer's standard two-part adhesive kit to create inconspicuous, non-porous joints. Color to blend with solid surface sheet material. Comply with UL 2818 GREENGUARD and SCAQMD Rule 1168.

B. Elastomeric Sealant: Manufacturer's standard mildew-resistant silicone sealant for filling gaps between countertops and terminating substrates in wet environment applications. Comply with ASTM C 920, Type S , Grade NS.

C. Siliconized Acrylic Sealant:: Manufacturer's standard siliconized acrylic latex sealant for general applications to fill gaps between countertops amd at terminating substrates. Comply with ASTM C 834, Type OP, Grade NF, and SCAQMD Rule 1168.

D. Construction Adhesive: Manufacturer's recommended silicone based construction adhesive for backsplashes, end plates, and other applications according to manufacturer's published fabrication instructions.

2.03 FABRICATION

A. Fabricate components in shop in sizes and shapes indicated according to approved shop drawings following manufacturer's printed fabrication instructions and deliver to job ready for installation. Manufacture in largest practical pieces for handling and shipping without seams.

B. Fabricate work square and to required lines.

C. Recess concealed fasteners, connections and reinforcing.

D. Design construction and installation details to allow for expansion and contraction of materials. Properly frame material with tight, hairline joints held rigidly in place.

E. Fabricate countertops with back splash and side splash pieces to profiles and sizes indicated.

F. Fabricate items to profiles shown with connections and supports as indicated or as required to complete installation in accordance with manufacturer's written instructions and approved shop drawings.

G. Provide holes and cut-outs for plumbing fixtures and trim, electrical components and appliances, and related items. Confirm layouts with equipment manufacturer's

cut-out templates before beginning work. Rout and round corners of cut-outs and sand edges smooth.

H. Do not exceed manufacturer's recommended unsupported overhanging distances.

I. Finish exposed surfaces smooth and in accordance with manufacturer's Recommendations

J. Form joints between solid surfacing components with specified seam adhesive. Complete joints inconspicuous in appearance and without voids. Provide joint reinforcement if required by manufacturer for particular installation conditions.

K. Radius corners and edges.

PART 3 EXECUTION

3.01 JOB MOCK-UP

A. Prior to final approval of shop drawings, erect at project site one full size mock-up of each component required, for Architect's review.

B. Should mock-up not be approved, refabricate and reinstall until approval is secured. Remove rejected units from project site.

C. Approved mock-ups may remain as part of finished work.

3.02 INSTALLATION

A. Install components plumb and level, and true, scribed to adjacent finishes, in accordance with approved shop drawings, product data and written installation instructions. Us woodworking and specialized fabrication tools acceptable to manufacturer.

B. Form joints seams using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Seams in locations shown on approved shop drawings and acceptable to manufacturer.

C. Provide back splashes and side splashes as indicated on the drawings. Adhere to countertops using manufacturer's standard color matched silicone sealant.

D. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Keep clean until Date of Substantial Completion. Replace stained components.

E. Provide minimum ½ inch radius for countertop inside corners.

F. Fill gaps between countertop and terminating substrates with manufacturer's recommended adhesive.

G. Rout sink cut-outs to manufacturer's template.

H. Make plumbing connections to sinks in accordance with Division 15, Mechanical and electrical connections in accordance with Division 16.

3.03 CLEANING AND PROTECTION

A. Clean and polish solid surface components in accordance with manufacturer's instructions. Complete remove excess mastic and seam adhesive from finished surfaces.

B. Protect surfaces from damage until Date of Substantial Completion. Repair work or replace damaged work that cannot be repaired to Architect's satisfaction.

C. Remove and replace solid surface components that are damaged and cannot be satisfactorily repaired.

END OF SECTION
06 61 16

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Definitions:

1. Sealants: A weatherproof elastomer used in filling and sealing joints, having properties of adhesion, cohesion, extensibility under tension, compressibility and recovery; designed to make joints air and watertight. Material is designed generally for application in exterior joints and for joints subject to movement.
2. Caulking Compound: A material used in filling joints and seams, having properties of adhesion and cohesion; not required to have extensibility and recovery properties, generally for application in interior joints.
3. Caulk: The process of filling joints, without regard to type of material.
4. Joint Failure: A caulked joint exhibiting one or more of the following characteristics:
    a. Air and/or water leakage.
    b. Migration.
    c. Loss of adhesion.
    d. Loss of cohesion.
    e. Failure to cure.
    f. Discoloration.
    g. Staining of adjacent work.
    h. Development of bubbles, air pockets or voids.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product description, indicating conformance with specified requirement and installation instructions for each type sealant. Indicate preparation requirements for each substrate condition.

B. Color Samples:

1. Submit samples of manufacturer's standard material colors and special colors as indicated at least 30 days prior to commencement of application.
2. Samples shall be actual materials or literature depicting actual material colors. Owner reserves the right to reject work not in conformance with selected colors, based upon samples submitted.
3. Should Contractor select a manufacturer meeting specified requirements, except for minimum color range requirements, he shall be responsible for furnishing special colors within color range requirements. Special colors shall be submitted for the Architect's acceptance.

C. Adhesion Test Results: Submit a letter from sealant manufacturer indicating that adhesion testing has been performed on actual samples of window wall components and that adhesion is acceptable to sealant manufacturer. Indicate requirements for primers or special preparation to meet adhesion requirements.

1.03 JOB CONDITIONS

A. Weather Conditions:

1. Install no materials under adverse weather conditions or when temperatures are below or above those recommended by manufacturer's

product data.
2. Proceed with work only when forecasted weather conditions are favorable for joint cure and development or high early bond strength.
3. Wherever joint width is affected by ambient temperature variations, install materials only when temperatures are in lower third of manufacturer's recommended installation temperature.

B. Protection of Adjacent Surfaces:
1. Protect by applying masking material or manipulating application equipment to keep materials in joint. If masking materials are used, allow no tape to touch cleaned surfaces to receive sealant. Remove tape immediately after caulking, before surface skin begins to form.
2. Remove misapplied materials from surfaces using solvents and methods recommended by the manufacturer.
3. Restore surfaces from which materials have been removed to original condition and appearance.

1.04 WARRANTY

A. Warrant work to be free from defects in materials and workmanship, including joint failure, for a period of two years, beginning at Date of Substantial Completion. Form of warranty shall be as included in Division 1.

PART 2 PRODUCTS

2.01 SILICONE SEALANT

A. Acceptable Products: Dow Corning Corporation, #790.

B. Characteristics:
1. Type: One part, low modulus silicone rubber.
2. Color: As selected by the Architect from manufacturer's standard selection.

2.02 SILICONE BATH SEALANT

A. Acceptable Products:
1. Dow Corning Corporation, Silicone Rubber Bathtub Caulk.
2. General Electric Company, Silicone Products Department, Silicone Sanitary Sealant.

B. Characteristics:
1. Type: One part, silicone rubber mildew and stain resistant.
2. Color: White.

2.03 TWO PART POURABLE POLYURETHANE SEALANT

A. Acceptable Products:
1. A. C. Horn, Inc., Daraseal-U.
2. Mameco International, Vulkem #245.
3. Pecora Corporation, Urexpan NR-200.
4. Tremco, Inc. THC-900.22
5. W. R. Meadows, Inc., Pourthane.

B. Characteristics:
1. Type: Two-component, pour grade polyurethane sealant for horizontal,

traffic-bearing surfaces.

2. Color: As selected by the Architect from manufacturer's standard selection.

2.04 ACRYLIC-LATEX CAULKING COMPOUND

A. Acceptable Products:

1. A. C. Horn, Inc., Acrylic Latex Caulk.
2. DAP, Inc., DAP Acrylic-Latex Caulk.
3. Pecora Corporation, AC-20.
4. Sonneborn Building Products, Sonolac.
5. Tremco, Manufacturing Company, Acrylic-Latex Caulk.
6. W. R. Meadows, Inc., Easaply.

B. Characteristics: Flexible, paintable, non-staining, non-bleeding acrylic emulsion.

2.04 ACCESSORY MATERIALS

A. Joint Cleaner: Type recommended by material manufacturer for substrates indicated.

B. Joint Primer/Sealer: Type joint primer/sealer recommended by material manufacturer.

C. Bond Breaker Tape: Plastic tape applied to contact surfaces where bond to substrate or joint filler must be avoided for material performance.

D. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam or neoprene foam as recommended by material manufacturer for compatibility with material. Provide size and shape of rod to control joint depth, break bond at bottom of joint, form optimum shape of bead on back side and minimize possibility of extrusion when joint is compressed.

E. Tooling Agent: Agent recommended by material manufacturer to insure contact of material with inner joint faces.

F. Divider Strips: Synthetic rubber or closed cell synthetic foam not less than 1/15" thick and full depth of sealant or caulking compound; approved by manufacturers of dissimilar materials as being compatible with each other.

PART 3 EXECUTION

3.01 JOB MOCK-UP

A. Prepare, caulk and finish one sample of each joint condition.

B. Sample joints shall be accepted by Owner prior to beginning work. Retain approved samples as a standard for work.

3.02 JOINT SURFACE PREPARATION

A. Clean joint surfaces immediately before caulking joints. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond.

B. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless material manufacturer's product data indicates that alkalinity does not interfere with bond and performance. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution; rinse with clean water and allow to dry before caulking.

3.03 APPLICATION

A. Comply with caulking material manufacturer's product data, except where more stringent requirements are shown or specified.

B. Prime or seal joint surfaces where recommended by material manufac-turer. Do not allow primer/sealer to spill or migrate onto adjacent surfaces.

C. Install backer rod for all caulking materials, except where recommended to be omitted by material manufacturer for application indicated.

D. Employ installation techniques which will ensure that materials are deposited in uniform, continuous ribbons without gaps or air pockets, with complete wetting of joint bond surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form slight cove, so that joint will not trap moisture and debris.

E. Do not allow materials to overflow or spill onto adjacent surfaces. Use masking tape or other precautionary devices to prevent staining of adjacent surfaces.

F. Remove excess and misplaced materials as work progresses. Clean the adjoining surfaces to eliminate evidence of misplaced materials, without damage to adjacent surfaces or finishes.

G. Cure sealants and caulking compounds in accordance with manufacturer's product data to obtain high early bond strength, internal cohesive strength and surface durability.

3.04 CAULKING SCHEDULE

A. Interior joints at perimeter of window wall: Silicone sealant.

B. Typical interior joints and seams at abutting and adjacent material: Acrylic-latex caulking compound.

C. Intterior joints in conjunction with vanities, fixtures and tile finishes: Silicone sealant.

D. Roofing repairs at new Roof Top Units, new roof penetrations, curbs, pitch pans and roof vents.

END OF SECTION
07 92 00

SECTION 08 12 16
ALUMINUM FRAMING SYSTEM

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes: Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
   1. Types of Aluminum Storefront Systems include:
      a. Basis of Design: Kawneer InFrame
         Interior Framing System - 2" x 6" (50.8 x 152.4) nominal dimension; Non-Thermal; Center Glazed, Screw Spline, Punched Opening Fabrication.
   2. Aluminum Entrance Doors

B. Related Sections:
   1. 079200 "Joint Sealants"
   2. 084113 "Aluminum-Framed Entrances and Storefronts"

1.03 DEFINITIONS

A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG)

1.04 PERFORMANCE REQUIREMENTS

A. Storefront System Performance Requirements: Interior framing system.

B. Structural Performance Aluminum Doors: Corner strength shall be tested per manufacturer's dual moment load test procedure and certified by an independent testing laboratory to ensure compliance integrity. Testing procedure and certified test results shall be provided upon request.

1.05 SUBMITTALS

A. Product Data: Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum frames and aluminum –framed entrance door indicated.

B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.

C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.

D. Samples for Verification: For aluminum frames and components required and for aluminum - framed entrance door and components required.

E. Product Test Reports –Entrance Doors: Based on evaluation of evaluation of comprehensive tests performance by qualified testing agency for each type of aluminum –framed entrance doors.

F. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum frames, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
   1. Joinery, including concealed welds.
   2. Anchorage.
   3. Expansion provisions.
   4. Glazing.

G. Other Action Submittals:
   1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications: A manufacturer capable of providing aluminum frames and aluminum-framed entrance doors that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.

C. Source Limitations: Obtain aluminum frames and aluminum –framed entrance doors through one source from a single manufacturer.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum frames and aluminum –framed entrance doors and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
   1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".

1.07 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of aluminum frame openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.08 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.

B. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product: Storefront System:
   1. Kawneer Company Inc.
   2. InFrame™ Interior Framing System (Non-Thermal)
   3. System Dimensions: 2" x 6" (50.8 x 152.4) nominal dimension
   4. Glass: Center Plane

B. Basis-of -Design Product: Aluminum-Framed Doors:
   1. Kawneer Company Inc.
   2. Aluminum-Framed Entrance Doors
   3. 190 Swing Door, Vertical Stile, 2-1/8" (54 mm), Top Rail 2-1/4" (58 mm), Bottom Rail 3-7/8" (99 mm)

C. Subject to compliance with requirements, provide a comparable product by the following: Manufacturers:
   1. Trulite Glass and Aluminum Solutions
   2. Vista Wall
   3. YKK

D. Substitutions: Refer to Substitutions Section for procedures and submission requirements.
   1. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
   2. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
   3. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
   4. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for storefront system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum storefront for a period of not less than ten (10) years. (Company Name)
   5. Samples: Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

E. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 MATERIALS

A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.

B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be noncorrosive and compatible with aluminum framing members, trim hardware, anchors, and other components.

C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinccoated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinccoated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

E. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.03 STOREFRONT FRAMING SYSTEM

A. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.

C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

D. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

E. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.04 GLAZING SYSTEMS

A. Glazing: As specified in Division 08, Section 08 80 00 “Glazing”.

2.05 ENTRANCE DOOR SYSTEMS

A. Major portions of door members to be 0.125” (3.2 mm) nominal in thickness and glazing molding to be 0.05” (1.3) thick.

B. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.

C. Provide adjustable glass jacks to help center the glass in the door opening.

D. Door Materials:
   1. Aluminum Extrusions: Allow and temper recommended aluminum-framed entrance door manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090" (2.3 mm) wall thickness at any location for the main frame and door leaf members.
   2. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be noncorrosive and compatible with the aluminum-framed entrance door members, trim hardware, anchors, and other components.
   3. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating, provide sufficient strength to withstand design pressure indicated.
   4. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

2.06 ACCESSORY MATERIALS

A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants".

B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.

2.07 FABRICATION

A. Extrude aluminum shapes before finishing.

B. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
   1. Profiles that are sharp, straight, and free of defects or deformations.
   2. Accurately fit joints; make joints flush, hairline and weatherproof.
   3. Physical and thermal isolation of glazing from framing members.
   4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
   5. Provisions for field replacement of glazing.
   6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

C. Aluminum-Framed Entrance Door Fabrication:
   1. Fabricate aluminum-framed entrance doors in sizes indicated. Include a complete system for assembling components and anchoring doors.
   2. Fabricate aluminum-framed glass doors that are re-glazable without dismantling perimeter framing.
      a. Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" (29 mm) long fillet welds inside and outside of all four corners. Glazing stops shall be

hook-in type with EPDM glasing gaskets reinforced with non-stretchable cord.

b. Accurately fit and secure joints and corners. Make joints hairline in appearance.
c. Prepare components with internal reinforcement for door hardware.
d. Arrange fasteners and attachments to control from view.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.
   1. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.08 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes:

B. Factory Finishing
   1. Match Kawneer AA-M30C12C30A41, #106 Class I Color: Light Satin.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight aluminum frame installation.
   1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.

   2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without Offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76 mm) of opening.
   3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
   4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum framed storefront system, accessories, and other components and aluminum-framed entrance doors, hardware, accessories and other components.

B. Install aluminum framed storefront system and aluminum-framed entrance doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.03 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

3.04 ADJUSTING, CLEANING, AND PROTECTION

A. Clean aluminum surfaces immediately after installing aluminum framed storefronts and aluminum-framed entrance doors. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION
08 12 16

SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Location and extent of each type of flush wood doors are indicated on the Drawings and in schedules.

B. All flush wood doors are interior solid core flush wood doors with veneer faces.

1.02 SUBMITTALS

A. Product Data: Door manufacturer's technical data for each type of door, including details of core and edge construction, trim for openings and louvers and factory finishing specifications.

B. Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.

C. Samples: Submit 3 samples, 1'-0" square for door faces with solid wood edging representing typical range of color and grain for each species of veneer and solid lumber required.

1.03 QUALITY ASSURANCE

A. Quality Standards: Comply with the following standards:
   1. NWWDA Quality Standard: I. S. I. "Industry Standards for Wood Flush Doors", of National Wood Window and Door Association (NWWDA).
   2. AWI Quality Standard: "Architectural Woodwork Quality Standards", including Section 1300 "Architectural Flush Doors", of Architectural Woodwork Institute (AWI) for grade of door, core construction, finish and other requirements exceeding those of NWWDA quality standard.

B. Manufacturer: Obtain doors from a single manufacturer.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with requirements of referenced standards and recommendations of NWWDA pamphlet "How to Store, Handle, Finish, Install and Maintain Wood Doors", as well as with manufacturer's instructions.

B. Identify each door with individual opening numbers which correlate with designation system used on shop drawings for door, frames and hardware, using temporary, removable or concealed markings.

1.05 PROJECT CONDITIONS:

A. Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period to comply with the following requirements applicable to project's geographical location:

Referenced AWI quality standard including Section 100-S-3 "Moisture Content".

1.06 WARRANTY:

A. General: Warranties shall be in addition to, and not limitation of, other rights the Owner may have under the Contract Documents.

B. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup or twist) or that show telegraphing of core construction in face veneers, or do not conform to tolerance limitations of referenced quality standards. Warranty shall also include reinstallation which may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.

C. Warranty shall remain in effect for the life of the installation.

D. The Contractors shall replace or refinish doors where his work contributed to the rejection or to avoiding of manufacturer's warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements, provide doors of one of the following:
Eggers Industries, Architectural Door Division
Fenestra Corporation Wood Door Division
Essex Industries Graham Manufacturing Division
Weyerhauser Company
Algoma Hardwood, Inc.

2.02 FLUSH WOOD DOORS

A. Interior Solid Core doors for transparent finish:
   1. Faces: White Birch, plain sliced.
   2. AWI Grade: Premium.
   3. Construction: PC-5. Non-rated - Particle board
      Rated – Mineral

B. Interior glass panel doors:
   1. White Birch, stain grade.
   2. Tempered glass panel with muntin as shown on drawing.

2.03 FABRICATION

A. Fabricate flush wood doors in sizes indicated on job site fitting.

2.04 LIGHTS

A. Provide openings with stops for lights.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine installed door frames prior to hanging door:
   1. Verify that frames comply with indicated requirements for type, size, location

and swing characteristics and have been installed with plumb jambs and level heads.

2. Reject doors with defects.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Hardware: For installation see Section 087100 "Finish Hardware" section of these Specifications.

B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and of referenced AWI standard and as indicated.

C. Job Fit Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.

1. Fitting Clearance for Non-Rated Doors: Provide 1/8 inch at jambs and heads; 1/16 inch per leaf at meeting stiles for pairs of doors; and 1/8 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch clearance from bottom of door to top of threshold.
2. Bevel non-rated doors 1/8 inch in 2 inches at lock and hinge edges.

D. Prefit Doors: Fit to frames for uniform clearances at each edge.

E. Field Finished Doors: Refer to Section 09900 "Painting" for finishing requirements.

3.03 ADJUSTING AND PROTECTION

A. Operation: Rehang or replace doors which do not swing or operate freely.

B. Finished Doors: Refinish or replace doors damaged during installation.

C. Protect doors as recommended by door manufacturer to ensure that wood doors will be without damage or deterioration at time of Substantial Completion.

END OF SECTION
08 14 16

SECTION 08 41 13

ALUMINUM-FRAMED ENTRANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes: Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
   1. Types of Aluminum Storefront Systems include:
      a. Basis of Design: Kawneer Trifab 601 Framing System – 2" x 6" (50.8 mm x 152.4 mm) nominal dimension; Non-Thermal; Center Plane; Screw Spline Fabrication.

B. Related Sections:
   1. 07 92 00 "Joint Sealants"
   2. 08 14 16 " Flush Wood Doors"
   3. 08 12 16 "Aluminum-Framing System

1.03 DEFINITIONS

A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.04 PERFORMANCE REQUIREMENTS

A. Storefront System Performance Requirements:
   1. Uniform Load: A static air design load of 30 psf (1437 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur. CSA A440 C2 Rating.
   2. Sound Transmission Class (STC) and Outdoor-Indoor Transmission Class (OITC): When tested to AAMA Specification 1801 and in accordance with ASTM E1425 and ASTM E90, the STC and OITC Rating shall not be less than:
      a. 37 (STC) and 31 (OITC).

1.05 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed storefront system indicated.

B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.

C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.

D. Samples for Verification: For aluminum-framed storefront system and components

required.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed storefront.

F. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
   1. Joinery, including concealed welds.
   2. Anchorage.
   3. Expansion provisions.
   4. Glazing.
   5. Flashing and drainage.

G. Other Action Submittals:
   1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications: A manufacturer capable of providing aluminum framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.

C. Source Limitations: Obtain aluminum-framed storefront system through one source from a single manufacturer.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
   1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup for type(s) of storefront elevation(s) indicated, in location(s) shown on Drawings.

F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".

1.07 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.08 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
   1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product:
   1. Kawneer Company Inc.
   2. Trifab™ 601 Framing System (Non-Thermal)
   3. System Dimensions: 2" x 6" (50.8 mm x 152.4 mm)
   4. Glass: Center Plane Glazed

B. Subject to compliance with requirements, provide a comparable product by the following Manufacturers:
   1. Trulite Glass and Aluminum Entrances
   2. Vistawall
   3. YKK

C. Substitutions: Refer to Substitutions Section for procedures and submission requirements
   1. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
   2. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
   3. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
   4. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for storefront system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum storefronts for a period of not less than ten (10) years. (Company Name)
   4. Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
   6. Samples: Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

D. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 MATERIALS

A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and

not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.

B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be noncorrosive and compatible with aluminum members, trim hardware, anchors, and other components.

C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinccoated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

E. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.03 STOREFRONT FRAMING SYSTEM

A. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposes shall be stainless steel.

C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

D. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

E. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.04 GLAZING SYSTEMS

A. Glazing: As specified in Division 08 Section “Glazing”.

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

E. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type, and as follows:
   1. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.
      a. Color: Matching structural sealant.

2.05 ENTRANCE DOOR SYSTEMS

A. Entrance Doors: As specified in Division 081416 Section "Flush Wood Doors".

B. Entrance Door Hardware: As specified in Division 087100 Section "Door Hardware".

2.06 ACCESSORY MATERIALS

A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants".

B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.

2.07 FABRICATION

A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
   1. Profiles that are sharp, straight, and free of defects or deformations.
   2. Accurately fit joints; make joints flush, hairline and weatherproof.
   3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
   4. Physical and thermal isolation of glazing from framing members.
   5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
   6. Provisions for field replacement of glazing.
   7. Fasteners, anchors, and connection devices that are concealed from view to Greatest extent possible.

B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

C. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.

D. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.

E. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.08 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing:
   1. Match Kawneer Corp.: AA-M30C12C30A41, Class I, #106 Color: Light Satin

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight framed aluminum-storefront system installation.
   1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
   2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76 mm) of opening.
   3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
   4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed storefront system, accessories, and other components.

B. Install aluminum-framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.

D. Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront system to the exterior.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.03 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

3.04 ADJUSTING, CLEANING, AND PROTECTION

A. Clean aluminum surfaces immediately after installing aluminum-framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION
08 41 13

SECTION 08 71 00
DOOR HARDWARE

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes commercial door hardware for the following:
   1. Swinging doors.
   2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:
   1. Mechanical door hardware.
   2. Electromechanical door hardware.
   3. Cylinders specified for doors in other sections.

C. Related Sections:
   1. Division 08 Section "Door Hardware Schedule".
   2. Division 08 Section "Hollow Metal Doors and Frames".
   3. Division 08 Section "Flush Wood Doors".
   4. Division 08 Section "Access Control Hardware".

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
   1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   2. ICC/IBC - International Building Code.
   3. NFPA 70 - National Electrical Code.
   4. NFPA 80 - Fire Doors and Windows.
   5. NFPA 101 - Life Safety Code.
   6. NFPA 105 - Installation of Smoke Door Assemblies.
   7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards:
   1. ANSI/BHMA Certified Product Standards - A156 Series
   2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.03 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
   1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
   2. Organization: Organize the Door Hardware Schedule into door hardware sets

indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:
    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:
1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the accesscontrol system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
    a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    b. Complete (risers, point-to-point) access control system block wiring diagrams.
    c. Wiring instructions for each electronic component scheduled herein.
2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Proof of Certification: Provide copy of manufacturer(s) official certification or accreditation document indicating proof of status as a qualified installer of Windstorm assemblies.

E. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

F. Informational Submittals:
1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and

witnessed by a qualified independent testing agency.

G. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.04 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

D. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

E. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
   1. Function of building, purpose of each area and degree of security required.
   2. Plans for existing and future key system expansion.
   3. Requirements for key control storage and software.
   4. Installation of permanent keys, cylinder cores and software.
   5. Address and requirements for delivery of keys.

F. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
   1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
   2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
   3. Review sequence of operation narratives for each unique access controlled

opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration Procedures.

G. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.06 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.07 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
1. Structural failures including excessive deflection, cracking, or breakage.

2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:
1. Ten years for mortise locks and latches.
2. Twenty five years for manual surface door closer bodies.
3. Two years for electromechanical door hardware.

PART 2 – PRODUCTS

2.01 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

C. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.02 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
   a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
5. Acceptable Manufacturers:
   a. Bommer Industries (BO).
   b. Hager Companies (HA).
   c. McKinney Products (MK).

B. Pivots: ANSI/BHMA A156.4, Grade 1, certified. Space intermediate pivots equally not less than 25 inches on center apart or not more than 35 inches on center for doors over 121 inches high. Pivots to be UL listed for windstorm where applicable.

1. Acceptable Manufacturers:
   a. Architectural Builders Hardware (AH).
   b. Dorma Products (DO).
   c. Rixson Door Controls (RF).

2.03 POWER TRANSFER DEVICES

A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
   1. Acceptable Manufacturers:
      a. Hager Companies (HA) - ETW-QC (# wires) Option.
      b. McKinney Products (MK) - QC (# wires) Option.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
   1. Provide one each of the following tools as part of the base bid contract:
      a. McKinney Products (MK) - Electrical Connecting Kit: QC-R001.
      b. McKinney Products (MK) - Connector Hand Tool: QC-R003.
   2. Acceptable Manufacturers:
      a. McKinney Products (MK) – QC-C Series.

2.04 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
   1. Acceptable Manufacturers:
      a. Corbin Russwin Hardware (RU).
      b. Sargent Manufacturing (SA).
      c. Yale Locks and Hardware (YA).

C. Cylinders: Original manufacturer cylinders complying with the following:
   1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
   2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
   3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
   4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
   5. Keyway: Manufacturer's Standard.

D. Key Quantity: Provide the following minimum number of keys:
   1. Change Keys per Cylinder: Two (2)
   2. Master Keys (per Master Key Level/Group): Five (5).
   3. Construction Keys (where required): Ten (10).

E. Construction Keying: Provide construction master keyed cylinders.

F. Key Registration List (Bitting List):
   1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
   2. Provide transcript list in writing or electronic file as directed by the Owner.

2.05 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
   1. Acceptable Manufacturers:
      a. Corbin Russwin Hardware (RU) – ML2000 Series.
      b. Sargent Manufacturing (SA) – 8200 Series.
      c. Yale Locks and Hardware (YA) – 8800FL Series.

2.06 ELECTROMECHANICAL LOCKING DEVICES

A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below.
   1. Electrified Lock Options: Where indicated in the Hardware Sets, provide

Electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling. Support end-of-line resistors contained within the lock case. Unless otherwise indicated, provide electrified locksets standard as fail secure.

2. Acceptable Manufacturers:
    a. Corbin Russwin Hardware (RU) - ML20900 Series.
    b. Sargent Manufacturing (SA) - 8200 Series.
    c. Yale Locks and Hardware (YA) - 8890 Series.

B. Electromechanical Narrow Stile Interconnected Locksets: Interconnected locksets designed with a mortise case which contains both a latchbolt and deadbolt and allows simultaneous retraction of both the latchbolt and deadbolt with a single motion turning of the lever handle. Locksets to be non-handed and available with a 1 1/8" or 1 1/2" standard backset. Latchbolt and deadbolt shall be fabricated of wrought brass and bronze with a minimum 3/4" latchbolt throw and 1"deadbolt throw. Electromechanical options include solenoid activated outside trim.
    1. Acceptable Manufacturers:
        a. Adams Rite (AD) – 2190/2290 Series.

2.07 STAND ALONE ACCESS CONTROL LOCKING DEVICES

A. Stand Alone Electronic Keypad Locksets: Internal, battery-powered, self-contained ANSI Grade 1 mortise or cylindrical lock consisting of electronically motor driven locking mechanism and integrated keypad without requirements for separate electronic programming devices. Locks to accept standard, interchangeable (removable) core, security and high security override cylinders. Provide keypad locks with a minimum 100 user codes furnished standard with 6 "AA" batteries and non-volatile memory.

    1. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
    2. Acceptable Manufacturers:
        a. Sargent Manufacturing (SA) - KP Series.

B. Narrow Stile Stand Alone Keypad Trim: Battery powered access control trim for narrow stile door applications. Internal clutch protected locking/unlocking control of the exterior lever handle trim. Field selectable handing with keyed cylinder override access capability.
    1. Card reader trim retrofits to Adams Rite MS Series Deadbolts, 4000 Series Deadlatches, and 8000 Series Exit Devices in 31/32" backsets and greater.
    2. Keypad trim can accommodate up to 150 users, (including master, supervisor and emergency users) plus two one-time codes and three operational modes (standard, passage, and lockout). Powered by (4) standard "AA" batteries.
    3. Acceptable Manufacturers:
        a. Adams Rite Manufacturing (AD) - eForce 3090 Series.

2.08 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
    1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:
1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.5.
4. Dustproof Strikes: BHMA A156.16.

2.09 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt and security type fasteners as required for proper installation.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Acceptable Manufacturers:
a. Corbin Russwin Hardware (RU) – DC6000 Series.
b. Sargent Manufacturing (SA) - 351 Series.
c. Norton Door Controls (NO) - 7500 Series.
d. Yale Locks and Hardware (YA) - 4400 Series.

2.10 ELECTROMECHANICAL DOOR OPERATORS – SELF POWERED

A. Standard: Certified ANSI/BHMA A156.19.

B. Performance Requirements: Capable of operating doors up to 48" wide and weighing up to 250 pounds.

C. Cycle Testing: Successfully tested to a minimum one million automatic cycles

D. Configuration: Surface mounted. Door operators to control single swinging and pair of swinging doors.
   1. Furnish complete with two jamb mounted push button transmitters with required signage.

E. Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19.
   1. When operated manually a clutch mechanism disengages the motor gearbox upon opening, and then re-engages during the closing cycle to control spring force.
   2. Optional Push-and-Go: Door movement activates the door opening cycle or recycles the door.
   3. Optional Power Close: Motor closes the door if held open by wind, stack pressure, or latchbolt binding.

F. Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.
   1. Provide units which are self adjusting for door size and weight, and using on-board diagnostics, continually maintain control of doors in wind or abusive environments.
   2. Provide manual adjustments for opening/closing speed, hold open time, backcheck, and opening/closing force.
   3. Provide units which have a regenerative drive system which charges the on-board battery pack when the door is operated manually, and which requires no external electrical power.
   4. Provide integral RF receiver paired with the included RF push buttons.
   5. Provide optional external power supply.

G. Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contact.

H. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Norton Door Controls (NO) - 5800 Series.

2.11 ARCHITECTURAL TRIM

A. Door Protective Trim
   1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
   2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side

of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

3. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
    a. Stainless Steel: 300 grade, 050-inch thick.
4. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
5. Acceptable Manufacturers:
    a. Rockwood Manufacturing (RO).

2.12 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
    1. Acceptable Manufacturers:
        a. Rockwood Manufacturing (RO).

2.13 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
    1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

    1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Test of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Acceptable Manufacturers:

1. National Guard Products (NG).
2. Pemko Manufacturing (PE).
3. Reese Enterprises, Inc. (RE).

2.14 ELECTRONIC ACCESSORIES

A. Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.
   1. Acceptable Manufacturers:
      a. Securitron (SU) - BPS Series.

2.15 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.16 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.02 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.03 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.04 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.05 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.06 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.07 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

B. Refer to Section 080671, Door Hardware Sets, for hardware sets.

C. Manufacturer's Abbreviations:
   1. MK - McKinney
   2. RF - Rixson
   3. SA - Sargent
   4. AD - Adams Rite
   5. RO - Rockwood
   6. SU – Securitron

Hardware Schedule

Set: 1.0
Doors: 100A, 106, 117A
Description: Card Reader

2 Hinge	TA2714 4-1/2" x 4-1/2"	US26D MK

1 Hinge	TA2714 QC12 4-1/2" x 4-1/2"	US26D	MK
1 Fail Secure Electric Lock	RX 8271-24V LNP	US26D	SA
1 Door Closer	351 UO	EN	SA
1 Kick Plate	K1050 10" x L.A.R.	US32D	RO
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO
1 ElectroLynx Harness	QC-C1500		MK
1 ElectroLynx Harness	QC-C300		MK
1 Multi-Class Reader	RP40		HD
1 Power Supply	BPS-12/24-1		SU

Notes: Presentation of authorized credential thru wall mounted reader to signal electronic lock to release and allow entry. Egress by lock lever. Access by key at all times. Lock to remain locked (fail secure) if power fails.

Set: 1.1
Doors: 108C
Description: Storefront (Card Reader)

1 Pivot	195 626		RF
1 Electrified Intermediate Pivot	EM19 626		RF
1 Lever Operator (DB/DL)	4600 (2190) MD	US32D	AD
1 Electrified Deadlatch	4300	628	AD
1 Closer	351 CPS	EN	SA
2 ElectroLynx Harness	QC-C1500		MK
1 Multi-Class Reader	RP40		HD
1 Power Supply	BPS-12/24-1		SU

Notes: Presentation of authorized credential thru wall mounted reader to signal electronic lock to release and allow entry. Egress by lock lever. Access by key at all times. Lock to remain locked (fail secure) if power fails.

Set: 2.0
Doors: 108B
Description: Storefront (Key Pad)

1 Pivot	195	626	RF
1 Intermediate Pivot	M19	626	RF
1 Deadlatch	4900	US26D	AD
1 Keypad Trim	3090-02	626	AD
1 Wall Stop	409	US32D	RO

Notes: Balance of hardware: threshold, door seals, door sweeps and mounting brackets furnished by storefront door manufacturer. Verify finish of hardware.

Set: 3.0
Doors: 101, 105
Description: Office

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK

1 Office Lock	8205 LNP	US26D	SA
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO

Set: 4.0
Doors: 108A
Description: Office (closer)

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Office Lock	8205 LNP	US26D	SA
1 Door Closer	351 UO	EN	SA
1 Kick Plate	K1050 10" x L.A.R.	US32D	RO
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO

Set: 5.0
Doors: 103, 109, 113, 114, 115, 116
Description: Storefront

1 Pivot	195	626	RF
1 Intermediate Pivot	M19	626	RF
1 Lever Operator (DB/DL)	4600 (2190) MD	US32D	AD
1 Deadlatch	4900	US26D	AD
1 Cylinder	41 101	US32D	SA
1 Door Closer	351 UO	EN	SA
1 Wall Stop	409	US32D	RO

Notes: Balance of hardware: threshold, door seals, door sweeps and mounting brackets furnished by storefront door manufacturer. Verify finish of hardware.

Set: 6.0
Doors: 107
Description: Storefront Sliding Door

1 HBO	All Hardware by door manufacturer	CO

Set: 7.0
Doors: 111
Description: Dressing

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Office Lock	8205 LNP	US26D	SA
1 Door Closer	351 UO	EN	SA
1 Kick Plate	K1050 10" x L.A.R.	US32D	RO
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO

Set: 8.0
Doors: 100B
Description: Break – Copy

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Passage Set	8215 LNP	US26D	SA
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO

Set: 9.0
Doors: 102A, 112
Description: Toilet (WS)

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Privacy Set	8265 LNP	US26D	SA
1 Mop Plate	K1050 4" x L.A.R.	US32D	RO
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO
1 Coat Hook	802	US26D	RO

Set: 10.0
Doors: 117B
Description: Existing

1 Exist	Existing Hardware to be re-used	CO

END OF SECTION
08 71 00

SECTION 08 80 00
GLAZING

1.01 SUMMARY

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

B. Section Includes:
   1. Transparent and translucent glass glazing for general and special purpose applications including tempered glass and glazing accessories.
   2. Work Results: Manufacture, handle, deliver and install glazing systems as shown on the architectural drawings or as otherwise specified and in accordance with the requirements of the contract documents.

1.02 REFERENCES

A. Abbreviations and Acronyms:
   1. AAMA American Architectural Manufacturers Association
   2. ANSI American National Standards Institute
   3. ASTM Formerly the American Society for Testing and Materials
   4. CPSC Consumer Products Safety Commission
   5. FT Fully Tempered 6. GANA Glass Association of North America
   6. HS Heat-strengthened
   7. ICC International Code Council

B. Definitions:
   1. Deterioration of Coated Glass: Defects developing from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking and other indications of deterioration in metallic coating.
   2. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delaminating material obstructing vision through glass and blemishes exceeding those allowed by referenced laminated glass standards.
      5. Manufacturer: A firm that produces primary glass or fabricated glass products as defined in referenced glazing publications.

C. Reference Standards: This section does not require compliance with standards, but is merely a listing of those used. If compliance is required, statements will be included in the appropriate Section.
   1. ASTM C 1036 Standard Specification for Flat Glass
   2. ASTM C 1048 Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
   3. ASTM C 1172 Standard Specification for Laminated Architectural Flat Glass
   4. ASTM C 1376 Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass
   5. ASTM E 1300 Standard Practice for Determining Load Resistance of Glass in Buildings

6. ASTM C 1349 Standard Specification for Architectural Flat Glass Clad Polycarbonate
7. ANSI Z97.1 Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings
8. BS EN 14179 Glass in building - Heat-soaked thermally-toughened soda lime silicate safety glass
9. CPSC 16 CFR 1201 Safety Standard for Architectural Glazing Materials

1.03 SUBMITTALS

A. Samples: Submit 12-inch (305 mm) long samples of each type of glass indicated except for clear monolithic glass products, and 12-inch (305 mm) long samples of each color required, except black, for each type of sealant or gasket exposed to view.

B. Test and Evaluation Reports: Glazing contractor shall obtain compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealant as well as other glazing materials including insulating units.

C. Warranties:

1. Provide a written 10-year warranty from date of manufacture for tempered glass. Warranty covers deterioration due to normal conditions of use and not to handling, installing, and cleaning practices contrary to the glass manufacturer's published instructions.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturers: Fabrication processes, including tempering shall be manufactured by a single manufacturer with a minimum of ten (10) years of fabrication experience and meet ANSI / ASQC 9002 1994.

D. Publications: Comply with recommendations in the publications below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this section or in Article 1.2 References.

1. GANA Glazing Manual
2. GANA Engineering Standards Manual
3. GANA Laminated Glazing Reference Manual

1.05 DELIVERY, STORAGE AND HANDLING

A. Storage and Handling Requirements:

1. Protect glass from edge damage during handling.
2. Storage and Protection: Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun or other causes.

1.06 SITE CONDITIONS

A. Ambient Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by the glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation or other causes.

1. Do not install liquid glazing sealants when ambient and substrate temperature

conditions are outside limits permitted by glazing sealant manufacturer or below 40°F (4.4°C).

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Acceptable manufacturers
   1. Viracon, Inc.
   2. PPG Industries Inc./ Glass Group
   3. Guardian Industries

B. Substitution Limitations: In some cases, it may be necessary to use the specified product without substitution, either to match work-in-place or to match similar products used in another facility or for another reason determined by the owner. Confirm constraints with the Owner or other Authority Having Jurisdiction.

C. Product Options: Obtain glass and glazing materials from one source for each product indicated. Coatings and finished assemblies, such as fully tempered units to be manufactured by the same fabricator in order to have a common source of warranty.

2.02 DESCRIPTION

A. Provide glazing systems capable of withstanding normal thermal movements and impact loads, without failure, including loss due to defective manufacture, fabrication and installation; deterioration of glazing materials; and other defects in construction.

2.03 PERFORMANCE / DESIGN CRITERIA

A. Glass Strength: Analysis shall comply with ASTM E 1300 Determining Load Resistance of Glass in Buildings. Provide glass products in the thickness and strengths (heattreated) required to meet or exceed the following criteria based on project loads and inservice conditions.
   1. Minimum thickness of heat-treated glass products to be selected so the worst case probability of failure does not exceed the following: a. 8 breaks per 1000 for glass installed vertically or not 15 degrees or more from the vertical plane and under wind action. b. 1 break per 1000 for glass installed 15 degrees or more from the vertical plane and under action of wind and/or snow.
   2. Deflection must be limited to prevent disengagement from the frame and be less than or equal to 1" (25mm).

2.04 FABRICATION

A. Flat Glass:
   1. Shall comply with ASTM C1036 Standard Specification for Flat Glass, Type 1, Class 1 (clear) and Quality q3
   2. ASTM C 1048 Heat Treated Flat Glass, Kind FT, Condition A (uncoated).
      a. Heat Treated Flat Glass to be by horizontal (roller hearth) process with inherent rollerwave distortion parallel to the bottom edge of the glass as installed.
      b. Maximum peak to valley rollerwave 0.003" (0.08mm) in the central area

and 0.008" (0.20mm) within 10.5" (267mm) of the leading and trailing edge

c. For clear or low-iron glass 1/4" to 3/8" thick without ceramic frit or ink, maximum + or – 100 mD (millidiopter) over 95% of the glass surface.
d. Maximum bow and warp 1/32" per lineal foot (0.79mm).

e. All tempered architectural safety glass shall conform with ANSI Z97.1 and CPSC 16 CFR 1201.
f. For all fully tempered glass, provide heat soak testing conforming to EN14179 which includes a 2 hour dwell at 290°C±10°C.

2.05 ACCESSORIES

A. Glazing Materials: Select glazing sealants, tapes, gaskets and additional glazing materials of proven compatibility with other materials they will contact, including glass products, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
   1. Setting blocks to be 100% silicone with a durameter hardness of 85±5.

2.06 GLAZING SYSTEM .

A. Glass: Clear Tempered, Minimum Thickness: ¼", Color: Clear, ASTM C 1048, Type: Heat 1 transparent flat, Class 1, quality q3 glazing select, Kind FT fully tempered.

B. Glazing Gaskets: ASTM C 864, neoprene or EPDM, or ASTM C 115, silicone or thermoplastic polyoefin, molded or extruded shape to fit glazing channel retaining slot

C. Fasteners: Type best suited to application.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:
   1. Verify prepared openings for glazing are correctly sized and within tolerance. Verify that the minimum required face and edge clearances are being followed.
   2. Verify that a functioning weep system is present.
   3. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Preparation: Immediately before glazing, clean glazing channels and other framing members receiving glass. Remove coatings not firmly bonded to substrates.

B. Demolition / Removal: Remove and replace glass that is broken, chipped, cracked or damaged in any way.

3.03 INSTALLATION

A. Install products using the recommendations of manufacturers of glass, sealants, gaskets and other glazing materials including those in the GANA Glazing Manual except where more stringent requirements are indicated.

B. Prevent glass from contact with contaminating substances that result from construction operations such as weld splatter, fire-safing or plastering.

3.04 CLEANING

A. Clean excess sealant or compound from glass and framing members immediately after application using solvents or cleaners recommended by manufacturers.

END OF SECTION
08 80 00

SECTION 08 83 00
MIRRORED GLASS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawing and general provisions of Contract, including General and Supplementary Conditions apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Float glass mirrors.

B. Metal-framed mirror units are specified in Division 10 Section "Toilet and Bath Accessories."

1.03 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract.

B. Product data for each type of product specified including description of materials and process used to produce mirrored glass, including source of glass, glass coating components, edge sealer, and quality control provisions.

C. Samples, 12 inches (300 mm) square in size, of each type of mirrored glass specified, including edge treatment on 2 adjoining edges of samples.

D. Product certificates signed by manufacturers of mirrored glass certifying that their products and edge sealers comply with specified requirements.

E. Mirror mastic glass coating compatibility test reports from organic protective coating manufacturer indicating that mirror mastic has been tested for compatibility and adhesion with organic protective coating. Include organic coating manufacturers' interpretation of test results relative to performance nd recommendations for use of mastics with organic protective coating.

1.04 QUALITY ASSURANCE

A. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" except where more stringent requirements are indicated. Refer to this publication for definitions of glass and glazing terms not otherwise defined in this Section or referenced standards.

B. Mirror Manufacturers' Document: Comply with recommendations of National Association of Mirror Manufacturers (NAMM) in its publication "MIRRORS Handle with Extreme Care, Tips for the Professional on the Care and Handling of Mirrors."

C. Single-Source Responsibility: Provide products obtained from one source for each type of mirror indicated.

D. Preconstruction Mirror Mastic Glass Coating Compatibility Test: Submit mirror mastic products to manufacturer of protective organic coating for testing by coating manufacturer's standard test method to determine compatibility of adhesive with

mirrored glass coating.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's instructions for shipping, storing, and handling mirrored glass; avoid deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors, protected from moisture including condensation.

1.06 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with mirrored glass installation until ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
   1. American Mirror Co.
   2. Bassett Mirror Co.
   3. Binswanger Mirror Products
   4. Carolina Mirror Corp.
   5. Consolidated Glass & Mirror Corp.
   6. Donisi Mirror Co., Inc.
   7. Falconer Glass Industries, Inc.
   8. Gardner Mirror Corp.
   9. Gilded Mirrors, Inc.
   10. Lenoir Mirror Co.
   11. Messer Industries
   12. Stroupe Mirror Co.
   13. Texas Mirror, Inc.
   14. Virginia Mirror Co., Inc.
   15. Wever Mirrors, Inc.

2.02 GLASS FOR MIRROR PRODUCTION

A. Primary Glass: Float glass complying with ASTM C 1036 requirements for Type 1 (transparent, flat) and for class and quality indicated below:
   1. Clear Float Glass: Quality q2 (mirror), Class 1 (clear).

2.03 MIRRORED GLASS PRODUCTION AND FABRICATION

A. Glass Coating: Coat second surface of glass with successive layers of chemically deposited silver, electrically or chemically deposited copper, and manufacturer's standard protective organic coating to produce coating system that complies with FS DD-M-0041, except with salt-spray test period extended to 300 hours and undercutting, discolorations, blackening, and silver impairment at mirror edges not greater than 1/8 inch (3 mm).
   1. Copper Substitute: In place of electrically or chemically deposited copper layer provide material equivalent in performance to copper.

B. Mirror Sizes: After application of glass coating, cut mirrored glass to final sizes and in the following nominal glass thickness:

1. Thickness: 5 mm.

C. Mirror Edge Treatment: Provide forms of edge treatment indicated below, with edges sealed after treatment to prevent chemical or atmospheric penetration of glass coating:
   1. Flat polished edge.
   2. Perform edge treatment and sealing in factory immediately after cutting to final sizes.

2.04 MISCELLANEOUS MATERIALS

A. Setting Blocks: Neoprene, 70-90 Shore A hardness.

B. Edge Sealer: A coating that has proven to be compatible with glass coting and approved by mirrored glass manufacturer for use in protecting against silver deterioration at mirror edges.

C. Mirror Mastic: An adhesive setting compound, produced specifically for setting mirrors by spot application, certified as compatible with glass coating by organic protective coating manufacturer and approved by mirror manufacturer.

D. Mirror Hardware: Extruded aluminum mirror hardware, of size and profile indicated, in manufacturer's standard finish, complying with description below:
   1. Clear polished finish.

E. Fasteners Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture.

F. Anchors and Inserts: Provide devices as required for installation of mirror hardware. Provide toothed or lead-shield expansion bolt devices for drilled-in-place anchors. Provide galvanized or cadmium-coated anchors and inserts for applications on inside face of exterior walls and where indicated.

G. Provide safety backing on all mirrored glass.

PART 3 EXECUTION

3.01 GLAZING

A. General: Install mirrors to comply with printed directions of mirror manufacturer, and with referenced FGMA standard and NAMM document. Mount mirrors in place to avoid distorting reflected images and provide space for air circulation between back of mirror and face of mounting surface.

B. Mastic Spot Installation System: Install mirrors with mastic as follows:
   1. Identify and examine surfaces over which mirror is to be mounted. Comply with manufacturer's printed installation directions for preparation of mounting surfaces including coating surfaces with mastic manufacturer's special bond coating where applicable.
   2. Apply barrier coat to mirror backing where approved by manufacturers of mirror and backing material.
   3. Apply mastic in spots to comply with mastic manufacturer's printed directions

for coverage and to allow air circulation between back of mirror and face of mounting surface.

4. After mastic is applied, align mirror and press into place while maintaining a minimum air space of 3/1 inch (5 mm) between back of mirror and mounting surface.
5. For wall-mounted mirrors install permanent means of support at bottom and top edges with bottom support designed to withstand mirror weight and top support to prevent mirror from coming away from wall along top edges.
    a. Attach mirror hardware securely to mounting surfaces with Mechanical fasteners installed with anchors or inserts as applicable.
    b. For continuous bottom supports, provide 1/8 x 5-inch (3 x 100-mm) setting blocks at quarter points. For channels or other continuous supports in which water could be trapped, provide two 1/4-inch (6-mm) diameter weeps drilled between setting blocks.
    c. For wall application provide clips along top of mirror.

3.02 PROTECTION AND CLEANING

A. Protect mirrored glass from breakage and contaminating substances resulting from construction operations.

B. Do not permit edges of mirror to be exposed to standing water.

C. Maintain environmental conditions that will prevent mirror from being exposed to moisture from condensation or other sources for continuous periods of time.

E. Wash mirrors not more than 4 days prior to date scheduled for inspections intended to establish date for Substantial Completion. Wash glass by methods recommended in NAMM document and by mirrored glass manufacturer. Use water or glass cleaners free from substances capable of damaging mirror edges or glass coating.

END OF SECTION
08 83 00

SECTION 08 87 00
ARCHITECTURAL WINDOW FILMS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Interior Window Film

B. Decorative Window Film

C. Privacy Window Film

1.02 RELATED SECTIONS

A. Section 08 12 16 – Aluminum Framing System: Windows to receive architectural window film

1.03 REFERENCES

A. ASTM International (ASTM)
   1. ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
   2. ASTM E 308 - Standard Recommended Practice for Spectophotometry and Description of Color in CIE 1931 System.

1.04 SUBMITTALS

A. Manufacturer's Product Data for specified products.

B. Submit shop drawings showing layout, profiles, and product components, including dimensions, anchorage, and accessories.

C. Samples: 4 inch by 4 inch Samples of specified color and pattern for verification.

D. Submit operation and maintenance data for installed products, including precautions against harmful cleaning materials and methods.

E. Mock ups: as required

1.05 QUALITY ASSURANCE

A. Obtain all products in this section from a single Manufacturer with a minimum of 10 years' experience.

B. Installer: Installation shall be performed by a trained and qualified installer, specialized and experienced in work required for this project.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store products protected from weather, temperature, and other harmful conditions as recommended by supplier.

C. Product must remain in original plastic bag and boxes and have storage conditions as follows:
   1. 40 °F – 90 °F (4 °C - 32 °C)
   2. Out of direct sunlight
   3. Clean dry area
   4. Original container
   5. Do not stack boxes over six (6) units high. Excessive weight can damage the Film

   6. Products are not recommended for interior applications where condensation consistently occurs.
   7. Handle products in accordance with manufacturer's instructions.
   8. Shelf life: 2 years

1.07 PROJECT/SITE CONDITIONS

A. Confirm appropriate substrate is suitable for mounting of glass finish components prior to start of installation.

B. Apply materials when environmental conditions are within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Application temperature range is 60 °F – 100 °F (16 °C – 38 °C).

C. Environmental Limitations: Do not install until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.08 WARRANTY

A. Manufacturer's Warranty: Submit manufacturer's standard warranty document by authorized manufacturer.

B. Standard Product Warranty: Refer to the manufacturer's applicable Technical Data Sheet for product warranty.

1.09 EXTRA MATERIALS

A. Furnish 2 percent extra material at time of installation. Deliver in protective packaging for storage and label contents appropriately.

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. Basis of Design: 3M Company – Commercial Solutions Division [CSD]

2.02 MATERIAL STANDARD

A. Design based upon 3M™ CRYSTAL Glass Finishes

2.03 MATERIAL PROPERTIES

A. General: Glass finishes field-applied application to glass or plastic material as visual opaque or decorative film.
B. Film: Vinyl

C. Option to Electrocut (by other than Manufacturer)

D. Adhesive: Acrylic, Pressure Sensitive, Permanent

E. Liner: Silicone-coated Polyester

F. Thickness (Film and Adhesive without Liner):
   1. Dusted - 3.2 mils (81 microns)
   2. Frosted - 4.7 mils (120 microns)

G. Fire Performance: Surface burning characteristics when tested in accordance with ASTM E84, Class A:
   1. Flame Spread: 25 maximum.
   2. Smoke Developed: 450 maximum.

2.04 OPTICAL PERFORMANCE

A. CRYSTAL Dusted Decorative / Privacy Glazing Film:
   1. Ultraviolet Transmittance (ASTM E 903): 27 percent.
   2. Visible Light Transmittance (ASTM E 903, ASTM E308): 85 percent.
   3. Visible Light Reflectance (ASTM E 903): 79 percent.
   4. Solar Heat Transmittance: 76 percent.
   5. Solar Heat Reflectance: 7 percent.
   6. Shading Coefficient at 90 Degrees (Normal Incidence) (ASTM E 903): 0.93.

B. CRYSTAL Frosted Decorative / Privacy Glazing Film:
   1. Ultraviolet Transmittance (ASTM E 903): 20 percent.
   2. Visible Light Transmittance (ASTM E 903, ASTM E308): 72 percent.
   3. Visible Light Reflectance (ASTM E 903): 12 percent.
   4. Solar Heat Transmittance: 64 percent.
   5. Solar Heat Reflectance: 10 percent.
   6. Shading Coefficient at 90 Degrees (Normal Incidence) (ASTM E 903): 0.82.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine substrate(s) for compliance. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Refer to the Manufacturer's applicable Technical Data Sheet to determine compatibility of finish to substrate.

C. Do not proceed with installation until unsatisfactory conditions have been corrected.

D. Responsibility for state of surfaces prior to installation to be pre-determined by installation specialist.

E. Scheduling of installation by Owner or its representative implies that substrate and conditions are prepared and ready for product installation per the recommendations of the installation specialist.

F. Proceeding with installation implies installer's acceptance of substrate and conditions.

3.02 SURFACE PREPARATION

A. Comply with all manufacturer's instructions for surface preparation.

B. Thoroughly clean substrate of substances that could impair the overlay's bond, including mold, mildew, oil, grease.

C. Re-clean surfaces with appropriate surface prep solvent and remove any haze or surface contamination.

3.03 APPLICATION

A. Application must be performed by qualified installer.

B. Do not proceed with installation until all finishing work has been completed in and around the work area.

C. Verify pattern prior to material acquisition.

D. Comply with manufacturer's installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

E. Install substrates with no gaps or overlaps. Form smooth, wrinkle-free, bubble-free surface for finished installation.

F. Remove air bubbles, wrinkles, blisters and other defects. Use approved procedures to prevent the formation of air bubbles, wrinkles, blisters and other defects.

G. Refer to the manufacturer's applicable Installation Guide for additional details.

3.4 CLEANING AND PROTECTION

A. Use cleaning methods recommended by architectural surfacing manufacturer for applicable environment.

B. Protect completed glass finish during remainder of construction period.

C. Consult with authorized installation specialist for project specifics.

END OF SECTION
08 87 00

SECTION 09 22 26
SUSPENDED ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 DESCRIPTION

A. Extent of each type of acoustical ceiling is shown and scheduled on Drawings.

B. Types of acoustical ceilings specified in this section include the following:
   1. 2x2 lay-in acoustical ceiling tile in suspended metal spline system.

1.02 SUMMARY

A. Section Includes:
   1. Acoustical ceiling panels
   2. Exposed grid suspension system
   3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
   4. Perimeter Trim

B. Related Sections:
   1. Section 09 29 00 Gypsum Wallboard System
   2. Section 09 30 13 Ceramic Tile
   3. Division 23 Mechanical
   4. Division 26 Electrical

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM A 1008 Standard Specification for Steel, Cold Rolled, Carbon, Structural, High-Strength Low-Allow and High –Strength Low-Allow with Improved Formability
   2. ASTM A 641 Standard Specification for Zinc-Cozted (Galvanized) Carbon Steel Wire.
   3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
   4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
   5. ASTM C 653 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
   6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
   7. ASTM D Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
   8. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
   9. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material
      A. Basis of Design Product: Manufacturer; Armstrong Fire Guard Products
   10. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint
   11. ASTM 1111 Standard Test Method for Measuring the INterzone Attenuation of Ceilings Systems

12. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
13. ASTM E 1264 Classification for Acoustical Ceiling Products

B. International Building Code

C. ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality

D. NFPA 70 National Electrical Code

E. ASC 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

F. International Code Council-Evaluation Services- AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

G. International Code Council –Evaluation Services Report-Seismic Engineer Report
   1. ESR 1308 –Basis of Design Product: Manufacturer: Armstrong Suspension System

H. International Association of Plumbing and Mechanical Officials-Seismic Engineer Report
   1. 0244- Basis of Design Product: Armstrong Single Span Suspension System

1.04 SYSTEM DESCRIPTION

Continuous / Wall-to-Wall

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Submit the following:
   1. Minimum 6 inch square samples of each acoustical panel type, pattern and color.
   2. Set of 12 inches long samples of exposed wall moldings and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceiling.

D. Certifications: Submit certifications from manufacturers of acoustical ceiling units and suspension systems attesting that their products comply with specification requirements., including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC and AC.

E. If the material supplied by acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to

an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.06 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.
   1. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
   2. Surface Burning Characteristics: As follows, tested per ASTM E84 and complying with ASTME 1264 Classification.
   3. Fire Resistance: As follows tested per ASTM E119 and listed in the appropriate floor or roof design in nthe Underwriters Laboratories Fire Resistance Directory.

B. Acoustical Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13 or their local codes for guidance where automatic fire detection and suppression systems are present.

C. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other work supported by, or penetrating through, ceilings, including light fixtures, HVAC equipment, fire-suppression system components (if any), and partition system (if any).

1.07 DELIVER, STORAGE AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.08 PROJECT CONDITIONS

A. Space Enclosure: Building areas to receive ceilings shall be free of construction dust and debris. Do not install interior acoustical ceilings until wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

1.09 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:

1. Acoustical Panels: Sagging and warping
2. Grid System:Rusting and manufacturer's defects

B. Warranty Period:
1. Acoustical panels: Ten (10) years from date of Substantial Completion
2. Grid: Ten (10) years from date of Substantial Completion

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.10 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below matching products installed, packaged with protective covering for storage and identified with appropriate labels.
1. Acoustical Ceiling Units: Furnish quantity of full size units equal to 5.0% of amount installed.
2. Exposed Suspension System Components: Furnish quantity of each exposed component equal to 5.0% of amount installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Ceiling Panels Basis of Design Product Manufacturer
1. Armstrong World Industries, Inc.

B. Suspension System Basis of Design Product Manufacturer
1. Armstrong World Industries, Inc.

C. Perimeter System Basis of Design Product Manufacturer
1. Armstrong World Industries, Inc.

2.02. ACOUSTICAL CEILING UNITS

A. Acoustical Panels Type: Basis of Design: Ultima High NRC, 1942 as Manufactured by Armstrong World Industries
1. Surface Texture: Fine
2. Composition: Mineral Fiber
3. Color : White
4. Size: 24 In x 24 In
5. Edge Profile: Beveled Tegular 9/16 In for interface with Armstrong Suprafine XL HRC grid
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton 0.80
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton 35
8. Sabin: N/A
9. Articulation Class (AC): ASTM E 1111; 170
10. Flame Spread: ASTM E 1264; Class A (UL)
11. Light Reflectance White Panel: ASTM E 1477; 0.87
12. Dimensional Stability; HemiGuard Plus

13. Recycle Content: Post –Consumer-1% Pre-Consumer Waste -67%

B. Acceptable Manufacturers:
   1. Armstrong World Industries, Inc.
   2. USG.
   3. CertainTeed Corp

2.03 METAL SUSPENSION SYSTEMS, GENERAL

A. Components: Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.
   a. Structural Classification: ASTM C 635 Heavy Duty
   b. Color: Basis of Design: Blizzard White as manufactured by Armstrong World Industries and match the actual color of the selected ceiling tile unless noted otherwise.
   c. Product **Basis of Design**: Suprafine XL-HRC 9/16" as manufactured by Armstrong World Industries, Inc.
   d. Acceptable Manufacturers:
      1. Armstrong World Industries, Inc.
      2. Chicago Metallic Corporation
   3. Certain Teed Corporation
   4. Eastern Products Div.

B. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated. For exposed suspension members and accessories with painted finish, match color indicated or, if not otherwise indicated, as selected by Architect from manufacturer's full range of standard colors.

C. Attachment Devices: Size for 5 times design load indicated in ASTM C635, Table 1, Direct Hung, unless otherwise indicated.

D. Wire for Hangers and Tees: ASTM A641, Class 1 zinc coating, soft annealed, with a yield stress load of at 3 times hanger design load (ASTM C635, Table 1, Direct Hung), but provide not less than 12 gage.

E. Accessories: Basis-of–Design Product: 7907 – 9/16 inch Tegular Act. To Drywall Transition Molding as manufactured by Armstrong World Industries

2.05 MISCELLANEOUS MATERIALS

A. Acoustical Sealant: Resilient, non-staining, non-shrinking, non-hardening, nonskinning, non-drying, non-sag sealant intended for interior sealing of concealed construction joints.
   1. Products: Subject to compliance with requirements, provide the following: BA-09; Pecora Corporation Tremco Acoustical Sealant or approved equal

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, tiling, plastering, and painting has been completed and thoroughly dried out, unless expressly

permitted by manufacturer's printed recommendations.

3.02 PREPARATION

A. Coordination: Furnish layouts for inserts, clips, or other supports required to be installed by other trades for support of acoustical ceilings.
   1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders, and comply with reflected ceiling plans wherever possible.

3.02 INSTALLATION

A. General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire-resistance rating requirements as indicated, and CISCA standards applicable to work.

B. Install suspension system and panels in accordance with the manufacturers instructions and in compliance with ASTM C636, and with authority having jurisdiction. Install with hangers supported only from building structural members. Suspend main beam from overhead construction with hanger wire not less than 6 inches from each end and spaced 4'-0" on center along the length of the main runner. Install hanger wire plumb and straight each carrying channel or direct-hung runner, unless otherwise indicated, leveling to tolerance of 1/8" in 12'-0".
   1. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye screws, or other devices which are secure and appropriate for substrate, and which will not deteriorate or fail with age or elevated temperatures.
   2. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structural or ceiling suspension system, Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing, counter splaying or other equally effective means.

C. Install wall moldings at the intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

D. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

E. Install acoustical panels in coordination with suspension system, with edges resting on flanges of main runner and cross tee. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.03 ADJUSTING AND CLEANING

A. Replace damaged or broken pieces.

B. Clean exposed surfaces of acoustical ceiling, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace work which cannot be successfully

cleaned and repaired to permanently eliminate evidence of damage. Replace with attic stock or new product to eliminate evidence of damage.

END OF SECTION
09 22 26

SECTION 09 29 00
GYPSUM WALLBOARD SYSTEM

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SCOPE

A. Provide all of the labor, materials, equipment and services to furnish and install the gypsum wallboard and the associated products.

1.03 SUMMARY

A. Section Includes:
   1. Interior gypsum board.
   2. Tile backing panels.
   3. Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

B. Related Requirements:
   1. Section 093013 "Tiling" for cementitious backer units installed as substrates for tile.

1.04 SUBMITTALS

A. Prior to installation, submit to the Designer for review the following:
   1. Manufacturer's literature fully describing each product named which shall include, but not be limited to, the manufacturer's name and catalog number for each item.
   2. Accompanying the materials list, submit two (2) copies of the manufacturer's current recommended method of installation for each item.
   3. Samples: For the following products:
      a. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.06 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

a. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

b. Indications that panels are mold damaged include, but are not limited to fuzzy or splotchy surface contamination and discoloration.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Moisture- and Mold-Resistant Assemblies: Provide and install moisture- and mold-resistant glass-mat gypsum wallboard products with moisture-resistant surfaces complying with ASTM C 1658 and ASTM C 1177 where indicated on Drawings and in all locations which might be subject to moisture exposure during construction. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.02 GYPSUM WALLBOARD -

A. Basis-of-Design Product: The design for each type of gypsum board and related products is based on Georgia-Pacific Gypsum products named. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
   a. American Gypsum.
   b. CertainTeed Corp.
   c. Lafarge North America Inc.
   d. National Gypsum Company.
   e. PABCO Gypsum.
   f. Temple-Inland.
   g. USG Corporation.

B. Gypsum Wallboard: ASTM C 1396/C 1396M.
   1. Gypsum wallboard is also available in 1/4- and 3/8-inch (6.4- and 9.5-mm) thicknesses for limited applications.
   2. Basis-of-Design Product: Georgia-Pacific Gypsum; "DensArmor Plus High-Performance Interior Panel
   3. Thickness: 1/2 inch (12.7 mm).
   4. Long Edges: Tapered.

C. Gypsum Board, Type X: ASTM C 1396/C 1396M.
   1. Basis-of-Design Product: Georgia-Pacific Gypsum; DensArmor Plus

Fireguard High-Performance Interior Panel
2. Thickness: 5/8 inch (15.9 mm).
3. Long Edges: Tapered.

D. Gypsum Ceiling Board: ASTM C 1396/C 1396M.
1. DensArmor Plus meets sag resistance requirements for ceiling applications.
2. Basis-of-Design Product: Georgia-Pacific Gypsum; DensArmor Plus High-Performance Interior Panel].
3. Thickness: 1/2 inch (12.7 mm).
4. Long Edges: Tapered.

E. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
1. Basis-of-Design Product: Georgia-Pacific-P Gypsum; DensArmor Plus High-Performance Interior Panel
2. Core: 1/2 inch (12.7 mm), regular type, 5/8 inch (15.9 mm), Type X
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274

2.03 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Georgia-Pacific Gypsum; "DensShield Tile Backer" or a comparable product by one of the following:
a. CertainTeed Corp.
b. USG Corporation
2. Core: 1/2 inch (12.7 mm), regular type, 5/8 inch (15.9 mm), Type X.
3. Long Edges: Square.
4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.04 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
1. Material: [Galvanized or aluminum-coated steel sheet or rolled zinc]
2. Shapes:
a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. L-Bead: L-shaped; exposed long flange receives joint compound.
e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
f. Expansion (control) joint.
g. Curved-Edge Cornerbead: With notched or flexible flanges.

2.05 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
1. Use screws complying with ASTM C 954 for fastening panels to steel

members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
2. Recycled Content of Blankets: Postconsumer recycled content plus onehalf of preconsumer recycled content not less than **<Insert number>** percent.
3. Products: Subject to compliance with requirements provide one of the following:
   a. USG Sound Attenuation Blankets - 3-1/2
   b. Owens-Corning Sound Attenuation Batts – 3-1/2"
   c. Certain Teed Noise Reducer Sound Attenuation Batts. 3-1//2"

D. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Products: Subject to compliance with requirements,provide one of the following:
   a) Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
   b) Grabber Construction Products; Acoustical Sealant GSC.
   c) Pecora Corporation; AIS-919.
   d) Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
   e) USG Corporation; SHEETROCK Acoustical Sealant.

E. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24
Acoustical joint sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatil Organic Emissions from Various Sources Using Small-Scale Environmental Chambers

2.06 METAL STUDS - STANDARD

A. Non-load bearing, screw-type, channel studs, roll-formed electro-galvanized steel in sizes as indicated on the Drawings. Flanges shall be at least 1-1/4" wide. Webs shall be punched to receive bridging, conduit, piping, etc. Meet or exceed ASTM C645-76, "Light-Gauge Studs, Runners, and Rigid Purring Channels".

B. Unless otherwise directed, install on 16" centers.

C. Sizes: 3-1/2" - 20 ga.
3-5/8" AND 2-1/2" - 20 ga.

2.07 FLOOR AND CEILING RUNNERS

A. As recommended by metal stud manufacturer.

2.08 METAL FURRING CHANNELS

A. Galvanized steel designed similar to USG metal furring channels. Face width 1-3/8" depth 7/8", length 12'-0".

2.09 FURRING CHANNEL CLIPS

A. Galvanized wire for use in attaching furring channels. Install on alternate sides of the carrying channels. Where clips cannot be alternated, wire tying must be employed.

2.10 COLD-ROLLED CHANNELS

A. 16 gauge galvanized steel for use in furring, suspended ceilings, and partition construction. Sizes - 3/4", 1-1/2", and 2" as required by the Drawings.

2.11 HANGER AND TIE WIRE

A. Soft annealed, low carbon steel wire, zinc-coated, No. 9 gauge for hanger wire and No. 18 gauge for tie wire.

2.12 FASTENERS

A. Self-drilling, self-tapping steel screws to comply with ASTM C646-80. Type S and S12, Pan and Bugle head. Length of screw to be equal to panel(s) thickness plus 3/8".

2.13 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.
B. Joint Tape:
    1. Interior Gypsum Board: Paper.
    2. Tile Backing Panels: As recommended by panel manufacturer.
C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
    1. Prefilling: At open joints, beveled panel edges, and damaged surface areas, use setting-type taping compound.
        a. Basis-of-Design Product: Georgia-Pacific Gypsum; ToughRock Sandable Setting Compound."
    2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping]compound.
        a. Basis-of-Design Product: Georgia-Pacific Gypsum; ToughRock Sandable Setting Compound
        b. Use setting-type compound for installing paper-faced metal trim accessories.
    3. Fill Coat: For second coat, use setting-type, sandable topping compound.
    4. Basis-of-Design Product: Georgia-Pacific Gypsum; ToughRock Sandable Setting Compound
    5. Finish Coat: For third coat, use setting-type, sandable topping compound.
        a. Basis-of-Design Product: Georgia-Pacific Gypsum; ToughRock Sandable Setting Compound."
    6. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound and to be used instead of skim coat to produce Level 5 finish
        a. Basis-of-Design Product: Georgia-Pacific Gypsum; ToughRock Sandable Setting Compound."
D. Joint Compound for Tile Backing Panels:
    1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
E. All products to comply with ASTM C-475-64, "Joint Treatment Materials for Gypsum Wallboard Construction".
F. Joint reinforcing tape: Perf-A-Tape Reinforcing Tape.

G. Joint compounds: Durbond Joint Compound-Taping and USG Crater, Free Ready-to-Use Joint Compound Topping.

2.14 CONTROL JOINTS

A. USG Zinc Control Joint No. 093.

2.15 OTHER MATERIALS

A. All other materials, not specifically described but required for a complete and proper installation of gypsum drywall, shall be as selected by the Contractor subject to the approval of the Designer.

PART 3 EXECUTION

3.01 GENERAL

A. All materials shall be installed in accordance with the manufacturer's current printed directions, approved submittals and the Contract Documents. In the case of a conflict between these instructions, the most stringent condition shall preside.

3.02 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been Corrected.

3.03 ENVIRONMENTAL CONDITIONS

A. During and after application of these materials, temperatures within the building shall be maintained within the range of 55 degrees F to 70 degrees F. Adequate ventilation shall be provided to carry off excess moisture.

3.04 METAL STUD ERECTION

A. Install all metal studs and accessory items in strict accordance with the approved submittal of manufacturer's recommendations, anchoring all members in position for long life under hard use.

B. Align all partition and wall assemblies to a tolerance of one in 20 horizontally and one in 500 vertically.

3.05 GRILLAGE ERECTION FOR CEILING

A. Space hanger wires 48" o.c. along carrying channels and within 6" of ends of carrying-channel run. In concrete, anchor hangers by attachment to reinforcing steel, by loops embedded at least 2" or by approved inserts. For steel construction, wrap hanger around or through beams or joists.

B. Install 1-1/2" carrying channels 48" o.c., and with 6" of walls. Position channels for proper ceiling height, level, and secure with hanger wire saddletied

along channel. Provide 1" clearance between runners and abutting walls and partitions. At channel splices, interlock flanges, overlap ends 12" and secure each end with double-strand 18 ga. tie wire.

C. Erect metal furring channels at right angles to 1-1/2" carrying channels or main supports. Space furring 24" o.c. and with 6" of walls. Provide 1" clearance between furring ends and abutting walls and partitions. Secure furring to carrying channels with clips or wire-tie to supports with double-strand 18 ga. wire. At splices, nest furring channels at least 8" and securely wire-tie each end with double-strand 18 ga. wire.

D. At light troffers or any openings that interrupt the carrying or furring channels, install additional cross reinforcing to restore lateral stability of grillage.

3.06 GYPSUM PANEL INSTALLATION – GENERAL

A. Comply with ASTM C 840.

B. Coordinate work with that of other Trades. Neatly cut face boards to fit around penetrations through wall. Provide suitable back-up anchorage as required for the attachment of shelves and cabinets.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and

abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
   a. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

I. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.07 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
   1. Wallboard Type: As indicated on Drawings
   2. Type X: Where required for fire-resistance-rated assembly
   3. Ceiling Type: Ceiling surfaces
   4. Moisture- and Mold-Resistant Type: As indicated on Drawings
   5. Glass-Mat Interior Type: As indicated on Drawings.

B. Single-Layer Application:
   1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels [**vertically (parallel to framing)**] [**horizontally (perpendicular to framing)**] unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
      a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
      b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
   3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
   4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:
   1. Retain first subparagraph below for multilayer gypsum board ceilings. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset facelayer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire resistance-rated assembly.
   2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or

required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to Support with screws.

D. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

E. Apply gypsum panels either vertically or horizontally. Position all edges over studs for vertical application; all ends over studs for horizontal application. Use maximum practical lengths to minimize end joints. Stagger joints on opposite ends of partition.

F. Screw heads shall provide a slight depression below the surface of the board. Do not drive "nail or screw" closer than 3/8" from edges and ends of the board.

G. Treat joints, screw head depressions, or defects incurred during the installation of the gypsum board in prescribed manner with joint treatment.

H. Properly space all fasteners in carefully accordance with the manufacturer's recommendations and code requirements with heads driven slightly below the surface for proper cementing but without breaking the paper cover.

I. Loosely butt all joints to be taped; firmly butt all joints to be left untreated.

J. Stagger all end joints and the joints between panels to achieve a maximum of bridging and a minimum of continued joints.

3.08 GYPSUM PANEL INSTALLATION AT CEILINGS - GENERAL

A. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

B. Apply gypsum panels of maximum practical length with long dimension perpendicular to furring channels. Position end joints over channel over channel web and stagger in adjacent rows.

C. Fit ends and edges closely, but not forced together. Fasten panels to channels with 1" Type S screws spaced 12" o.c. in field of panels and along abutting ends and edges.

3.09 APPLYING TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at where indicated and locations indicated to receive tile. Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.10 INSTALLING METAL TRIM

A. The Drawings do not purport to show all trim required; verify with the Designer the precise locations and types of trim to be used.

B. In addition to locations shown on Drawings, install trim at ceiling angles and around cut-onto and openings.

C. Install all trim in strict accordance with the manufacturer's recommendations, paying particular attention to make all trim installation plumb, level, and true to line, with firm attachment to supporting members.

D. Corner bead: Reinforce all vertical and horizontal exterior corners with corner bead fastened with 9/16" rosin-coated staples 9" o.d. on both flanges along entire length of bead.

E. Metal trim: Where assembly terminates against masonry or other dissimilar material, apply metal trim over panel edge and fasten with screws or 9/16" rosin-coated staples 12" o.c.

3.11 APPLICATION OF PERIMETER CAULKING

A. Apply sound caulking where any is designated to receive sound blankets. Apply sealant around all cut-outs and all intersections with adjoining structures.

B. Cut panels for loose fit around perimeter. Leave a groove no more than 1/8" wide. Apply a 1/4" minimum round bead of sealant each side of runners including those used at partition intersections with dissimilar wall construction. Immediately install panels, squeezing sealant into firm contact with adjacent surfaces. Fasten panels in normal manner over sealed joints.

C. Seal partitions intersecting sound-isolating partitions that are extended to reduce sound flanking paths.

3.12 EXPANSION CONTROL

A. Panel surfaces shall be isolated with control joints or other means where:
   1. Partition, furring or column fireproofing abuts a structural element (except floor) or dissimilar wall ceiling;
   2. Ceiling abuts a structural element, dissimilar wall or partition or other vertical penetration;
   3. Construction changes within the plane of the partition or ceiling;
   4. Partition or furring run exceeds 30'-0" in either direction;
   5. The areas within separate ceiling sections exceeds 2,500 sq. ft.;
   6. Wings of "L", "U", and "T" shaped ceiling areas are joined;
   7. Expansion or control joints occur in the base exterior wall.

B. The location of all control joints shall be verified with the Designer.

C. Ceiling-height door frames may be used as control joints, as may less-than ceiling-height door frames if control joints extend to ceiling from both corners.

3.13 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels in accordance to ASTM C 840:

3.14 PROTECTION

Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

Remove and replace panels that are wet, moisture damaged, and mold damaged. Indications that panels are wet or moisture damaged include, but are not limited to,discoloration, sagging, or irregular shape. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration

3.15 CLEANING UP

A. Do not allow the accumulation of scraps and debris arising from the work of this Section but maintain the premises in a neat and orderly condition at all times; in the event of spilling or splashing compound onto other surfaces, immediately remove the spilled or splashed material and all trace of the residue to the approval of the Designer.

END OF SECTION
09 29 00

SECTION 09 30 13
TILING

PART 1 – GENERAL

1.01 SUBMITTALS

A. Shop drawings: Submit for tile pattern work indicated. Indicate control and expansion joint locations. Include tile layout, setting bed thicknesses, joint widths, control and expansion joint sizes and sections.

B. Product data: Submit manufacturer's printed product description and installation instructions for each type of tile and for use of manufactured mortars, grouts, adhesives, sealants, latex/polymer additives, crack isolation membrane and accessory products. Include mortar and grout proportioning and mixing instructions for latex/polymer additives.

C. Samples; submit the following:
   1. 1'-0" by 1'-0" panel of each type and color tile selected, grouted as specified.
   2. Samples of each trim shape required.
   3. 1'-0" length of threshold.
   4. Samples of each accessory required.
   5. Submit samples of standard color sealant materials for Design Professional's approval.

D. Master grade certificates: Indicate that tile materials conform to ANSI A137.1. Certificates shall indicate grade, kind of tile, identification for tile packages and name and location of project. Tile manufacturer shall issue certificates at time of shipping.

E. Submit written certification that crack isolation membrane is approved for use with specified mortars.

1.02 QUALITY ASSURANCE

A. Applicable standards:
   1. Standards of the following, as referenced herein:
      a. American National Standards Institute (ANSI).
      b. ASTM International (ASTM).
      c. Marble Institute of America, Version VII (MIA).
   2. Tile Council of North America (TCNA), "Handbook for Ceramic Tile Installation," 2011 Edition.

B. For each type of setting material and grouting material specified, only one brand shall be used throughout project.

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original containers with labels legible and intact, identifying brand name and contents.
   1. Tile cartons shall be grade-sealed by manufacturer in accord with ANSI

A137.1, with grade seals unbroken.

2. Manufactured mortars, adhesives and grouts shall bear hallmarks certifying compliance with specified standards.

1.04 JOB CONDITIONS

A. Environmental requirements: For manufactured mortar, adhesive and grout, comply with minimum temperature recommendations of manufacturers.

1.05 MAINTENANCE

A. Extra materials: Provide one carton of each type, size and color of tile specified and 5% of each type, size and color of accessory, for Owner's maintenance.

PART 2 – PRODUCTS

2.01 TILE, GENERAL

A. Factory blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

B. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer.

C. Factory-applied temporary protective coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of release agent as recommended by mortar and grout manufacturer or a hot-applied petroleum paraffin wax. Do not coat backs or sides of tile surfaces.

E. FloorScore compliance: Tile for floors shall comply with requirements of FloorScore Standard.

2.02 TILE

A. The Basis of Design Product Manufacturer for each type of porcelain tile is: Ceramic Technics, Style: Sardina Vein, Color: Cream, as scheduled on drawings. Tile of similar characteristics, as manufactured by other acceptable manufacturers, maybe submitted for Design Professional's acceptance. Acceptance is subject to compliance with specified requirements, as evidenced by specified submittals.

B. Acceptable manufacturers; porcelain tile:

1. American Marazzi Tile, Inc.
2. American Olean/Dal-Tile Co.
3. Buchtal Corp., U.S.A.
4. Ceramic Technics.
5. Crossville Ceramics.
6. Dal-Tile Corp.
7. Florim USA.
8. Florgres.
9. GranitiFiandre, Trans Ceramic Ltd.
10. Interceramic, USA.
11. R.A.K. Ceramics.

12. United States Ceramic Tile Co.

C. Porcelain tile:
1. Meeting ANSI A137.1, Section 4.1 Impervious Class, and Section 6.1 Table 10, Standard Grade.
2. Color: Match colors scheduled on drawings.
3. Nominal face size: As scheduled on drawings.
4. Thickness: Minimum 3/8".
5. Finish: As scheduled on drawings.
6. Static coefficient of friction (COF) for floor tile, tested in accord with ASTM C1028-07 and meeting ANSI A137.1 and recommendations of ADA Accessibility Guidelines:
   a. Accessible routes: Minimum COF of 0.60.
   b. Ramps: Minimum COF of 0.80.
7. Trim shapes: Matching tile in color and size. Include coved base, coved bullnose base, bullnose caps, beads and corner units, as required.

2.03 SETTING MATERIALS AND ACCESSORIES

A. Medium bed latex Portland cement mortar for floor tile:
1. Acceptable products:
   a. Bonsal American, ProSpec Medium Bed Permaflex 550.
   b. Bostik, Big Tile & Stone Mortar.
   c. Custom Building Products, Marble and Granite Mortar Mix.
   d. Mapei Corp., Ultralite Mortar.
2. Characteristics: Pre-sanded, latex/polymer-modified Portland cement and additives meeting ANSI A118.1 and A118.4 for floors; mixed with specified latex/polymer additive.

B. Dry-set Portland cement mortar for walls:
1. Acceptable products:
   a. Bonsal American, ProSpec Superior Permaset 400.
   b. Bostik, Tile-Mate Premium.
   c. Custom Building Products: Megalite.
   d. Mapei Corp., Kerabond/Keralastic System.
2. Characteristics: Pre-sanded, latex/polymer-modified or polymer-modified Portland cement and additives meeting ANSI A118.1 for walls; mixed with specified additives.

C. Crack isolation membrane:
1. Acceptable products:
   a. The Noble Co., Noble Seal CIS.
   b. Compotite Corporation, Composeal Gold.
   c. NAC Products, Inc., ECB Membrane.
2. Characteristics:
   a. Material: Minimum 30 mil thickness chlorinated polyethylene or PVC sheet with fabric-reinforced facing; meeting ANSI A118.12.
   b. Primer, adhesive and accessories: As recommended by acceptable membrane submittals with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.04 GROUTING MATERIALS

A. Epoxy grout for floor tile and for wall tile:
   1. Acceptable products:
      a. Bonsal American, ProSpec B-7000 Epoxy Mortar & Grout.
      b. Bostik Findley, Color-Poxy.
      c. Custom Building Products: 100% Solids Epoxy Grout.
      d. Mapei Corp.: Kerapoxycceptable products:
   2. Characteristics: 100% epoxy, two-part or three-part composition meeting ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D; standard colors selected by Design Professional.
   3. Grout release agent: Provide grout manufacturer's recommended grout release agent, for application prior to grouting tile to receive epoxy grout.

2.05 ADDITIVES

A. Latex/polymer additives as herein specified: Undiluted type for field mixing. Additives shall be manufactured or approved in writing by mortar and grout manufacturers.

B. Additives for thickset mortar beds; acceptable products:
   1. Bonsal American, ProSpec B-710 SBR Mortar Additive.
   2. Bostik Findley: #425 Multi-Purpose Acrylic Latex Admixture.
   3. Custom Building Products: CustomFlex Ultra-Strength Thin-Set Additive.
   4. Mapei Corp.: Keraply.

C. Add specified additives to specified manufactured mortars, comply with accepted mortar manufacturers' submittals for additive proportions and mixing instructions.

2.06 CONTROL AND EXPANSION JOINT MATERIALS

A. Acceptable products:
   1. Pecora Corp., Dynatrol II.
   2. BASF Building Systems, NP-2.
   3. Tremco, Inc., Dymeric.

B. Characteristics:
   1. Type: Two-part, polyurethane-based sealant with separate pre-packaged color agent **; VOC Content of not more than 250 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Colors: Standard colors as selected by Design Professional from manufacturer's standard selection.

C. Primer: Types recommended by sealant manufacturer:
   1. Sealant primers for nonporous substrates: 250 g/L.
   2. Sealant primers for porous substrates: 775 g/L.

D. Backup material: Flexible, non-compressive foam type as recommended by sealant manufacturer.

2.07 ACCESSORY MATERIALS

A. Marble thresholds: Meeting MIA Group A, honed finish, in sizes and shapes indicated; color selected by Design Professional.

B. Edge strips: Stainless steel, 1/8" wide with provisions for anchoring to concrete slab.

C. Cleaning materials and methods for face of epoxy-grouted tile: Provide grout cleaning materials and methods in accord with accepted submittals.

D. Leveling compound; acceptable products:
   1. Custom Building Products, LevelQuik RS.
   2. Euclid Chemical Co., Floorstone with Latex Liquid.
   3. Mapei, Ultraplan 1 Plus.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Subfloor curing:
   1. Concrete subfloors shall be moisture-cured or cured using a curing compound in accord with the requirements of the Concrete Finishing section.
   2. If a curing compound has been used, Contractor shall verify that compound is compatible with flooring manufacturer's installation materials.
   3. If the curing compound is not compatible, or if compatibility is unknown, Contractor shall remove curing compound by shot-blasting or other methods approved by floor finish manufacturer.

B. Concrete moisture vapor emission, humidity levels and pH testing: Perform one or more of the following tests, as required by acceptable flooring submittals, using the following methods:
   1. Moisture vapor emissions: Perform tests on subfloors in accord with ASTM F1869-04 calcium chloride test and acceptable flooring submittals, to determine if surfaces are acceptable to receive specified flooring products.
   2. Humidity level: Perform on subfloors in accord with ASTM F2170-02 *in situ* probe and acceptable flooring submittals, to determine if surfaces are acceptable to receive specified flooring products.
   3. Concrete pH level: Perform on subfloors to verify that surfaces are acceptable to receive specified flooring products.
   4. Correction of conditions: Prior to installation, correct conditions that do not meet flooring manufacture's requirements, or that may be detrimental to flooring installation.

C. Conditions of surfaces to receive tile:
   1. Surfaces shall be firm, dry, clean and free of oily or waxy films.
   2. Grounds, anchors, plugs, hangers, bucks, electrical and mechanical work in or behind tile shall be installed prior to proceeding with tile work.

3.02 GENERAL TILE INSTALLATION

A. Install tile in accord with ANSI A108.1 through A108.11 and as specified herein.

B. Layout:
   1. Center tile within areas to avoid tiles of unequal widths at opposite walls

and tiles of less than 1/2 tile width.
2. Align tile joints straight and parallel to walls.
3 .Align joints in floor and base or wall tile.
4. Locate accessories, control joints and expansion joints before installing tile.

C. Cutting and fitting:
1. Cut and drill tiles without damaging exposed tile face. Rub cut edges smooth with Carborundum stone.
2. Grind and fit tile at intersections, against trim and at built-in fixtures and accessories.
3. Fit tile around outlets, pipes, fixtures and fittings so that tile edges are concealed under applied escutcheons, collars or plates.
4. Miter coved and bullnose tile in corners or use special trim shapes to maintain uniform joint widths.

D. Joints:
1. Provide 3/8" wide joints for porcelain tile.
2. In internal vertical corners of wall tile and where tile abuts dissimilar materials, form joints using control joint filled with sealant in lieu of grout.

E. Control and expansion joints:

1. Ascertain that control and expansion joints are located in accord with Approved shop drawings, TCNA EJ171-11, and as approved in advance by Design Professional.
2. Provide control joints, perimeter control joints and expansion joints through tile and setting bed.
   a. Field of floor control joints shall be located as follows:
      1) Spacing indicated, but not less than 20'-0" to 25'-0" o. c. in each direction.
      2) Over cold joints and saw-cut control joints.
   b. Provide control joints at all perimeters.
   c. Locations of joints shall be as approved in advance by Design Professional. Width of joints shall match width of grout joints, except control joint shall be not less than 1/8" wide.
3. Prime joints in accord with acceptable sealant submittals. Following tile work completion, seal joints in accord with TCNA EJ171-11, using specified sealant.

F. Thresholds:
1. Marble: Install in accord with TCNA TR611-11. Seal joint between threshold and tile using sealant in lieu of grout.
2. Edge strips: Install at door openings not having thresholds and at intersections with other flooring materials where thresholds are not indicated.

G. Allowable site tolerances: Plumb, level and true to line within ±1/4" in an undivided space and ±1/16" maximum in a running foot.

H. Install crack isolation membrane at medium-bed-set tile. Install in accord with

requirements of ANSI A108.17 or accepted submittals if more stringent.

I. Grout release agent: Prior to grouting tile to receive epoxy grout, apply specified grout release agent to face of tile only. Do not allow agent to migrate into joints.

3.03 TILE INSTALLATION

A. Floor tile with any dimension 8" or larger, medium bed set, interior:
   1. Setting method: Medium-bed latex Portland cement mortar.
   2. Standard installation method: Generally in accord with TCNA F125-Full-11.
   3. Grout type: Epoxy grout. Apply grout release agent prior to grouting tile to receive epoxy grout.

B. Wall tile and base, thinset over solid backing, interior:
   1. Setting method: Dry-set or latex Portland cement mortar.
   2. Standard installation method: TCNA W243-11.
   3. Grout type: Epoxy grout. Apply grout release agent prior to grouting tile to receive epoxy grout.

3.04 CLEANING AND PROTECTION

A. Clean tile as work progresses, preventing accumulation of setting and grouting materials or debris on tile faces.

B. Immediately remove stains, grout release agent, excess mortar, grout and sealant from faces of tile; comply with accepted submittals.

C. Thresholds and glazed tile: Clean thresholds and glazed tile using a solution of detergent and water only. Use no acids to clean thresholds and glazed tile.

D. Unglazed tile:
   1. Allow tile work to cure a minimum of 14 days prior to acid cleaning.
   2. Saturate grout joints with clean water at least two hours prior to beginning acid cleaning. Apply a grease coating to metal and vitreous surfaces subject to contact with acid solution.
   3. Utilize a solution of one pound sulfamic acid to five gallons clean water for cleaning in accord with ANSI A137.1, Section 3.5.3. Work in areas not exceeding 20 sq. ft., scrubbing tile surfaces to remove residue. Do not scrub grout joints.
   4. Flush cleaned areas with water immediately after cleaning. Scrub surfaces with clean water to remove remaining film.
   5. Do not reuse cleaning solutions. Discard solutions containing residue and debris from cleaning operations so as not to contaminate or stain adjacent work.

E. Protection: Protect installed tile work until Date of Certificate of Material Completion by covering with kraft paper.

END OF SECTION
09 30 13

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 DESCRIPTION

A. Extent of resilient flooring and accessories is shown on the Drawings and in schedules.

1.02 QUALITY ASSURANCE

A. Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants and leveling compounds.
B. Installer's Qualifications: Engage Installer who is certified in writing by resilient flooring manufacturer as qualified for installation.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of resilient flooring and accessory.
B. Samples for verification Purposes: Submit the following samples of each type, color and pattern of resilient flooring required, showing full range of color and pattern variations.
    1. Full size tile samples.
    2. 2 1/2 foot long samples of resilient flooring accessories.
    3. Other materials as requested.

1.04 PROJECT CONDITIONS

A. Maintain minimum temperature of 65 degrees F (18 degrees C) in spaces to receive resilient flooring for at lease 48 hours prior to installation, during installation and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 degrees F (13 degrees C) in areas where work is completed.

B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's recommended bond and moisture test.

1.05 TESTING

A. Specification (ASTM) 1700) Class 3, Type B

B. Heat Stability (ASTM F-1514)

C. Stain & Chemical Stability (ASTM F-925)

D. HUD/FHA Requirements: Exceed

E. Static Coefficient of Friction: Meet or Exceed ADA Guidelines

F. Flooring Radiant Panel (ASTM-E-648)

G. N.B. S. Smoke Chamber (ASTM E-662)

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with the requirements, provide products of one of the following:
   1. Basis of Design Luxury Vinyl Tile:: Manufacturer: Mannington Commercial, Style: Dissolve, Color: Recede
   2. Acceptable Manufacturers:
      Mannington Commercial
      Armstrong World Industries, Inc.
      Shaw Industries, Inc..
      Mohawk

2.02 RESILIENT FLOORING COLORS AND PATTERNS

A. Provide colors and patterns as indicated, or if not otherwise indicated, as selected by Architect from manufacturer's standards.

2.03 TILE FLOORING

A. Luxury Vinyl Tile: 18 inches x 36 inches unless otherwise indicated, and as follows:
   1. Overall Thickness, 0.100 inches (2.5 mm)
   2. Wearlayer Thickness: 0.020 mils (0.51 mm).
   3. Static Load Limit: 750 psi
   4. Color and pattern: Match color and pattern as selected by Architect.

2.04 ACCESSORIES

A. Resilient Edge Strips: 1/8 inch thick, homogeneous vinyl or rubber composition, tapered or bullnose edge,color to match flooring or as selected by Architect from standard colors available; not less than 1 inch wide.
B. Adhesive (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.
C. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
D. Leveling and Patching Compound: Latex type as recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 INSPECTION

A. Require Installer to inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor surface is defined as one that is smooth and free from cracks, holes, ridges, coatings preventing adhesive bond and other defects impairing performance or appearance.
B. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence or curing compounds.
C. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

3.02 INSTALLATION

A. Prepare subfloor surfaces as follows:

1. Use leveling and patching compounds as recommended by resilient flooring manufacturer for filling small cracks, holes and depressions in subfloors.
2. Remove coatings from subfloor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient flooring adhesives, paint, oils, waxes and sealers.

B. Broom clean or vacuum surfaces to be covered, and inspect subfloor.

C. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.03 INSTALLATION, GENERAL

A. Install resilient flooring using method indicated in strict compliance with manufacturer's printed instructions. Extend resilient flooring into toe spaces, door reveals and into closets and similar openings.

B. Scribe, cut and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.

C. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.

D. Tightly cement resilient flooring to sub-base without open cracks voids, raising and puckering at joints, telegraphing of adhesive spreader marks or other surface imperfections. Hand roll resilient flooring at perimeter of each covered areas to assure adhesion.

3.04 INSTALLATION OF TILE FLOORS

A. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.

B. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tiles are not acceptable. Lay tile in "checkerboard" fashion with grain reversed in adjacent tiles.

C. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

3.05 INSTALLATION OF ACCESSORIES

A. Apply wall base to walls, columns, pilaster, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.

B. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.06 CLEANING AND PROTECTION

A. Perform following operations immediately upon completion of resilient flooring:
   1. Sweep or vacuum floor thoroughly.
   2. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well sealed in adhesive.
   3. Damp mop floor being careful to remove black marks and excessive soil.
   4. Remove any excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturers.

B. Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.

C. Clean resilient flooring not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Clean resilient flooring by method recommended by resilient flooring manufacturer.

3.07 EXTRA STOCK

A. Deliver stock of maintenance materials to Owner. Furnish maintenance materials from same manufactured lot as materials installed and enclosed in protective packaging with appropriate identifying labels.

B. Tile flooring: Furnish not less than one box for each 50 boxes or fraction thereof, for each type, color, pattern and size installed.

END OF SECTION
09 65 00

SECTION 09 90 00
PAINTING & COATINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish all materials, labor, equipment and incidentals required and perform all painting necessary to complete this Contract in its entirety.

B. It is the intent of these Specifications to paint all exposed miscellaneous metal, pipe, fittings, valves, equipment and all other work obviously required to be painted unless otherwise specified. Minor items omitted in the schedule of work shall be included in the work of this Section when they come within the general intent of the Specifications as stated herein.

C. The following surfaces or items are not required to be painted:
   1. Concrete.
   2. Stainless steel, brass, bronze and aluminum other than exposed tubing.
   3. Piping buried in the ground or embedded in concrete.
   4. Pipes and other miscellaneous items covered with insulation or plastic coated.
   5. Concealed surfaces of pipe or crawl spaces.
   6. Finish hardware.
   7. Non-ferrous metals, unless specifically noted otherwise.
   8. Toilet Accessories.
   9. Control Panels.
   10. Parts of buildings not exposed to sight unless specifically noted otherwise.
   11. Labels or equipment identification, performance rating, name or Nomenclature plates.

1.02 RELATED WORK

A. Section 092900: Gypsum wallboard system.

1.03 QUALITY ASSURANCE

A. Include on label of containers:
   1. Manufacturer's name.
   2. Type of paint.
   3. Manufacturer's stock number.
   4. Color.
   5. Instructions for reducing, where applicable.
   6. Label analysis.
   7. Federal Specification Number.

B. Paint Coordination
   1. Provide finish coats which are compatible with the prime coats actually used.
   2. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.
   3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
   4. Provide barrier coats over non-compatible primers, or remove the primer and reprime as required.

5. Notify the Architect in writing of anticipated problems in using the specified coating systems over prime coatings supplied under other sections.
6. All hidden areas in and around the natatorium that are subject to corrosion are to be coated prior to covering.

C. Field Quality Control
1. Request review of first finished room, space, or item of each color scheme required by the Architect for color texture, and workmanship.
2. Use first acceptable room, space, or item as project standard for each color scheme.
3. For spray application, paint surface not smaller than 100 square feet as project standard.

1.04 SUBMITTALS

A. Submit to the Architect as provided in the General Conditions, shop drawings, manufacturer's specifications and printed technical data on the proposed paint systems and detailed surface preparation, application procedures and dry film thickness.

B. Schedule of Painting Operations: The Contractor shall submit for approval a complete Schedule of Painting Operations within 30 days after the Notice to Proceed. This Schedule is imperative so that the various fabricators may be notified of the proper shop prime coat to apply. It shall be the Contractor's responsibility to properly notify and coordinate the fabricators' surface preparation and painting operations with these Specifications. This Schedule shall include for each surface to be painted, the brand name, the volume solids, the coverage and the number of coats the Contractor proposes to use in order to achieve the specified dry film thickness, and color charts. When the Schedule has been approved, the Contractor shall supply all material in strict accordance with the approved Schedule and the manufacturer's instructions. Wet and dry paint film gauges may be utilized by the Architect to verify the proper application while work is in progress.

C. The Contractor shall have available, at all times at the work site, a Nordson Dry Film gauge or other Architect approved dry film thickness gauge to be used to inspect the coating thickness by the Contractor during the progress of the work. The gauge shall also be made available to the Architect upon request for dry film thickness inspection.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials
1. Deliver sealed containers with labels legible and intact and with batch codes indicating when the coating was manufactured.
2. Deliver to project site or segregate at source of supply in advance of need so as to allow 15 days for testing.

B. Storage of Materials
1. Store only acceptable project materials on project site.
2. Store in a suitable location.
3. Restrict storage to paint materials and related equipment.
4. Comply with health and fire regulations.
5. No paint shall be stored on site or applied which exceeds the product shelf life at time of application.

1.06 JOB CONDITIONS

A. Environmental Requirements
   1. Do not apply finish coating in areas where dust is being generated.

B. Protection
   1. Cover or otherwise protect finished work of other trades or surfaces not being painted concurrently or not to be painted.

C. Weather Conditions
   1. Do not apply paint when the relative humidity exceeds 85% or to damp or wet surfaces, unless otherwise permitted by the manufacturers' printed instruction as approved by the Architect.
   2. Applications may be continued during inclement weather only within the temperature limits specified by the paint manufacturer as being suitable for use during applications and drying periods.

PART 2 PRODUCTS

2.01 MATERIALS

A. All painting materials shall be fully the equal to those manufactured by PPG Architectural Coatings, Sherwin Williams, Benjamin Moore, Duran or Koppers Company, Inc. unless noted otherwise. . The painting schedule has been prepared on the basis of PPG Architectural Coatings product, and recommendations for applications. **The paint color selections shall MATCH SHERWIN WILLIAMS color selections as noted on drawings**. No brand other than those named will be considered for approval unless the brand and type of paint proposed for each item in the following schedule together with sufficient data substantiated by certified tests conducted at no expense to the Owner, to demonstrate its equality to the paint(s) named is submitted in writing to the Architect for approval within 30 days after the signing of the Notice to Proceed. The type and number of tests performed shall be subject to the Architect's approval. Minimum standards for testing shall be in accordance with the applicable test methods of the American Society for Testing and Material (ASTM) and Federal Standard No. 141 or other approved methods when not covered by the preceding.

B. All painting materials shall be delivered to the mixing room in unbroken packages, bearing the manufacturer's brand and name. They shall be used without adulteration and mixed, thinned and applied in strict accordance with manufacturer's directions for the applicable materials and surface and with the Architect's approval before using.

C. Shop priming shall be done with primers that are guaranteed by the manufacturer to be compatible with the finish paints to be used.

D. No paint containing lead will be allowed. Oil shall be pure boiled linseed oil.

E. Work areas will be designated by the Architect for storage and mixing of all painting materials. Materials shall be in full compliance with the requirements of pertinent codes and fire regulations. Proper containers outside of the building shall be provided and used for painting wastes, and no plumbing fixture shall be used for this purpose.

F. All recommendations of the paint manufacturer in regard to the health and safety of workers shall be followed.

2.02 FABRICATED EQUIPMENT

A. Unless otherwise indicated below all fabricated equipment shall be shop primed and shop or field finished.

B. All items to be shop primed shall be thoroughly cleaned of all loose material prior to priming. If, in the opinion of the Architect, any prime coating that has been improperly applied or if material contrary to these Specifications has been used, that coating shall be removed by sandblasting to white metal and reprimed in accordance with these Specifications.

C. All shop prime coats shall be of the correct materials and applied in accordance with these Specifications. The Contractor shall remove any prime coats not in accordance with these Specifications by sandblasting and apply the specified prime coat at no additional cost to the Owner.

D. Shop primed surfaces shall be cleaned thoroughly and retouched with the specified primer before the application of successive paint coats in the field.

E. Shop finish coats may be the standard finish as ordinarily applied by the manufacturer when approved by the Architect. All pumps and motors shall be repainted after installation, unless specified otherwise.

F. The Contractor shall be responsible for and take whatever steps necessary to properly protect the shop prime and finish coats against damage from weather or any other causes.

F. If, in the opinion of the Architect, a shop finish coat does not give the protection quality of other work of similar nature the Contractor shall apply the coat or coats of paint as directed by the Architect to accomplish the desired protection quality. Architect may request proof of purchase of specified materials by the Contractor and/or fabricator if the need arises.

H. Wherever fabricated equipment is required to be sandblasted, the Contractor shall protect all motors, drives, bearings, gears, and related equipment, from the entry of grit. Any equipment found to contain grit shall be promptly and thoroughly cleaned by the Contractor.

2.04 EXTRA PAINT

A. Furnish one clearly marked unopened gallon can or kit, if coating is a catalized type coating, of each type and each color of paint used.

PART 3 EXECUTION

3.01 PREPARATION OF SURFACES

A. Gypsum Drywall (Previously Painted) –Interior Walls:
Surface Preparation: Surface must be clean, dry and free from dirt, loose paint, oil, grease, wax, chalk, efflorescence, mildew, dust, and any other contamination. Any damaged areas should be repaired prior to priming and painting. Painted surfaces should be sanded to dull existing gloss. Following sanding, remove all generated

sanding dust from surface. Any bare drywall and patched areas should be spot primed prior to full priming. Follow all additional surface preparation guidelines on technical data sheets.

B. Gypsum Drywall (Bare Drywall) –Interior Walls:
Surface Preparation: Surface must be clean, dry and free from dirt, loose paint, oil, grease, wax, chalk, efflorescence, mildew, dust, and any other contamination. Any damaged areas should be repaired prior to priming and painting. Patched areas should be sanded, dusted, and primed prior to full primer application. Follow all additional surface preparation guidelines on technical data sheets.

C. Previously Painted Ferrous Metal
Surface Preparation: Surface must be clean, dry and free from dust, dirt, chalk, loose paint, oil, rust, grease, wax and any other contamination. Scrape off any peeling and loosely adhering paint from the surface. When down to a stable painted surface, sand surface to dull the finish if glossy and remove all sanding dust prior to recoating. Remove any remaining contaminants from the surface. Spot prime any bare metal surfaces. Follow all additional surface preparation guidelines on technical data sheets.

D. All metal welds, blisters, and other defects shall be ground and sanded smooth in accordance with SSPC-SP-3 or in difficult and otherwise inaccessible areas by hand cleaning in accordance with SSPC-SP-2. All pits and dents shall be filled and all imperfections shall be corrected so as to provide a smooth surface for painting. All rust, loose scale, oil, grease, and dirt shall be removed by use of approved solvents, wire brushing, or sanding.

G. All plastic pipe surfaces shall have lightly sanded surfaces before painting.

F. Exposed Pipe: Bituminous coated pipe shall not be used in exposed locations. Pipe which will be exposed after project completion shall be primed in accordance with the requirements herein. Any bituminous coated pipe which is inadvertently installed in exposed locations shall be sandblasted clean before priming and painting. After installation, all exterior exposed flanged joints shall have the gap between adjoining flanges sealed with a single component Thiokol caulking to prevent rust stains.

G. Primed or Coated Surfaces and Non-ferrous Surfaces: All coated surfaces shall be cleaned prior to application of successive coats. All non-ferrous metals not to be coated shall be cleaned. This cleaning shall be done in accordance with SSPC-SP-1, Solvent Cleaning.

H. Shop Finished Surfaces: All shop coated surfaces shall be protected from damage and corrosion before and after installation by treating damaged areas immediately upon detection. Abraded or corroded spots on shop coated surfaces shall be "Hand Cleaned" and then touched up with the same materials as the shop coat. All shop coated surfaces which are faded, discolored, or which require more than minor touchup, in the opinion of the Architect shall be repainted. Cut edges of galvanized sheets and exposed threads and cut ends of galvanized piping, electrical conduit, and metal pipe sleeves, not to be finished painted, shall be "Solvent Cleaned" and primed with Rustoleum No. 9334 Zinc Sele or Rustoleum No. 2185 Cold Galvanized Compound per manufacturer's directions.

3.02 PAINTING SYSTEMS

A. All colors will be selected by the Architect from Porter Paints Design Spectrum Color System.

B. The following types of paints by PPG Architectural Coatings have been used as a basis for the paint schedule:
   1. 100% Acrylic Primer–17-921 Seal Grip 100% Acrylic Universal Primer
   2. Semi Gloss Epoxy Finish –98-1 Aquapon WB Semi Gloss Waterborne Epoxy.
   3. LatexSemi Gloss Enamel–6-500Speedhide Interior Latex Semi-Gloss Enamel
   4. Drywall Primer - #6-2 Speedhide Interior Latex Drywall Sealer.
   5. Hollow Metal Primer - #6-208 Speedhide Int./Ext. Rust Inhibitive Steel Primer
   6. Gloss Alkyd - #7-282 Series 7 Line Int/Ext Industrial Gloss Oil Enamel
   7. Wood Stain - #44500 Olympic Interior Oil Wood Stain
   8. Polyurethane Varnish - #43884Olympic Interior Gloss Urethane Varnish

C. The following surfaces shall have the types of paint specified below and applied at the wet film thickness and dry film thickness in mils (W.F.T. and D.F.T.) per coat, as noted.
   1. Interior Gypsum Wallboard - All bare gypsum walls unless otherwise noted.
      First Coat: PPG #6-2 Speedhide Interior Latex Drywall Sealer @ 400 sq. ft. per gallon.
      W.F.T. 4.0 mils - D.F.T. 1.0 mils.
      Second & Third Coats: PPG 6-500 Speedhide Interior Latex Semi-Gloss Enamel @ 400 sq. ft. per gallon.
      W.F.T. 4.0 mils - D.F.T. 1.4 mils
   2. Interior Gypsum Wallboard –Toilet Room Walls and Gypsum Board Ceilings
      First Coat: PPG 17-921 Seal Grip 100% Acrylic Universal Primer @ 400 sq. ft. per gallon.
      W.F.T. 4.0 mils - D.F.T. 1.6 mils.
      Second & Third Coats: PPG 98-1 Aquapon WB Semi Gloss Waterborne Epoxy @ 340 Sq. Ft. per gallon.
      W.F.T. 5.3 mils - D.F.T. 2.0 mils.
   3. Interior Hollow Metal Door Frames - All Areas.
      First Coat: PPG #6-208 Series Speedhide Int/Ext Rust Inhibitive Steel Primer @ 400 sq. ft. per gallon.
      W.F.T. 4.0 mils - D.F.T. 2.3 mils.
      Second & Third Coats: PPG #7-282 Series 7 Line Int/Ext Industrial Gloss Oil Enamel @ 400-450 sq. ft. per gallon.
      W.F.T. 3.6 to 4.0 mils - D.F.T. 2.0 to 2.3 mils.
   4. Interior Wood Doors
      First Coat: PPG #44500 Olympic Premium Interior Oil Based Wood Stain @ Appx. 400 sq. ft. per gallon (W.F.T. & D.F.T N/A).
      Second Coat: PPG #41060 Olympic Premium Interior Oil Based Sanding Sealer @ Appx. 500-700 sq. ft. per gallon
      W.F.T. 2.7 to 3.7 mils - D.F.T 0.8 to 1.10 mils.
      Third and Fourth Coats: PPG #43888 Olympic Premium Interior Fast Dry Gloss Varnish @ Appx. 535 sq. ft. per gallon.
      W.F.T. 3.0 mils - D.F.T. 1.4 mils.

3.03 WORKMANSHIP

A. General
   1. At the request of the Architect, samples of the finished work prepared in strict

accordance with these Specifications shall be furnished and all painting shall be equal in quality to the approved samples. Finished areas shall be adequate for the purpose of determining the quality of workmanship. Experimentation with color tints shall be furnished to the satisfaction of the Architect where standard chart colors are not satisfactory.

2. Protection of fixtures, fittings and accessories shall be provided throughout the painting operations. Canopies of lighting fixtures shall be loosened and removed from contact with surface, covered and protected and reset upon completion. Remove all electric plates, surface hardware, and related materials, before painting, protect and replace when completed. Mask all machinery name plates and all machinery parts not receiving a paint finish. Dripped or spattered paint shall be promptly removed. Lay drop cloths in all areas where painting is being done to adequately protect flooring and other work from all damage during the operation and until the finished job is accepted.
3. On metal surfaces apply each coat of paint at the rate specified by the manufacturer to achieve the minimum dry mil thickness required. If material has thickened or must be diluted for application by spray gun, the coating shall be built up to the same film thickness achieved with undiluted material. One gallon of paint as originally furnished by the manufacturer shall not cover a greater area when applied by spray gun than when applied unthinned by brush. Deficiencies in film thickness shall be corrected by the application of additional coat(s). On masonry, application rates will vary according to surface texture; however, in no case shall the manufacturer's stated coverage rate be exceeded. On porous surfaces, it shall be the painter's responsibility to achieve a protective and decorative finish either by decreasing the coverage rate or by applying additional coats of paint.
4. All safety equipment shall be painted in accordance with OSHA Standards as approved.
5. Paints shall be mixed in proper containers of adequate capacity. All paints shall be thoroughly stirred before use and shall be kept stirred while using. No unauthorized thinners or other materials shall be added to any paint.
6. Only skilled painters shall be used on the work and specialists shall be employed where required.

B. Field Priming

1. Steel members, metal castings, mechanical and electrical equipment, and other metals which are shop primed before delivery at the site will not require a prime coat on the job provided the Contractor and/or subcontractor apply only the brand and type of coating specified as the "Standard of Quality" for the total coating system applied. All piping and other bare metals to be painted shall receive one (1) coat of primer before exposure to the weather, and this prime coat shall be the first coat as specified in the painting schedule.
2. Equipment which is customarily shipped with a baked-on enamel finish or with a standard factory finish shall not be field painted unless the finish has been damaged in transit or during installation. Surfaces that have been shop painted and have been damaged, or where the shop coats of paint have deteriorated, shall be properly cleaned and retouched before any successive painting is done on them in the field. All such field painting shall match as nearly as possible the original finish.

C. Field Painting

1. All painting at the site shall be designated as Field Painting and shall be under the direct and complete control of the Architect, and only skilled painters and specialists where required, shall be used on the work.
2. All paint shall be at 70° F before applying, and painting shall be done when the air and surface temperatures are between 60-100° F for epoxies, 50-100° F for acrylic emulsions and 32-100° F for all other coating systems applied. Unless coating manufacturer's technical information states otherwise no paint shall be applied unless the surface and air temperature is 5° F above the dew point.
3. Successive coats of paint shall be tinted so as to make each coat easily distinguishable from each other with the final undercoat tinted to the approximate shade of the finished coat.
4. Finish surfaces shall not show brush marks or other irregularities. Undercoats shall be thoroughly and uniformly sanded with No. 00 sandpaper or equal to remove defects and provide a smooth even surface. Top and bottom edges of doors shall be painted and all exterior trim shall be back-primed before installation.
5. Painting shall be continuous and shall be accomplished in an orderly manner so as to facilitate inspection. Materials subject to weathering shall be prime coated as quickly as possible. Surfaces of exposed members that will be inaccessible after erection shall be cleaned and painted before erection.
6. All materials shall be brush painted unless spray painting is specifically approved by the Architect.
7. All surfaces to be painted as well as the atmosphere in which painting is to be done shall be kept warm and dry by heating and ventilation, if necessary, until each coat of paint has hardened. Any defective paint shall be scraped off and repainted in accordance with the Architect's directions.
8. Before final acceptance of the work, all damaged surfaces of paint shall be cleaned and repainted as directed by the Architect at no additional cost to the Owner.

9. Only the aluminum work noted on the Drawings or in the Painting Schedule shall be field painted.
10. Any pipe scheduled to be painted and having received a coating of a tar or asphalt-compound shall be painted with two (2) coats of "International Intertuf 132 HS" or equal before successive coats are applied per the schedule.
11. Valves and fittings shall be painted the same color as the pipe they join.
12. It shall be the responsibility of the Contractor to arrange a meeting prior to the start of painting between the Contractor, the coating manufacturer and the Architects. All aspects of surface preparation and application of the specific coating systems shall be fully reviewed at the meeting.
13. It shall be the responsibility of the coating manufacturer's representative to provide on-site technical assistance to the Architect and Contractor and to report his findings from the on-site inspection as to surface preparation, application procedures, and dry film thickness to the Architect on a timely basis unless deemed unnecessary by the Architect.
14. Touch up shop applied prime coats which have been damaged and touch up bare areas prior to start of finish coats application.
15. Do not apply additional coats until the completed coat has been inspected and approved.
16. Only the inspected and approved coats of paint will be considered in

determining the number of coats applied.

D. Drying
1. Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.
2. Consider oil base and oleo resinous solvent type paint as dry for recoating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and when the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

E. Brush Application
1. Brush out and work the brush coat onto the surface in an even film.
2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness and other surface imperfections will not be acceptable.

F. Spray Application
1. Except as specifically otherwise approved by the Architect, confine spray application to metal framework and similar surfaces where hand brush work would be inferior.
2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
3. Do not double back with spray equipment to build up film thickness of two coats in one pass.

G. For completed work, match the approved samples as to texture, color and coverage. Remove, refinish or repaint work not in compliance with the specified requirements.

H. Miscellaneous surfaces and procedures
1. Exposed mechanical items
   a. Finish electric panels, conduits, pipes, ducts, grilles, registers, vents and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.
   b. Paint visible duct surfaces behind vents, registers and grilles flat black.
2. Exposed pipe and duct insulation
   a. Apply one coat of paint on insulation which has been sized or primed under other Sections; apply two coats on such surfaces when unprepared.
   b. Match color of adjacent surfaces.
   c. Remove band before painting and replace after painting.
3. Hardware
   a. Paint prime coated hardware to match adjacent surfaces.
4. Wet Areas
   a. Add an approved fungicide to paints.
   b. For oil base paints, use 1% phenolmercuric or 4% tetrachlorophenol.
   c. For water emulsion and glue size surfaces, use 4% sodium tetrachloraphenate.
5. Interior
   a. Use stipple finish where enamel is specified.
6. Exposed vents
   a. Apply two coats of heat resistant paint approved by the Architect.

3.04 CLEANUP

A. The premises shall at all times be kept free from accumulation of waste material and rubbish caused by employees or work. At the completion of the painting remove all tools, scaffolding, surplus materials, and all rubbish from and about the buildings and leave work "broom clean" unless more exactly specified.

B. Upon completion, remove all paint where it has been spilled, splashed, or splattered on floor, fixtures, equipment and all other surfaces, leaving the work ready for inspection.

END OF SECTION
09 90 00

SECTION 09 95 00
VINYL WALL COVERING

PART 1 GENERAL

1.01 SCOPE:
A. Furnish Vinyl Wallcovering as specified in the contract documents.

1.02 SUBMITTALS:
A. Product Data: Submit manufacturer's product descriptions, recommended installation procedure, primers and adhesives. Include certification of fire resistive properties and test results from independent testing laboratories, as well as manufacturer's cleaning and maintenance.

B. Sample: Submit samples of wall coverings immediately upon receipt of shipment for each type and color to be installed for the Architect's approval. Samples shall be full width by not less than 3' – 0" length. Identify samples by name and number.

C. Certificate of Compliance: Submit manufacturer's certification that wall covering furnished meets or exceeds the Architect's specification requirements.

1.03 QUALITY ASSURANCE:
A. Mock-up

1. Install four lengths of each type wall covering as a mock-up for Architect's acceptance. Prepare mock-up at least two weeks prior to beginning wall covering installation. Notify Architect for observation. Should mock-up be disapproved, prepare additional mock-ups until acceptable to Architect.
2. Following Architect's acceptance, retain mock-up as a standard of quality for wall covering installation.
3. Acceptable mock-up may remain as part of the finished Work.

1.04 WARRANTIES:
A. Furnish a written warranty against defects in material or workmanship for five (5) years from date of Substantial Completion.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING:
A. Deliver vinyl wallcovering and adhesive to the job site in unbroken or undamaged containers and clearly marked with the supplier's identification label.

B. Store vinyl wallcovering in flat positions to avoid damage to rollends. Store materials in a clean, dry storage area with temperatures maintained at 55 degrees F with normal humidity. DO NOT CROSS STACK THIS MATERIAL.

C. Handle materials to prevent damage, staining or contamination by other work.

1.06 PROJECT/SITE CONDITIONS:
A. Environmental Requirements:

1. Install materials only when normal temperature and humidity conditions approximate interior conditions that will exist when space is occupied.

2. Remove wall covering materials from packaging and allow to acclimatize to area on installation 24 hoursbefore application.
3. Areas where wall covering will be installed shall have a constant minimum temperature of not less than 65 degrees F for at least 48 hours before, during and 48 hours after application

B. Subsurfaces: Inspect substrates for proper finish and priming. Correct deficiencies before beginning installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. **Basis-of Design Product Manufacturer**: Vycon

B. Acceptable Manufacturers for wall covering covered by this specification.
1. Vycon Wall Coverings
2. Vicratex Wall Coverings
3. Koroseal Wallcoverings
4. Columbus Coated Fabrics

2.02 DECORATIVE VINYL WALLCOVERING

A. Provide product suitable for direct application over gypsum wall systems.

B. Provide for extra stain resistance.

C. Size: 54 inch width (36 inch min.), in 30 yard bolts.

D. Color: Refer to Drawings.

E. Finishes: Finish Schedule on Drawings.

2.03 STANDARDS

A. Wallcovering shall meet Federal Specification CCC-W-408A and the CFFA-W-101-D, Quality Standard for Vinyl Coated Fabric Wallcovering. The wallcovering Types I, Type II and Type III desired shall be specified. The vinyl wallcovering shall contain mildew inhibitors.

2.04 VINYL WALLCOVERING (PROTECTIVE FILM)

A. Shall meet the requirements as listed in 2.02 and in addition have a 0.37 thick protective film factory applied to the wallcover surface.

2.05 TECHNICAL DATA

A. Adhesive: Acceptable products: per Manufacturer's recommendations.
1. Provide adhesives that at full strength contains mildew inhibitors. Adhesive shall be non-staining, strippable adhesive, for use with specific wall covering and substrate application; as recommended in writing by wall-covering manufacturer.
   i. Adhesive shall have VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Primers / Sealer: Acceptable products: Mildew resistant a recommended in

writing by wall covering Manufacturer's for wall covering application.

C. Burning Characteristics: The manufacturer shall certify at the time of shipment that the materials furnished meet the flame spread and smoke development Fire Hazard Classification Rating(s) of those products when tested according to ASTM- E84 Tunnel Test.
D. Provide ASTM E84 test reports from independent testing laboratories other than U.L. on all products.

E. UL Label: All products shall be UL labeled assuring complete compliance with all specifications and requirements through continuous inspection by UL inspectors.

F. Fire Detection Characteristics: The vinyl wallcovering shall contain formulation which provides early warning to potential fire conditions. Evidence of early warning formulation shall be based on the ASTM E603 standard guide for room fire experiments.

G. Protective Coating: The vinyl wallcovering shall have a protective coating applied to its surface to minimize migration of stains into the vinyl and therefore offer stain protection from a variety of staining agents and provide greater ease of cleanability.

PART 3 EXECUTION

3.01 INSPECTION

A. Installer shall inspect all areas and conditions under which vinyl wallcovering shall be installed. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation. Work shall proceed only when conditions are corrected and accepted by the architect.

B. Substrate shall be checked with a suitable moisture meter. Moisture shall not exceed 4%.

3.02 SURFACE PREPARATION

A. Wall shall be free from defects and imperfections that could show through the finished covered surface. Remove all dirt, grease, old adhesive, loose paint and plaster from wall. Fill openings, cracks, crevices and holes with spackling compound. Sand rough spots smooth.

B. For new drywall construction manufacturer's recommended primer shall be used before application of wallcovering for ease of future removal when redecorating.
C. Glossy surfaces shall either be sanded to dull surface, or a coat of manufacturer's recommended primer applied prior to installation of wallcovering.

D. If there is any evidence of mildew, it must be removed and the wall surface treated to inhibit future mildew growth.

F. Do not install vinyl wallcovering over oil- based wood stains as bleed-through may occur.

H. DRYWALL
    1. Prime walls using manufacturer's recommended application process.

2. Allow drying time as recommended by manufacturer.

I. PAINTED SURFACES

1. All painted surfaces should be evaluated for the possibility of pigment bleed-through. If there is any possibility of bleed-through apply a coat of sealer recommended by the manufacturer before the application of the wallcovering. Check for any pigment bleed.

J. OTHER SURFACES

1. For covering surfaces other than standard wall surfaces, a primer sealer, which promotes adhesion to metal, glass, tile or other vinyl wallcovering, may be used.
2. For specific procedures and details, please contact manufacturer's representative.

3.03 INSTALLATION

A. Wallcovering shall be installed by crew with a minimum of five years' experience in the installation of vinyl wallcovering. Wall covering shall be installed in strict accordance with manufacturers' printed instructions using vinyl wallcovering adhesive recommended by manufacturer. Use only Adhesive, as supplied by manufacturer. **"Wheat Paste Shall Not be Used** " for the installation of wallcovering. Installer shall strictly comply with manufacturer's instruction sheet in each roll before installing the vinyl wallcovering. Permanent building light shall be provided for the installation of the vinyl wallcovering.

B. Remove switchplates, wall plates and surface mounted fixtures andcut wall covering evenly to edges of outlet boxes or support. Replace items following installation.

C. Prime wall surfaces to receive wall coverings in accord with wall covering manufacturer's product data.

D. Before cutting installer shall examine color and pattern and determine that they are the correct color and pattern as specified.

E. Installer shall install each roll in sequence starting with largest roll number and each strip in same sequence as cut from roll. If pattern is not random, examine for repeat design. Some patterns should be lined up, matched or reversed for best results. If necessary trim selvage deep enough to ensure color uniformity.

F. After the application of three strips conduct an inspection of the installation. If there are any variations in color or patterns which are felt to be excessive contractor shall notify manufacturer's representative or wallcovering distributor for manufacturer's representative's inspection before any further wallcovering is installed.

G. Always bring material six (6) inches around inside and outside corners being sure to fit into corners to avoid bridging or spanning.

H. The wallcovering should be smoothed to the hanging surface with a stiff bristled sweep brush or a flexible broad-knife to eliminate air bubbles.

I. Remove excess adhesive along finished seam immediately after each wallcovering strip is applied. Use clean warm water, a natural sponge and clean towels for this use as recommended by manufacturer. Change water often to maintain cleanliness.

3.04 CLEAN-UP COMPLETION

A. Upon completion of the work, remove surplus materials, rubbish and debris,

resulting from wallcovering installation. Leave areas in neat, clean and orderly condition.

END OF SECTION
SECTION 09 95 00

SECTION 10 14 00
SIGNAGE

PART 1 GENERAL

1.01 SUBMITTALS

A. Shop drawings: submit for aluminum letters, door signs, and building plaque.
   1. Indicate sizes, finishes and installation details

B. Product Data:
   1. Submit manufacturer's standard specifications and installation instructions.
   2. Submit manufacturer's product literature indicating units and design selected.
   3. Submit evidence of manufacturer's computerized data retrival programs for tracking Project for sign topography, message strip requirements, and other pertinent data from schedule input to final computerized topography on finished product.

C. Samples: Submit full size sample for holder, insert and copy of colors specified. Provide sample in small size sign. Samples will not be returned for use in Project.

D. Contract Closeout:
   1. Provide appropriate checklist for aiding in reordering after Date of Substantial Completion. Maintain computer schedule program for five years for ordering new SIGNAGE a required by Owner.
   2. Submit maintenance data and cleaning data.

E. Quality Control: Maintain computer link between schedule input and computerized topography production.

1.02 QUALITY ASSURANCE:

A. Applicable Standards:
   1. Aluminum Association (AA), standards as referenced herein.
   2. American with Disabilities Act (ADA)

B. Manufacturer's Qualifications: Provide work required under this Section from manufacturers regularly engaged in work of this magnitude and scope for minimum of five years.

1.03 DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials: Delivery of work to project site under this section until adjacent finishes are completed and actually ready for immediate installation is prohibited.

B. Deliver signs and directories for interior installation only after the designated area is ready to receive work.

E. Protect finished surfaces from damage or stains for remainder of work.

1.04 PROJECT CONDITIONS

A. Sequencing and Scheduling: Schedule system installation after all related finishes have been completed.

PART 2 – PRODUCTS

2.01 MANUFACTURED UNITS

A. Interior Signs:

1. DOOR / WALL SIGNS (INTERIOR): Provide with tactile graphics and braille to comply with ADA requirements. Mount in accordance with ADA requirements.

   a. 6" x 6" "ES plastic as manufacturered Best Manufacturing Co., Montrose, CO.
   b. Type Style: Helvetica Medium
   c. Color: As Selected by Architect

B. Acceptable Products:

1. ASI Sign Systems
2. Nelson- Harkins
3. The Southweld Company
4. Nexus Modular Sign Systems
5. J.M. Steward Corporation
6. Other manufacturer's products are acceptable if submitted in accordance with Product Options and Substitutions Section and are in strict accordance with these specified requirements.
7. Signage shall comply with all requirements of A.D.A. Guidelines especially in regard to braille and mounting heights.

C. Evacuation Plan: Design professional will design and specify in plans a place to install egress plans according to code. Design Professional will provide proper egress plans (from their digital floor plan). Design professional will provide digital files to Contractor, so that permanent emergency egress plans are installed in accord with applicable codes, as part of the project.

D. Building Directory: Provide Owner standard design building directory. Consult closely with the Owner.

2.02 COMPONENTS

A. Provide all required accessories and equipment for the proper maintenance and support of the sign systems provided.

2.03 FABRICATION

A. Fabricate units to configurations indicated on approved shop drawings. Internally reinforce units in accordance with approved shop drawings.

B. Provide copy of inserts, and covers as required on approved shop drawings.

C. Fill all directories with combination of approved copy on message strips and blank message strips.

F. Wrap each individual unit with polyethylene.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine areas to receive SIGNAGE. Notify Architect in writing of unacceptable

substate. Beginning work indicates acceptance of substrate. Subsequent modifications to substrate or SIGNAGE becomes the section's complete responsibility.

3.02 INSTALLATION

A. Install signage using specified fasteners, level, plumb, and true to line in accordance with accepted submittals, at indicated locations.

B. Mounting heights above finish floor: As indicated on drawings. Comply with ADA requirements.

C. Install inserts at Date of Substantial Completion with all proper copy in place.

3.03 CLEANING

A. Just prior to Date of Substantial Completion, clean and polish all exposed surfaces in accordance with manufacturer's written cleaning instructions.

3.04 SCHEDULE

A. Door Signs: Door signs shall be furnished for interior doors as shown on floor plans and door schedule.

B. Room Name Signs: Room designations shall be furnished for interior spaces as shown on the floor plans and finish schedule.

END OF SECTION
10 14 00

SECTION 10 28 00
TOILET ACCESSORIES

PART 1 GENERAL

1.01 DESCRIPTION

A. Submittals: Manufacturer's product data for each toilet accessory item specified, including details of construction relative to materials, dimensions, gages, profiles, mounting methods, specified options, and finishes.

B. Samples: Full-size samples of the following toilet accessory items to verify design, operation, and finish requirements. Acceptable samples will be returned and may be used in the Work:
   1. Stainless steel framed mirror unit.

1.02 PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide toilet accessories by one of the following:
   1. American Specialities, Inc.
   2. Bobrick Washroom Equipment, Inc.
   3. Bradley Corporation.

B. Materials, General: Fabricate toilet accessory items from the following materials and according to requirements specified for individual accessory items:
   1. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 0.034-inch (22- gage) minimum thickness, unless otherwise indicated.
   2. Sheet Steel: Cold-rolled, commercial quality ASTM A366, 0.04-inch (20-gage) minimum thickness, unless otherwise indicated. Surface preparation and metal pretreatment as required for applied finish.
   3. Galvanized Steel Sheet: ASTM A 527, G60.
   5. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.
      Mirror Glass: Nominal 6.0-mm (0.23-inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.
   6. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
   7. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.
   8. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide a minimum of six keys to Owner's representative.

C. Surface-Mounted Paper Towel Dispensers: Basis of Design: Georgia Pacific Model Number 59462, Finish: Translucent Smoke.
   1. Subject to compliance with requirements other acceptable manufacturers are as noted:
      a. Kimberly Clark
      b. Electra

D. Toilet Tissue Dispenser: Basis of Design: Georgia Pacific surface mounted toilet tissue dispenser, Model No. 56796, Finish: Brushed Steel.

1. Subject to compliance with requirements other acceptable manufacturers are as noted:
    a. Kimberly Clark
    b. San Jamar

E. Stainless Steel Grab Bars: Provide grab bars with wall thickness not less than .050 inch (18 gage) and as follows:
    1. Mounting: Concealed, manufacturer's standard flanges and anchorages.
    2. Clearance: 1-1/2 inch clearance between wall surface and inside face of bar.
    3. Gripping Surfaces: Manufacturer's standard nonslip texture.
    4. Heavy-Duty Size: Outside diameter of 1-1/2 inches.
    5. Product:
        a. Surface Mounted 36 inch Grab Bar: Match Bobrick B-5806 x 36: Finish: Satin Finish S.S.
        b. Surface Mounted 42 inch Grab Bar: Match Bobrick B-5806 x 42: Finish: Satin Finish S.S.

F. Sanitary Napkin Disposal, Surface-Mounted: Basis of Design: Bobrick, Model Number B-270, Finish: Satin Finish S.S. Fabricate units of stainless steel with seamless exposed walls, tightly self-closing top cover and locking bottom panel with continuous stainless steel piano hinge.

G. Soap Dispenser: Basis of Design: Georgia Pacific, Model 52052 Surface Mounted Soap Dispenser, Finish: Translucent smoke
    1. Subject to compliance with requirements other acceptable manufacturers are as noted:
        a. Kimberly Clark
        b. Gojo

H. Fabrication: Only a maximum 1-1/2 inch diameter, unobtrusive stamped manufacturer logo, as approved by Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by means of either a waterproof, printed label or a stamped nameplate, indicating manufacturer's name and product model number.

I. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

J. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:
    1. Provide galvanized steel backing sheet, not less than 0.034 inch (22 gage) and full mirror size, with non-absorptive filler material. Corrugated cardboard is not an acceptable filler material.
    3. Product: Match Kentwood Model No. 224, Finish: Satin Nickle

K. Mirror Unit Hangers: Provide system of mounting mirror units that will permit rigid, tamperproof, and theft proof installation, as follows:

1. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

L. Coat Hook: Surface Mounted: Provide heavy duty clothes hook with concealed mounting, one piece brass casting with satin nickle plate finish. Hook shall be secured to a concealed wall plate with three stainless steel setscrews. Hook shall withstand 300Lb downward pull.
   1. Concealed Wall Plate: 12 gauge (2.7 mm) cast hardened steel.
   2. Product: Match Bobrick Washrom Equipment Inc., Model No.B-2116.

M. Electric Hand Dryer: Refer to the electrical drawings for the manufacture and model number for the electric hand dryer.

1.03 EXECUTION

A. Installation: Install toilet accessory units according to manufacturers' printed installation instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.
   1. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, in accordance with manufacturer's instructions for type of substrate involved.
   2. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
   3. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION
10 28 00

SECTION 10 44 16
FIRE EXTINGUISHERS AND CABINETS

PART 1 GENERAL

1.01 DESCRIPTION

A. Furnish all labor, materials, equipment and incidentals required and install fire extinguisher and brackets at the locations as specified herein.

1.02 SUBMITTALS

A. Submit to the Architect for approval shop drawings as provided for in the General Specifications, showing details of construction and installation of fire extinguisher and brackets.

1.03 PRODUCTS

A. Fire extinguishers shall be PW Series, 2-1/2 gal. as manufactured by Larsen's or approved equal.

B. Where required, fire extinguishers shall be 10-pound capacity, dry chemical type, rated A, B, and C Class fires. Extinguishers shall be red enamel painted aluminum cylinders with indicating guage and shall be Model Number MP-10 as manufacturer by Larsen's Manufacturing Company, equal by the Fyr-Fyter Company.

C. Recessed cabinets, model 2712-R, manufactured by Larsen, shall be furnished for all fire extinguishers as shown on drawings.

PART 3 EXECUTION

3.01

A. Install fire extinguishers at each location as shown on the drawings.

B. Mount cabinets 4 feet 6 inches above finish floor to top of cabinet.

END OF SECTION
10 44 16

SECTION 22 00 00
MECHANICAL GENERAL

PART 1 GENERAL

1.01 DESCRIPTION

A. Submittals: The Contractor shall submit for review by the Architect data of materials and equipment to be incorporated in the work. Submittals shall be supported by descriptive material, catalogs, cuts, diagrams, performance curves and charts published by the manufacturer to show conformance to specification and drawing requirements; model numbers alone will not be acceptable.

Mechanical Equipment Electric Data:

1. Prior to submitting data for equipment requiring electrical service, the Contractor shall verify that electrical characteristics of equipment submittals comply with electrical service provided for the specified items of equipment.
2. Upon receipt of the Contractor of reviewed submittals for equipment provided under this Division, the Contractor shall coordinate the electrical service requirements, i.e., motor horsepower and full load amps, electrical service characteristics (voltage and phase), and number of services for each item of equipment requiring electrical connections with the electrical drawings and specifications.

Layout drawings shall be submitted for the following systems:

1. Ductwork.
2. Plumbing piping.

The layout drawings shall be prepared at a scale of not less than 1/4" = 1'-0", and drawings sheet size shall be 30" wide by 42" long. The drawing submittals by the Contractor shall be in 6 sets. The layout drawings shall include: Plans, coordinated with all disciplines, with elevations and/or sections, where necessary, of all piping and duct distribution systems showing proposed piping, ductwork, terminal units, all dampers and all air inlets and outlets. If departures from the contract drawings are deemed necessary by the Contractor, details of such departures, including changes in related portions of the project and the reasons therefore, shall be submitted with the drawings for review by the Architect/Engineer. Allowed departures shall be made at no additional cost to the Owner.

1.02 PRODUCTS

A. The products of particular manufacturers have been used as the basis of design in preparation of these documents. Any modifications to the mechanical systems and their components, the electrical systems, the building structure and architecture, or any other portion of the building that result from the use of any other than that basis of design equipment shall be coordinated with all other trades. Such coordination shall occur before delivery of products from the manufacturer (before shop drawings submittals) and shall be clearly indicated on the shop drawings. Any related modifications shall be performed without any additional cost to the Contract.

1.03 EXECUTION

A. General: The plans do not give exact elevations or locations of lines, nor do they show all the offsets, control lines, or other installation details. The Contractor shall

carefully lay out his work at the site to conform to the structural conditions, to provide proper grading of lines, to avoid all obstructions, to conform to details of installation supplied by the manufacturers of the equipment and components to be installed, and to thereby provide an integrated, coordinated and satisfactory operating installation. Do not scale drawings.

B. If the Contractor proposes to install equipment, including piping and ductwork, requiring space conditions other than those shown, or to rearrange the equipment, he shall assume full responsibility for the rearrangement of the space and connect arrangement at no additional cost to the Owner, and shall have the Architect/Engineer review the change before proceeding with the work. The request for such changes shall be accomplished by shop drawings of the space in question.

C. The Contractor is responsible for the proper location and size of all holes or openings in the building structure pertaining to his work, and for the correct location of sleeves, inserts, cores, etc.

D. The Contractor shall so coordinate the work of the several various trades that it may be installed in the most direct and workmanlike manner without hindering or handicapping the other trades. Piping interferences shall be handled by giving precedence to pipe lines which require a stated grade for proper operation. For example sanitary sewer piping shall take precedence over water lines in determination of elevations. In all cases, lines requiring a stated grade for their proper operation shall have precedence over electrical conduit and ductwork.

G. All piping and ductwork in finished areas, except where noted to the contrary, shall be installed in chases, furred spaces, above ceilings, etc. In all cases, pipes and ducts shall be installed as high as possible. Runs of piping shall be grouped whenever it is feasible to do so.

F. Piping shall be installed to pass inspections by local plumbing inspection department, state and federal authorities and insurance company having jurisdiction. Any changes or additions which may be necessary to obtain such inspections and approval shall be made by the Contractor as part of this Contract and without additional cost to the Owner.

G. Provide access to equipment and apparatus requiring operation, service or maintenance within the life of the system. Including, but not limited to, motors, valves, filters, dampers, shock absorbers, etc. Equipment located above lay-in type ceilings is considered accessible.

H. Electrical Work: All electrical equipment provided under this Division shall comply with the electrical system characteristics indicated on the Electrical Drawings and specified in Division 26. All power wiring and final power connections to the mechanical system equipment and components shall be provided under Division 26. Control wiring (120V and less) shall be provided under Division 23. All wiring for voltages higher than 25 volts shall be done by a licensed electrician.

I. All electrical characteristics shall be taken from the Electrical drawings and Specifications and coordinated before equipment is ordered or submitted.

J. Flame Spread and Smoke Developed Properties of Materials: Materials and

adhesives used throughout the mechanical and electrical systems for insulation, and jackets or coverings of any kind, or for piping or conduit system components, shall have a flame spread rating not over 25 without evidence of continued combustion and with a smoke developed rating not higher than 50. If such materials are to be applied with adhesives, they shall be tested as applied with such adhesives, or the adhesives used shall have a flame spread rating not over 25 and a smoke developed rating not higher than 50. "Flame-Spread Rating" and "Smoke Developed Rating" shall be as determined by the "Method of Test of Surface Burning Characteristics of Building Materials", NFPA No. 255, ASTM E84, Underwriter's Laboratories, Inc., Standard". Such materials are listed in the Underwriters' Laboratories, Inc. "Building Materials List" under the heading "Hazard Classification (Fire)".

K. Testing Pipe and Duct systems: Concealed piping and duct work and insulated piping and ductwork shall be tested in place before concealing or covering. Test shall be conducted in the presence of the Architect or his designated representative. Equipment, materials and instruments for testing shall be furnished by the Contractor without additional cost to the Owner. A detailed report of pressure tests on piping and ductwork shall be forwarded in duplicate to the Architect. This report shall show date of test, section(s) of piping and/or ductwork tested, test medium, length of time test pressure was held, pressure drop or rise.

L. Testing Sanitary Waste and Vent System: The hydrostatic test shall be performed before installing fixtures. Water tests shall be applied to each system or piping sections. The test section(s) shall be filled with water and tested with at least a 10 ft. head of water. The water shall be kept in the system, or in the portion under test for at least 2 hours before the inspection starts. The system shall be tight at all joints. The pneumatic test shall be made by attaching an air compressor testing apparatus to one opening and, after closing all other inlets and outlets to the system, forcing air into the system until there is a uniform gage pressure of 5 pounds per square inch or sufficient to balance a column of mercury 10" in height. This pressure shall be held without introduction of additional air for a period of at least 15 minutes.

M. Testing Domestic Water System: The hydrostatic test shall be made upon completion of the roughing-in and before setting fixtures. The entire domestic cold water and hot water, and hot water circulation piping system shall be tested at a hydrostatic pressure of 150 psig and proved tight at this pressure for a period of not less than 2 hours in order to permit inspection of all joints.

N. Testing and Balancing of Air Systems: The testing and balancing agent shall be a member of AABC (Associated Air Balance Council) or NEEB (National Environmental Balancing Bureau) and shall perform testing and balancing of air systems per AABC or NEBB standards. All air flow rates shall be adjusted within 10 percent of the values shown on drawings.

END OF SECTION
22 00 00

SECTION 22 40 00
PLUMBING FIXTURES AND ACCESSORIES

PART 1 GENERAL

1.01 DESCRIPTION

A. General: The Contractor shall submit for review by Architect product data for plumbing fixtures and fixture trim.

1.02 PRODUCTS

A. General: Unless specified otherwise hereinafter, furnish, set, and connect all fixtures and supports. All fixtures, except for special types, shall be the products of the same manufacturer. All vitreous china fixtures shall be white, unless otherwise noted. The nipple connecting the cold water supply to the flush water tank shall be chrome plated IPS brass pipe. All fixtures shall be provided with shutoff valves, p-trap and carrier. All exposed waste and supply water piping shall be chrome plated.

B. FIXTURES AND FIXTURE TRIM

1. Water Closets: Water closets shall be floor mounted, white vitreous china, with elongated bowl, AquaPiston flushing system, water tank one piece with toilet bowl, seat and cover, left-hand polished chrome trip lever and water consumption limited to 1.6 gallons per flush. Water closets shall be Kohler Santa Rosa series comfort height compact toilet, model K-3811 with K-4650 toilet seat, K-7637 angle supply with stop, K-9169-L trip lever, tank cover, bolt cap accessory pack and tank accessory pack, conforming to ASME A112.19.2, DOE Energy Policy Act 1992 and ADA requirements or Architect approved equal by American Standard, Crane or Eljer.
2. Toilet Room Sinks: Toilet Room sinks shall be integrated with vanity top with imperceptible seams for a perfect, natural fit. The sinks shall be Staron model A3181, 18-3/16" x 14-13/16" size, oval shape, in bright white (BW010) color and with an overflow hole located at the top front of the bowl or Architect approved equal by American Standard, Crane or Eljer. The sinks shall be fitted with a single lever-handle Kohler Alteo series model K-45800-4 faucet with one-piece self-contained ceramic disc valve for water flow and temperature control, temperature memory for turning it on and off at any temperature setting, stationary spout with 5" spout reach and aerator for water consumption limited to 1.5 gallons per minute, conforming to ADA requirements, ASME A112.18.1, NSF 61, NSF 372, DOE Energy Policy Act 1992, EPA WaterSense. The faucet color shall be vibrant brushed nickel.
3. Breakroom Sink: Breakroom sink shall be under-mount type, 18-gauge stainless steel construction, with 25" x 22" small single bowl and installation hardware, Kohler Vault series, model K-3894, conforming to ASME A112.19.3, compliant to ADA accessibility requirements, with Kohler Simplice series model K-596 pull-down kitchen sink faucet with single handle high-arch spout for added clearance for filling or cleaning pots, stainless steel finish, three-function pull-down sprayhead with touch control to switch from stream to Sweep spray to pause, DockNetik (a magnetic docking system located within the spout) for smoothly gliding and securely locking the sprayhead into place, ceramic disc valves for longevity and durable performance for life, temperature memory for turning it on and off at any temperature setting, ProMotion technology's light, quiet braided hose and swiveling ball joint construction for

easy sprayhead pull-down, MasterClean sprayface for easy-to-clean surface that withstands mineral buildup and aerator for water consumption limited to 1.8 gallons per minute at 60 psi, conforming to ASME A112.18.1, NSF 61, NSF 372, DOE Energy Policy Act 1992 and ADA accessibility requirements or Architect approved equal by American Standard, Crane or Eljer. The faucet color shall be vibrant stainless steel.

4. Dressing Room Sink: Dressing Room sink shall be single bowl under-mount type, 18-gauge type 304 stainless steel construction with lustrous highlighted satin finish, 23-1/2" x 18-1/4" x 4-3/8" overall dimensions and 21" x 15-3/4" x 4-3/8" bowl dimensions and installation hardware, Elkay Gourmet (Lustertone) stainless steel series, model ELUHAD211545, conforming to ASME A112.19.3, compliant to ADA accessibility requirements, with Kohler Simplice series model K-596 pull-down kitchen sink faucet with single handle high-arch spout for added clearance for filling or cleaning pots, stainless steel finish, three-function pull-down sprayhead with touch control to switch from stream to Sweep spray to pause, DockNetik (a magnetic docking system located within the spout) for smoothly gliding and securely locking the sprayhead into place, ceramic disc valves for longevity and durable performance for life, temperature memory for turning it on and off at any temperature setting, ProMotion technology's light, quiet braided hose and swiveling ball joint construction for easy sprayhead pull-down, MasterClean sprayface for easy-to-clean surface that withstands mineral buildup and aerator for water consumption limited to 1.8 gallons per minute at 60 psi, conforming to ASME A112.18.1, NSF 61, NSF 372, DOE Energy Policy Act 1992 and ADA accessibility requirements or Architect approved equal by American Standard, Crane or Eljer. The faucet color shall be vibrant stainless steel.
5. Under-The-Sink Electric Instantaneous (On-Demand) Water Heaters: Water Heaters shall be tankless units that are designed for installation directly under bathroom and breakroom sinks and provide hot water at selected precise temperatures. The water heaters shall be equipped with convenient wall mounted waterproof controls (under the sinks) for easy access for water temperature adjustment. Water heaters shall be as manufactured and marketed by Rheem or Architect approved equal by A. O. Smith, Rinnai or American Standard.

1.03 EXECUTION

A. Installation: All spaces between fixtures and walls or floors shall be sealed with a white non-hardening caulking compound. Chrome plated piping, valves and fittings shall be installed using padded wrenches. An application of petroleum jelly shall be applied to all exposed surfaces after installation. All fixtures and trim shall be set level and straight. Waste traps and supplies shall be installed perpendicular to walls. Fixture mounting height shall be as indicated on architectural drawings or as required to meet local plumbing code. Surfaces and structures to, and on, which plumbing fixtures will be mounted shall be inspected by the Contractor before installation of fixtures begins. Surfaces and structures shall be capable of supporting the fixtures. Surfaces which will be concealed by plumbing fixtures shall be finished before fixtures are installed. Exposed junctions to walls shall have chromium plated escutcheons neatly and firmly secured in place.

END OF SECTION
22 40 00

SECTION 23 07 16
MECHANICAL SYSTEMS INSULATION

PART 1 GENERAL

1.01 DESCRIPTION

A. Submittals: The Contractor shall submit for review by Architect product data for external blanket type ductwork insulation, pipe insulation, adhesives, vapor barrier covering and tape.

1.02 PRODUCTS

A. Fiberglass Blanket Insulation for Ductwork

1. Blanket type fiberglass insulation with average thermal conductivity not exceeding .29 BTU-in. per square feet per degrees F per hour at mean temperature of 75 degrees F.
2. Minimum density 1 lb./cu. ft., 2" thick minimum.
3. Blanket Insulation Acceptable Products:
   - Schuller Microlite FSK faced wrap 1 lb./cu. ft.
   - Owens-Corning Fiberglass faced duct wrap commercial grade.
   - Certainteed Standard Ductwrap
   - Knauf Duct Wrap
4. Fire Retardant Adhesive
   Acceptable Products:
   - Foster 85-20
   - Vimasco 733
   - Childers CP-82
   - Epolux Cadoprene 400
5. White Vapor Barrier
   Acceptable Products:
   - Foster 30-35
   - Vimasco 740
   - Childers CP-30
   - Epolux Cadaler 650
6. Foil Reinforced Kraft Tape, 3" wide.
   Acceptable Products:
   - Arno C-430
   - Easson 0822
   - Nashua FSK

B. FIBERGLASS PIPE INSULATION

1. One piece fibrous glass pipe insulation with factory applied aluminum foil and white craft paper flame retardant vapor barrier jacket.
2. Provide self-sealing longitudinal jacket laps and butt strips.
3. Average thermal conductivity: 0.23 BTU/in. per square foot per degrees F per hour at 75 degrees F mean temperature.
4. Pipe Insulation Acceptable Products:
   - Schuller Micro-Lok 650 AF-1
   - Owens Corning Fiberglass ASJ/SSL
   - Certainteed Fiberglass 500₀ Snap-On ASJ/SSL
   - Knauf ASJ-SSL Pipe Insulation
5. Insulation thickness for domestic cold water piping shall be 1" minimum.

6. Insulation Thickness for domestic hot piping shall be:

Insulation Thickness	61°F-150°F	151°F-200°F
1/2"	up to 3/4"	------
1"	1" - 3"	up to 1 1/4"
1 1/2"	4" - 8"	1 1/2" - 3"
2"	10" & larger	4" - 6"

7. Insulation Cement
   Acceptable Products:
   - Keene Super 1900
   - Fibrex FBX Super Blend
   - Rockwood Manufacturing Co. Delta-Maid One Shot
8. Glass Reinforcement Fabric: 10/10 or 10/20 white glass or nylon fabric.
9. Vapor Barrier Coating
   Acceptable Products:
   - Foster TITE FIT 30-35
   - Vimasco 740
   - Childers Cil-Perm CP-300
   - Epolux Cadaler 650
10. Breather Coating
    Acceptable Products:
    - Foster Seam Fas 30-36
    - Vamasco 713
    - Childers Chil-Seal CP-50
    - Epolux Catalog 336
11. Securing Wire: 20 Gauge Galvanized Steel Wire.
12. PVC Fitting Cover:
    Acceptable Products:
    - Zeston Covers
    - Foster Speedline 1 Covers
    - Certainteed Snap-Form Fitting Covers

1.03 EXECUTION

A. General

1. Provide qualified superintendent to supervise application of all insulation materials. Use mechanics skilled in trade to perform work.
2. Do not use staples for securing any insulation.
3. Apply insulation only on clean, dry surfaces. Perform air pressure and leakage tests required before applying insulation.
4. Continue insulation through wall and ceiling openings and sleeves, except terminate duct insulation at fire dampers and at flexible duct connections at fan powered air terminal units and ceiling supply air diffusers.
5. Provide continuous unbroken vapor seal insulation on all cold surfaces where vapor jackets are used.
6. Insulate and vapor seal supports that are secured to cold surfaces to prevent condensation.
7. Do not insulate unions in potable cold and hot water piping for plumbing.
8. Seal off ends of insulation on potable cold and hot pipes with white vapor barrier coating at valves, flanges and fittings and on straight runs of piping not to exceed 21 feet.

9. Fill pipe insulation protective saddles on hot pipes with same insulation as adjoining pipe insulation.
10. Application of all materials shall be in accordance with the manufacturer's published instructions.
11. Install insulation materials with smooth and even surfaces, jackets drawn tight and cemented down smoothly at longitudinal seams and end laps. Do not use scrap pieces of insulation where a full length section will fit.
12. Protect insulation from physical damage at points of support where insulation must carry load imposed by support. Coordinate this requirement with types of hangers and supports used.
13. Cold pipe lines consist of domestic cold water system and hot pipe lines consist of domestic hot water system.

B. Fiberglass Blanket Insulation for Concealed Ductwork

1. Insulate the following:
    a. All galvanized steel supply air, return air and outside air ductwork, which is not internally lined.
    b. That portion of ceiling diffusers which are exposed above ceilings.
2. Wrap insulation around ducts. Butt all circumferential joints. Overlap longitudinal joints a minimum of 2 inches.
3. Adhere insulation to ducts with 100% coverage of fire retardant adhesive.
4. For ducts over 24" wide, in addition to adhesive, impale insulation on the bottom of ducts on metal pins maximum 18" on center, welded to duct. Secure insulation on pins with speed washers and seal with vapor barrier coating.
5. Seal perimeter or circumferential joints at fire dampers, flexible connections, and ends of ducts with 3" wide foil reinforced Kraft tape.
6. Tape longitudinal joints with 3" wide foil reinforced Kraft tape.
7. Seal penetrations and punctures with 3" wide foil reinforced Kraft tape and apply vapor barrier coating.
8. Wrap portions of ceiling diffusers described above with insulation. Overlap ends of insulation 2" minimum. Tape all joints with 3" wide foil reinforced Kraft tape.

C. Fiberglass Pipe Insulation

1. Apply insulation to the following:
    a. All above ground domestic cold water and hot water piping.
    b. Do not insulate chrome plated piping at plumbing fixtures.
2. Butt all joints of pipe insulation together and secure jacket laps. Seal butt joints with joint strips furnished with insulation.
3. Insulate fittings, valves and flanges of above ground domestic cold water and hot water piping with fibrous blanket insulation wrapped under compression of minimum of 2:1 to thickness equal to adjoining pipe insulation. Secure with steel wire and apply a smooth coat of insulating cement. Cover with PVC fitting covers. Assembly shall be secured with stainless steel tacks pushed into the throat joint.

END OF SECTION
23 07 16

SECTION 23 30 00
AIR DISTRIBUTION SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION

A. Submittals: The Contractor shall submit for review by Architect product data for ductwork construction standards, pre-insulated flexible ductwork, air volume control manual dampers, fire dampers, supply air diffusers, supply air registers, return air grilles and exhaust air registers.

1.02 PRODUCTS

A. Ductwork General: Ductwork shall be constructed of lock forming quality galvanized steel sheets per ASTM A527 except ductwork indicated to be pre-manufactured flexible duct. Galvanized coating shall be not less than 1.25 ounces (total for both sides) per square foot of sheet. Ductwork shall be square, rectangular, or round, as indicated on the drawings. Ductwork material delivered to the job and not installed immediately shall be stored in a safe, dry location and protected against damage or loss. Turning vanes shall be installed in all 90 degrees square and rectangular elbows and at other locations shown on the drawings. Curved elbows shall have a centerline radius not less than 1 1/2 times the duct width. Ductwork shall be classified and constructed in the following SMACNA pressure classes for systems or zones indicated.

System or Zone	Pressure Class
Supply air ductwork downstream of FP's and VAV's.	+ 1
Return air ductwork.	- 1
Exhaust air ductwork.	- 1

Dissimilar metals shall be isolated to prevent galvanic corrosion. Joints not provided with gaskets shall be isolated with 1/16 inch minimum thickness asphalt impregnated building paper. Joints which have gaskets do not require additional isolation.

B. Galvanized Steel Ductwork: Except where indicated otherwise, herein or on the drawings, duct construction shall conform to the recommendations of the SMACNA HVAC Duct Construction Manual for pressure classes specified herein before. All galvanized areas damaged by welding shall be coated with rust inhibiting aluminum paint. Round ductwork shall be spiral lock-seam construction, except concealed round ducts up to 12" in diameter in pressure classes 2" and lower shall be longitudinal seam construction.

Round ductwork shall be:

United McGill Sheet Metal Corporation
Monroe Manufacturing Company
Semco Manufacturing Company

Round fittings shall be fusion welded but seam type with all welds continuous along seams. All divided flow fittings shall be manufactured as separate fittings - tap collars welded into spiral duct sections will not be permitted. All divided flow fittings 12" in diameter and smaller shall have radiused entrance produced by machine or press forming; all divided flow fittings 14" and larger shall have conical entrance produced by machine or press forming. All divided flow entrances shall be free of weld build-up, burrs and irregularities. Fittings shall be of the same manufacturer as the ductwork. Duct sealant shall be a polymeric rubber base mastic, mineral impregnated woven fiber tape with adhesive, or heat-shrink tape with adhesive. Mastic shall be: United

States Metal Duct Sealant. Fiber tape and adhesive shall be: United States Metal MOT3-300. Heat-shrink tape shall be the thermoplastic type constructed of woven polyolefin and factory coated with adhesive. Tape shall be designed to shrink and adhesive to melt when heated to 250 degrees F. Tape shall be:

Raychem	Thermofit Wrap TWDB

Tape width shall be:

Duct Diameter Inches	Tape Width Inches
0 to 10	2
11 to 20	3
22 and Larger	4

C. Flexible Ductwork: Insulated flexible duct shall be Class 1 air duct in accordance with UL 181 and shall comply with NFPA 90A and 90B. Insulated flexible duct shall consist of an inner film layer for minimum working pressure of 6" wg. bonded to a steel or aluminum spring wire helix, fiberglass insulation, and a vapor barrier jacket. Insulation shall have a maximum U-valve of 0.23 BTU/hr/sq. ft/degree F at 75 degrees F mean temperature. Vapor barrier jacket shall have a maximum vapor transmission rate of 0.1 grains/sq. ft./hr/inch Hg (perm). The assembly shall have a maximum flame and smoke rating of 25/50 per ASTM E84 and NFPA 255. Insulated flexible duct shall be:

Wiremold	Type WG
Flexmaster	Type 9
Thermoflex	Type G-KM
Flex-aire	Type VFS

D. Spin-In Collars: Spin-in collars shall be galvanized steel for use with rectangular or square sheet metal ductwork. Spin-in collars shall have air scoop and volume damper. Spin-in collars for sheet metal shall be:

Flexmaster	FLDE
Clevaflex	DESC
Flex-aire	TI-DEL
Thermaflex	S-4

E. Manual Dampers and Damper Hardware: Splitter dampers shall be constructed of not less than 20-gauge galvanized steel sheet. The length of the damper blade shall be the same as the width of the widest duct section at the split, but in no case shall the blade length be less than 12 inches.

F. Butterfly and Multi-Blade Dampers: Dampers shall be single blade butterfly type in ducts up to and including 18" x 12" size; for ducts larger than 18" x 12", in either or both dimensions, the dampers shall be the multi-blade type. Single blade butterfly damper shall be constructed of not less than 16-gauge galvanized steel blade mounted in a galvanized steel frame. For rectangular dampers, the top and bottom edges of the blade shall be crimped to stiffen the blade. Damper shall be provided with an extended rod to permit installation of a damper regulator. Damper shall be:

Manufacturer	Rectangular Model	Round Model
Ruskin	CD-35	CDR-25
Air Balance, Inc.	AC-115	-----

Louvers & Dampers, Inc.	CD-500	CD-600
Arrow United Ind., Inc.	1700	-----
Dowco Corp.	AVR	AVR
American Warming & Ventilating, Inc.	VC-21	VC-22

Multi-blade dampers shall be the opposed blade type, constructed of not than 16-gauge galvanized steel blades mounted in galvanized steel channel frame. Blade spacing shall not exceed 6 inches and the top and bottom edges of the blades shall be crimped to stiffen the blades. Damper blades shall be interconnected by rods and linkages to provide simultaneous operation of all blades. Dampers shall be provided with extended rods to permit installation of damper operators. Dampers shall be:

Manufacturer	Rectangular Model
Ruskin	CD-35
Air Balance, Inc.	AC-115
Louvers & Dampers, Inc.	CD-500
Arrow United Ind., Inc.	1700
Dowco Corp.	AVS
American Warming & Ventilating, Inc.	VC-21

G. Damper Hardware General: For splitter damper hardware when neither dimension of a damper exceeds 18 inches, the damper shall be provided with a ball joint bracket attached to the outside of the duct. The bracket shall have a set screw for securing damper rod in position. The damper operating rod shall be not less than 1/4" diameter steel rod and shall be secured to the damper blade with a clip. When either dimension of a damper exceeds 18 inches, the damper shall be provided with 2 ball joint brackets and rods. The rods shall be located at quarter points on the damper.

H. Butterfly and Multi-Blade Damper Hardware: Duct mounted dial regulators with operating handle shall be provided for dampers which are located above non-fire rated, lift out acoustical tile ceilings supported on an exposed grid system. Concealed ceiling mounted dial regulators shall be provided on volume control dampers which are located above the gypsum board ceiling or plastered ceiling. Concealed regulators shall be provided with plain-off-white covers. The Contractor shall provide steel channel blocking above the ceiling to support and anchor the regulators. Dampers with operating rods parallel to the line of the ceiling shall be provided with miter gears for connecting the regulator operating rod to the damper operator rod. Damper hardware shall be:

1) Vent Fabrics.
2) Young Regulator.
3) Duro-Dyne.

I. Flexible Duct Connections: Flexible duct connections shall be non-combustible glass fabric double coated with neoprene 30 oz. per square yard minimum as manufactured by:

1. Vent Fabrics.
2. Young Regulator.
3. Duro-Dyne.

J. Fire Dampers: Fire dampers shall be the folding blade fusible link type conforming to UL 555 and labeled for installation in fire rated walls and floors. Dampers in floor shall have spring operator. Dampers, except for lower sections of a multiple section assembly, and those installed behind grilles and registers, shall have blades out of the air stream when damper is in the open position. Dampers in walls or floors rated 2 hours or less shall be rated for 1 1/2 hours; dampers in walls rated 3 or 4 hour shall be rated for 3 hours. Dampers shall be constructed of galvanized steel. Fire dampers in square and rectangular ductwork shall be:

	1 1/2 Hour	3 Hour
Air Balance, Inc.	Model 119 Frame BLK	Model 319P Frame B
American Warming & Vent, Inc.	FD-150C	FD-300C
Louvers & Vent, Inc.	HFD-VM/HM Frame C	-------
Nailor-Hart, Inc.	Model 1030 Frame C	Model 0530 Frame C
Ruskin	Model IBD2 Frame B	Model IBD23 Frame B

Fire dampers in round ductwork shall be:

	1 1/2 Hour	3 Hour
Air Balance, Inc.	Model 119 Frame ML	Model 319P Frame B
American Warming & Vent, Inc.	FD-150C	FD-300B
Louvers & Dampers, Inc.	HFD-VM/HM Frame C	-----
Nailor-Hart, Inc.	Model 1040 Frame C	Model 0520 Frame B
Ruskin	Model IBD2 Frame CR/CO	Model IBD23 Frame C

K. Duct and Plenum Access Doors: Duct and plenum access doors in ducts up to 24" x 24" and pressure classes 2" and below shall be 12" x 12". Doors shall be double wall construction of not less than 24 gauge galvanized steel sheet, with 1 inch thick neoprene coated fiberglass insulation between the walls. Doors shall have a continuous hinge on one side and cam latch with striker plate on the other side; doors with the height over 12 inches shall have not less than 2 cam latches with striker plates. Door frame shall be constructed of not less than 22 gauge galvanized steel and shall have knock-over edges for securing to duct. The door assembly shall be double gasketed to provide seals from the door to the frame and from the frame to the duct. Access doors shall be:

Air Balance	Model FSA100
Cesco	Model HAD-10

Dovco Corp.	Model ADM-100
Ruskin	Model ADH2
Krueger	Model F-1

L. Supply Air Diffusers and Registers and Return and Exhaust Air Grilles and Registers – Finish: Aluminum grilles, registers and diffusers which are ceiling mounted shall be provided with a factory applied white baked enamel finish. Aluminum grilles and registers which are duct mounted shall be factory etched to a satin finish and coated with a clear lacquer. Supply air diffusers and supply air registers shall be of design and air pattern (4-way air throw) unless indicated otherwise on the drawings. Provide each supply air register and diffuser with air turning device for deflecting air evenly into throat of device and opposed blade volume control damper. Return and exhaust air grilles and registers shall be of design indicated on drawings and mounted with sponge rubber gasket. Sound power level of grilles, registers and diffusers selected shall be such that sound level in occupied area shall comply with the NC occupancy recommendations in the ASHRAE Handbook of Fundamentals. Selection and sizing of grilles, registers and diffusers shall conform to manufacturer's published air flow performance data.
All supply air diffusers and registers, return air grilles and exhaust air registers are for surface mounting in exposed tee-bar grids or for integral mounting in exposed tee-bar grids. Where grilles, registers or diffusers are to be installed in gypsum board hard ceilings, the mounting frame shall be adjusted to match the ceiling requirements. All supply air outlet and return and exhaust air inlet air devices shall be as manufactured and marketed by Titus, Price, Carnes, Metal-Aire, Tuttle and Bailey or Owner/Architect approved alternate.

1.03 EXECUTION

A. Installation: Galvanized steel ductwork shall be installed in accordance with recommendations of SMACNA HVAC Duct Construction Standards Manual.
Duct-to-duct joints in round duct up to and including 60" in diameter shall be made by using sleeve couplings, reinforced by rolled beads. Duct-to-fitting joints in round duct up to and including 60" in diameter shall be made by slip-fit of the projecting collar on the fitting into the duct. Sleeve shall be the same gauge galvanized steel as the duct; insertion length of sleeve coupling and fitting collar shall be not less than 2". After the joint is slipped together, sheet metal screws shall be installed for mechanical strength; screws shall be equally spaced, no more than 12" on centers and with a minimum of 3 screws in each joint. Screws shall be placed at 1/2" from the joint bead. Duct-to-duct joints in ducts up to and including 12" in diameter for pressure class 2" and below may be the beaded-crimp type and each joint shall be fastened with sheet metal screws, equally spaced, not more than 12" on centers and with a minimum of 3 screws in each joint. The beaded-crimp joint shall provide at least a 1" lap to accommodate the sheet metal screws. All duct joints (longitudinal, transverse) and duct penetrations shall be sealed using methods outlined in SMACNA HVAC Air Duct Leakage Test Manual.

B. Flexible Ductwork: Flexible ducts shall be installed in an extended condition free of sags and kinks, using only the minimum length required to make the connection. Abrupt bends and turns that crimp the duct and restrict air flow shall not be permitted. Horizontal supports shall be 3/4" wide, 22 gauge flat galvanized steel sheet banding material. Flexible ducts shall be supported on 36" centers. Maximum length of flexible duct in pressure class 2" and below shall be 5 feet. Flexible duct shall not be used above inaccessible ceilings.

C. Duct Closure Collars: Duct collars shall be provided where ducts pass through masonry walls and partitions which extend full height to the underside of the structure and shall be fabricated from 22 gauge galvanized steel sheet. Duct collar shall be provided on both sides of walls and partitions, except collar shall be omitted on that side of the wall on which registers and grilles are installed. Flanges shall be installed tight against the wall. The space between the duct and the wall shall be packed with fiberglass blanket insulation.

D. Fire Dampers: Dampers shall be installed in accordance with the manufacturer's instructions.

E. Access Doors: Install access doors in ductwork adjacent to fire dampers smoke detectors and control dampers.

F. Duct Support Spacing: Duct hangers and supports shall be in accordance with SMACNA HVAC Duct Construction Standards except hangers shall be spaced not over 8'-0" on centers. For rectangular ducts, with longest dimensions up through 60", hangers shall be galvanized steel strap type; with longest dimension 61" and larger, hangers shall be trapeze type constructed of galvanized steel angles with round hangers rods. Sizes for strap hangers and trapeze angles and rods shall be based on duct size as scheduled in the SMACNA HVAC Duct Construction Manual. For round ducts the hangers shall be the galvanized steel strap hangers. Sizes and number for strap hangers shall be based on duct size as scheduled in the SMACNA HVAC Duct Construction Manual.

G. Supply Air Diffusers and Registers and Return and Exhaust Air Grilles and Registers – Air distribution devices shall be stored on wooden pallets or rails and covered with 6 mil (minimum) thickness polyethylene sheets. Ceiling supply air diffusers and registers, return air grilles and exhaust air registers sized to fit ceiling grid system shall be supported from grid system. Exhaust air registers not sized to fit ceiling grid system shall be secured to ductwork with sheet metal screws.

END OF SECTION
23 30 00

SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

1.01 SUMMARY

A. General:

1. Materials and equipment shall comply with all requirements of the contract documents. Materials furnished by the Contractor shall be new, the standard products of manufacturers regularly engaged in the production of such materials, and of the manufacturer's latest designs that comply with the specification requirements. If material and equipment requirements conflict, the order of precedence for selection shall be as follows: special contract provision, the contract drawings, this specification; and then in continuing order of precedence, NFPA publications, IEEE standards, UL standards and NEMA standards. Wherever standards have been established by Underwriters Laboratories, Inc., the material shall bear the UL label.

B. Definitions:

1. Approval Authorities shall include Fulton County (Owner), Fulton County Representative (Owner's Representative), and Williams-Russell & Johnson, Inc. (Engineer).

1.02 ELECTRICAL CHARACTERISTICS

A. Provide the following electrical equipment and systems:

1. Equipment, wiring devices and electrical connections required for installation of electrical equipment.
2. Raceways and wiring for power and controls.
3. Grounding systems.
4. Concrete equipment bases.
5. Cutting and patching for electrical construction.
6. Lightning protection system.
7. Excavation and backfill for underground utilities and services.
8. Seismic bracing.

B. Product Requirements:

1. Provide products which conform to and installation that complies with the requirements of the American Disabilities Act.

C. Spacing Requirements:

1. Electrical equipment sizes indicated on the drawings are generally based on specified manufacturer. Verify that the equipment proposed will fit in the space indicated on the drawings. Coordinate building dimensions with architectural and structural drawings. Equipment furnished and installed under other Sections of this Specification shall be coordinated with the requirements of this Section. Maintain clearances required by NFPA 70 around electrical equipment. Establish the exact location of electrical equipment based on the actual field verified dimensions of equipment furnished.

D. Departure from Dimensions Shown:

1. Minor departures from exact dimensions shown in electrical plans may be permitted when required to avoid conflict or unnecessary difficulty in placement of a dimensioned item, provided all contract requirements are met. The Contractor shall promptly obtain written approval from the OR prior to undertaking any such departures and shall provide appropriate documentation of the departure.

1.03 SUBMITTALS

A. Product Data: For each type of product specified.

B. Samples: When the adequacy, quality and safety of a material will be better demonstrated and it will expedite approval, provide single samples of items proposed for use. Conform to the procedures specified. Submit samples of color, lettering style, and other graphic representation required for each identification product for the project.

C. Test Reports:

1. Operating Tests:
   a. An interim operating and performance test shall be performed for each major equipment item after installation is complete and before the item is placed in service. After systems have been completely installed and balanced, test each system for proper operation. Tests shall be conducted in the presence of the OR under design conditions to ensure proper sequence and operation throughout the range of operation. Make adjustments as required to ensure proper functioning of the systems. Special tests on individual systems are specified under individual sections. Tests shall be scheduled and approved in writing by the OR at least 7 calendar days prior to conducting tests. Contractor shall demonstrate, to the OR's satisfaction, proper operation of control devices by simulating actual operating conditions. Devices tested shall include, but not be limited to, flow and pressure controls, temperature controls, and system interlocks and alarms.
   b. Submit a summary of the Electrical Test Report and Motor Test Report, noting deviations from requirements listed below:
      1) Maximum plus or minus 5 percent variation between nominal system voltage and no load voltage.
      2) Variation between motor average phase current and measured individual phase currents does not exceed the manufacturer's specified limits.
      3) Maximum plus or minus 10 percent variation between average phase current and measured individual phase currents for panelboards.

D. Operation and Maintenance Data:

1. Provide three copies of operating and maintenance instructions, equipment service manuals, catalog cuts and illustration as described in this section. The operations and maintenance (O&M) data shall be placed in suitable binders, with tabs, for use by maintenance personnel. The material shall include equipment model and serial numbers, performance characteristics, power and utility requirements and manufacturer's recommended maintenance

schedules. Final acceptance of this equipment is contingent upon submission of required documents to and approval by the OR prior to the facility turnover. Operating and maintenance instructions shall contain the following minimum data and shall comply with submittal requirements specified in individual Division 26 Sections.

a. Operating instructions shall include illustrations and explanations for controls, initial set points and startup and shutdown procedures for both normal and emergency conditions.
b. Maintenance instructions shall include periodic inspection and lubrication requirements and where applicable, equipment performance verification requirements.
c. Troubleshooting and fault diagnosis data shall list trouble symptoms, instructions necessary to determine cause of trouble and the action required to restore equipment to operating condition.

2. Repair instructions.
3. Spare parts list.
4. A list of required tools and equipment to maintain the system.
5. Provide names, addresses and telephone numbers of all service organizations that supply repair parts for the system or systems to be furnished.
6. Repair Instructions:
   a. Include equipment disassembly, repair, replacement and re-assembly. Checkout or test data shall also be provided. Reprogramming instructions shall be provided for equipment having a programmable memory. Re-packing instructions shall be provided for sending equipment to the manufacturer or to a repair depot for repairs. The instructions shall contain a list of spare parts recommended by the equipment manufacturer to support the operation of the equipment for a 1-year time period.
7. Parts List:
   a. A parts list shall be furnished that includes part names and part numbers that are shown on illustrations or tables. The parts list shall identify the actual manufacturer of the part, replacement cost and shall also contain a notation of identifying products as commercial grade for common non-special design hardware.
8. Overhaul Instructions:
   a. The O&M data shall include overhaul instructions that are required to return the equipment to full operational capability in the event that the machinery stops working properly.
9. Operation & Maintenance Data Binder:
   a. The O&M binder shall include tabs for insertion of all data. The O&M data shall include wiring diagrams, electrical schematics, control diagrams, wire terminal assignments, ans equipment layouts.
10. Record electrical drawings, modified to record actual conditions and modifications, including dimensions.
11. Approved shop drawings.
12. A list of all subcontractors used on the project with address and phone number.

1.04 QUALITY ASSURANCE

A. Comply with NFPA 70 for components and installation. In case of conflict between provisions of codes, laws and ordinances, the more stringent requirement shall apply.

B. Listing and Labeling:

1. Provide products specified that are listed and labeled, as defined in the National Electrical Code, Article 100. All electrical materials and equipment shall meet the latest requirements of the applicable standards of UL if UL standards exist for such materials and equipment. The UL authorized listing mark is acceptable as evidence that the materials meet this requirement.

C. Summary:

1. Submit a summary of the Electrical Test Report and Motor Test Report, noting deviations from requirements listed below:
   a. Maximum plus or minus 5 percent variation between nominal system voltage and no load voltage and between no load and full load voltage.
   b. Variation between motor average phase current and measured individual phase currents does not exceed the manufacturer's specified limits.
   c. Maximum plus or minus 10 percent variation between average phase current and measured individual phase currents for panelboards.

D. Equipment Training.

1. After final tests and adjustments have been completed, fully instruct the OR and other personnel as directed by the OR in details of operation and maintenance of special equipment, including control systems, as installed. Submit outline of proposed instruction course 21 days prior to start for approval by the OR.

E. Project Record Documents

1. Maintain at the job site a separate set of white prints of the contract documents for the purpose of recording the system and dimension changes of those portions of work in which actual construction is at variance with the contract documents. The Contractor shall record changes for Contractor-provided equipment. Upon acceptance of the project, submit documents to the OR, with verification of data accuracy. Mark the drawings with colored pencil. Prepare the drawings as the work progresses. Upon completion of work, submit drawings clearly indicating the following:
   a. Locations of devices, conduits, equipment and other pertinent items. Indicate the depth of buried ducts and direct burial cable.
   b. Schematic and interconnection wiring diagrams of the completed power and control system incorporating the data derived from the equipment shop drawings and the cable and conduit schedule. The drawings shall be detailed to wire and terminal block numbers, conductor color coding, device designations locations and reflect identifications established at the site.
   c. Cable and conduit schedule for cables and conduits actually installed; include the type, size, origin, destination, and approximate length for each cable and conduit. Indicate for each cable the voltage rating, number of conductors, cable number, color coding and routing.

1.05 POSTED OPERATING INSTRUCTIONS

A. Provide for each system and principal item of equipment as specified in the technical sections for use by operation and maintenance personnel. The operating instructions shall include the following:
    1. Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
    2. Start up, proper adjustment, operating, lubrication, and shutdown procedures.
    3. Safety precautions.
    4. The procedure in the event of equipment failure.
    5. Other items of instruction as recommended by the manufacturer of each system or item of equipment.

B. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions where directed. For operating instructions exposed to the weather, provide weather-resistant materials or weatherproof enclosures. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.06 DELIVERY, STORAGE AND HANDLING

A. Contractor provided equipment shall be protected from damage and stored in a dry location from the time of site delivery. Furnish and energize space heaters or provide desiccant recommended by the equipment manufacturer to prevent condensation. Conduct routine inspections of stored equipment to check equipment condition.

1.07 SEQUENCING AND SCHEDULING

A. Coordinate electrical equipment installation with other building components.
    1. Arrange for chases, slots and openings in building structure during progress of construction to allow for electrical installations.
    2. Coordinate installing required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
    3. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the work. Coordinate installing large equipment requiring positioning prior to closing in the building.
    4. Coordinate connecting electrical service to components furnished under other Sections.
    5. Coordinate connecting electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.
    6. Coordinate requirements for access panels and doors where electrical items requiring access are concealed by finished surfaces.
    7. Coordinate installing electrical identification after completion of finishing where identification is applied to field-finished surfaces.
    8. Coordinate installing electrical identifying devices and markings prior to installing acoustical ceilings and similar finishes that conceal such items.

PART 2 – PRODUCTS

2.01 SUPPORTING DEVICES

A. Channel and angle supports, raceway supports, sleeves and fasteners shall be as specified in Section 26 05 29, "Hangers and Supports for Electrical Systems."

2.02 ELECTRICAL IDENTIFICATION

A. Provide electrical identification as specified in Section 26 05 53, "Identification for Electrical Systems." Manufacturer's standard products to use colors prescribed by ANSI A13.1 and NFPA 70.

PART 3 – EXECUTION

3.01 EQUIPMENT INSTALLATION REQUIREMENTS

A. Comply with NECA 1.

B. All materials and equipment shall be installed in accordance with the contract drawings. Where manufacturer's recommended installation methods conflict with the contract requirements, difference shall be resolved by the OR. The installation shall be accomplished by skilled workers regularly engaged in this type of work. Where required by local regulation, the workers shall be properly licensed. Install components and equipment to provide the maximum possible headroom where mounting heights or other location criteria are not indicated. Install items level, plumb, and parallel and perpendicular to other building systems and components, except where otherwise indicated. Install equipment to facilitate service, maintenance and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations. Give right of way to raceways and piping systems installed at a required slope.

3.02 INSTALLATION

A. The rules, regulations, and reference documents indicated shall be considered as minimum requirements, and shall not relieve the Contractor from furnishing and installing higher grades of materials and workmanship than are specified or when required by the contract drawings. Equipment shall be installed in a manner to provide proper working space, access, and space for removal of the equipment to suit intended application.

B. Contract Drawings:
   1. Where the drawings schematically indicate the work, diagrammatically or otherwise, furnish and install equipment, material and labor for a complete and proper installation. Ensure that electrical and communications work is coordinated and compatible with Architectural, Mechanical, Structural, and Civil work.

C. Firestopping:
   1. Apply to cable and raceway penetrations of fire-rated floor and wall assemblies. Perform firestopping to re-establish the original fire resistance rating of the assembly at the penetration.

D. Fastening:
   1. Unless otherwise indicated, securely fasten electrical items and their supporting hardware to the building structure in accordance with Section 26 05 29, "Hangers and Supports for Electrical Systems."

E. Identification Devices:
   1. Install identification devices where required in accordance with the requirements of Section 26 05 53, "Identification for Electrical Systems."

F. Wiring Methods:

1. All wiring shall consist of insulated copper conductors installed in metallic raceways, unless otherwise specified.

G. Conductor Routing:
   1. Panelboards, surge arresters, disconnect switches, etc., shall not be used as a raceway for conductor routing other than conductors that originate or terminate in these enclosures. Isolated ground conductors will be allowed to traverse these enclosures.

H. Conductor Separation:
   1. Power conductors shall be routed separately from all other conductor types. Route power conductors and other conductors in separate raceways, or by a metallic divider between the power conductors and the other conductors in the same raceway.

I. Neutral Conductor:
   1. Shared/common neutrals shall not be permitted (i.e., each overcurrent device shall have its own separate neutral conductor). Neutral conductor sizes shall not be less than the respective feeder or phase conductor sizes.

J. Ground Conductor:
   1. Shared/common grounding conductors shall not be permitted (i.e., each overcurrent protective device shall have its own separate ground conductor). The equipment grounding conductor shall be installed in the same conduit as its related branch and feeder conductors and shall be connected to the ground bus in the branch or distribution panelboard. Equipment ground conductor shall be the same size as the phase conductors were indicated for special equipment branch or feeder circuits that require parity sized ground conductors to comply with equipment manufacturer's recommendations.

K. Cable Terminations:
   1. Provide terminations in accordance with this Section and manufacturer's requirements. All splices (including those in the building) must be approved by the OR.

3.03 DEMOLITION

A. Abandoned Work:
   Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish. All wire not removed shall have the OR's written approval.

3.04 CUTTING AND PATCHING

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for electrical installations. Cutting shall be performed by skilled mechanics of the trades involved. Repair disturbed surfaces to match adjacent undisturbed surfaces.

3.05 FIELD TESTING

A. Perform the tests specified and other tests necessary to establish the adequacy, quality, safety, completed status, and suitable operation of each system. Repair or replace

equipment that does not meet test requirements and retest. Tests shall be scheduled and approved in writing by the OR at least 21 calendar days prior to conducting tests. Unless otherwise indicated, the Contractor shall furnish all test instruments, materials, and labor necessary to perform tests designated in Division 26 Sections. All tests shall be performed in the presence of the OR. All instruments shall have been calibrated within a period of 1 year preceding testing. Calibrations shall be traceable to applicable industry recognized standards.

B. Interim Operating and Performance Test:

1. Perform for each major equipment item after installation is complete and before the item is placed in service. After mechanical systems have been completely installed and balanced, test each system for proper operation. Tests shall be conducted in the presence of the OR under design conditions to ensure proper sequence of operation throughout the range of operation. Make adjustments as required to ensure proper functioning of the systems. Special tests on individual systems are specified under individual Sections. Provide 21 days written notice to the OR for major tests. Contractor shall demonstrate, to the OR's satisfaction, proper operation of control devices by simulating actual operating conditions. Devices tested shall include, but not be limited to, flow and pressure controls, temperature controls, and system interlocks and alarms.

C. Operation and Maintenance of Equipment:

1. After final tests and adjustments have been completed, fully instruct the OR and other personnel as directed by the OR in details of operation and maintenance of electrical equipment, including control systems and fire alarm system as installed.

D. Electrical Test Report:

1. Complete the Electrical Test Report included as Attachment No. 1. Provide the requested information for each panelboard and its power supply conductors. Perform insulation resistance tests in compliance with Section 26 05 19, "Low-Voltage Electrical Power Conductors and Cables" on wires including the neutral before connection to source and to loads. Perform the tests specified and other tests necessary to establish the adequacy, quality, safety, completed status, and suitable operation of each system. Repair or replace equipment that does not meet test requirements and retest. Notify the OR in writing 7 days prior to conducting tests.

E. Motor Insulation Resistance Test:

1. The manufacturer shall provide the following requested information for each 3-phase electrical squirrel cage, induction motor 1/2-horsepower (HP) and larger supplied to this project. Complete the Motor Test Report included as Attachment No. 2. Motors shall be tested for grounds and short circuits prior to being shipped to the job site. Windings shall test free from short circuits and ground. Minimum insulation resistance for motors, phase to phase to ground, shall not be less than 30 megohm measured within a 500 bolt DC insulation resistance tester. The manufacturer shall apply the test voltage for at least 1 minute after the reading has stabilized.

F. Electrical Main Supply and Distribution Feeders:

1. All electrical main supply and distribution feeders originating from

switchboards, distribution panelboards, panelboards, or transformers, and all electrical feeders to 3-phase electrical squirrel cage, induction motor, 1/2-horsepower (HP) and larger, shall be tested for open/short circuits. Submit the Electrical Test Report included as Attachment No.1. Provide grounding bushings on all feeder circuits (both ends and at pull/junction boxes in between).

G. Lighting, Power, Miscellaneous Power and Receptacle Branch Circuits:

1. In Lighting, power, miscellaneous power and receptacle single pole (1P) branch circuit panelboards, test any random 4 branch circuits (consisting of a phase conductor, a neutral and a grounding conductor) within a 42 pole panelboard or test one branch per every ten branch circuits. If more than 10 test points are above the specified value, then all branch line circuit wiring shall be tested. Submit Attachment No.1, Electrical Test Report to the OR.

H. Other Tests:

1. All insulation resistance test, meggering, continuity tests, open and short circuiting testing that fail to meet the minimum standards as set forth in these electrical specifications shall have their feeder or branch circuit conductors (phase conductor, neutral and ground)removed and replaced. If after retesting, these feeder conductors fail to meet minimum requirements, the work shall be re-performed until such work and retesting passes the minimum design parameter requirements as set forth in these electrical specifications.

I. Circuit Breaker Tests:

1. No 120 volt, single pole (1P) 15-100 amp, molded case circuit breaker is required to be tested. All two pole (2P) and all three pole (3P), molded case breakers shall be tested for short circuit operation and for long term thermal overload protection operation to ascertain that they conform to manufacturer's recommended tolerances and design parameters. They shall be tested for handle operation, trip resetting, and mechanical freedom of movement. The circuit breakers shall have factory recommended electrical insulation resistance and factory recommended electrical conductivity path resistance.

J. Receptacle and Miscellaneous Power Branch Circuit Test Procedures:

1. The following test procedure shall be used:
   a. Open the branch overcurrent circuit protection divide and remove all plugs from all of the connected convenience receptacle outlets and devices. For switched receptacles and for single phase, thermal manual motor starters used with fractional horsepower supply and exhaust fan motors, close circuit the switch.
   b. Perform both the continuity test and insulation resistance meggering test. If the continuity and meggering test results are within specified design parameters, disconnect all testing equipment and close the overcurrent circuit protective device. If the results are not within specifications, repair the defective component and retest the branch circuit until satisfactory results are obtained.

K. Lighting Branch Circuit Wiring Test Procedures:

1. The following test procedure shall be used:
   a. For meggering test first open the overcurrent circuit protective device,

then close circuit for all light switches connected to the branch circuit prior to the first lighting fixture and then disconnect (open circuit) the branch circuit conductors from the first lighting fixture in the circuit. Perform both the continuity test and then the insulation resistance megger test. If the continuity and meggering test results are within specified design parameters disconnect all testing equipment and close the overcurrent circuit protective device. If the results are not within specifications, repair the defective component and retest the branch circuit until satisfactory results are obtained.

L. Load Balancing:

1. After the Contract Acceptance Inspection (CAI) of electrical systems, redistribute the loads where there is a greater than a 20 percent difference between readings in two or more phases, in accordance with Section 26 24 16, "Panelboards".

END OF SECTION
26 05 00-10

SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes building wires and cables and associated splices, connectors, and terminations for wiring systems rated volts and less.

1.02 REFERENCE STANDARDS

A. The publications listed below form a part of this Specification to the extent referenced. The publications listed below are referenced as the latest edition published as of the date of this document. The publications are referred to within the text by the basic designation only.

B. American Society for Testing and Materials (ASTM)
   1. ASTM B 8 Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
   2. ASTM D 1000 Standard Test Method for Pressure-Sensitive Adhesive-Coated Tapes used for electrical and electronic applications.

C. International Electrical Testing Association (NETA)
   1. NETA ATS Acceptance Testing Specifications for Electric Power Distribution Equipment and Systems

D. National Electrical Contractors Association
   1. NECA Standard of Installation

E. National Electrical Manufacturers Association (NEMA)
   1. NEMA WC3 Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
   2. NEMA WC70 Non-Shielded Power Cable 2000 V or Less

F. National Fire Protection Association (NFPA)
   1. NFPA 70 National Electrical Code 2008

G. Occupational Safety and Health Administration (OSHA)
   1. 29 CFR 1910.7 Definitions and Requirements for a Nationally Recognized Testing Laboratory (NRTL)

H. Underwriters Laboratories (UL)
   1. UL 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors
   2. UL 486C Standard for Splicing Wire Connectors
   3. UL 486E Standard for Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors

1.03 SUBMITTALS

A. Test Reports: Field test reports indicating and interpreting test results relative to compliance with performance requirements of testing standard.

B. Operation and Maintenance Data: Prepare and distribute operations and maintenance data as specified in Section 01 78 23, "Operation and Maintenance Data."

1.04 QUALITY ASSURANCE

A. Testing Firm Qualifications: An independent testing firm shall meet OSHA criteria for accreditation of testing laboratories, 29 CFR 1910.7, or shall be a full member company of the International Electrical Testing Association (NETA).

B. Testing Firm's Field Supervisor Qualifications: A person currently certified by the NETA National Institute for Certification in Engineering Technologies to supervise on-site testing specified in PART 3.

C. Components and Installation: Comply with NFPA 70, for components and installation.

D. Listed and Labeled: Provide products specified in this Section that are listed and labeled. The terms "Listed" and "Labeled" as defined in NFPA 70, Article 100.

H. Listing and Labeling Agency Qualifications: A NRTL as defined in 29 CFR 1910.7.

F. Installer Qualifications: Cable splices shall be performed by experienced and qualified cable splices. The workman shall be licensed if required by the authority having jurisdiction.

1.05 SEQUENCING AND SCHEDULING

A. Coordinate layout and installation of cable with other installations. Revise locations and elevations form those indicated as required to suit field conditions and as approved by the OR.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Wires and Cables:
   1. American Insulated Wire Corporation, Leviton Manufacturing Co.
   2. Brand-Rex Cable Systems, Brintec Corp.
   3. Carol Cable Company, Inc.
   4. Senator Wire & Cable Co.
   5. Southwire Co.

B. Connectors for Wires and Cables
   1. AFC, Monogram Co.
   2. AMP, Inc.
   3. Anderson, Square D Co.
   4. Electrical Products Division, 3M Co.
   5. O-Z/Gedney Unit, General Signal

2.02 BUILDING WIRES AND CABLES

A. Specified Applications: UL-listed building wires and cables with conductor material, insulation type, cable construction, and rating as specified in PART 3.

B. Rubber Insulation: Conform to NEMA WC3.

C. Thermoplastic Insulation: Conform to NEMA WC70, NEMA WC71,and NEMA WC74.

D. Stranded Conductors: Solid conductor for 10 AWG and smaller; stranded conductor for larger than 10 AWG. Stranded conductors rating shall be tin coated, ASTM B 8, Class B.

E. Wire and Conduit Sizes: All wire and conduit sizes are based on copper insulated conductors with 75 degrees C temperature rating, ambient temperature of 30 degrees C and a minimum conduit size of 3/4".

F. Sizes: Minimum 12 AWG. Minimum 10 AWG for 120 volt circuits where circuit length (one way) exceeds 75 feet from source, and 10 AWG for 277 volt circuits where circuit length (one way) exceeds 150 feet from source. Communication systems wiring size shall be in accordance with manufacturer's requirements. Fire alarm and control systems wiring size shall be in accordance with manufacturer's requirements or as specified in Section 28 30 00, "Master Fire Alarm System."
    1. Stranded conductors may be used with wire compression connectors or a pressure washer type lug.
    2. Conductor Type
    3. Soft drawn, annealed copper (aluminum conductors are not acceptable).
    4. Power conductors shall be single conductor type.
    5. Control interconnection between equipment shall be jacketed type multiconductor.
    6. Instrumentation conductor shall be twisted pair, shielded, jacketed type.
    7. Conductors used for lighting and receptacle branch circuits shall be single conductor type.

G. Conductor Color Codes: Refer to Section 26 05 53, "Identification for Electrical Systems" for conductors No. 4 AWG and larger, where factory color-coding is not available. Feeder conductors to panels and three phase circuits shall be factory color coded as follows:
    1. 208/120 Volt System:
        a. Phase A: Black
        b. Phase B: Red
        c. Phase C: Blue
        d. Neutral: White
        e. Ground: Green
    2. 480/277 Volt System:
        a. Phase A: Yellow
        b. Phase B: Brown
        c. Phase C: Orange
        d. Neutral: Gray
        e. Ground: Green
    3. Single-phase branch circuits shall be factory color coded as stated above, or Identified in accordance with Section 26 05 53, "Identification for Electrical Systems."
    4. Control cables shall be IAW NEMA WC50
    5. DC power cables shall be as follows:
        a. Plus: red color and identified with "+" symbol.
        b. Minus: black color and identified with "-" symbol.
        c. N: white (if used).

H. Uninsulated Conductors: Uninsulated conductors shall be copper and comply with FS QQ-W-343.

2.03 CONNECTORS AND SPLICES

A. UL-listed factory-fabricated wiring connectors of size, ampacity rating, material, and type and class for applications and for service indicated. Select to comply with project's installation requirements and as specified in PART 3.

B. Connectors, Splice Sleeves, and Terminal Lugs: Wire and cable connectors, lugs, and sleeves shall be in compliance with UL 486A, and the following:
   1. For splices of 10 AWG and smaller building wires in lighting circuits, use tin plated copper compression type connector caps with nonflammable, self-extinguishing insulation grip with temperature rating equal to that of conductor insulation.
   2. Use ring tongue compression type terminators with insulated barrel on all Stranded conductors used in control wiring.
   3. Crimp type connectors are not permitted on solid conductors.

C. Insulating Tape: ASTM D 1000. As a minimum, rate equal to conductor insulation. Rubber tape shall be silicon rubber with silicon pressure sensitive adhesive.

D. Bundling Straps: Nylon straps with a locking hub or head on one end and a taper on the other.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine raceway and building finishes to receive wires and cables for compliance with installation tolerances and other conditions. Verify that the duct or conduit is open, continuous, and clear of debris before installing cable. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 APPLICATIONS

A. Feeders: Type THHN/THWN, copper conductor, in raceway.

B. Indoor Branch Circuits: Type THHN/THWN, copper conductor, 75 degrees C insulation, in raceway.

C. Exterior Branch Circuits: Type THHN/THWN, copper conductor, 75 degrees C insulation, in raceway.

D. Fire Alarm Power Circuits: Type THHN/THWN, copper conductor, in raceway.

E. Service Entrances: Type XHHW conductor rated for SE, USE or USE-2, single conductors in raceway.

3.03 INSTALLATION

A. Install wires and cables as indicated, according to manufacturer's written instructions and

NECA. Pull conductors into raceway simultaneously where more than one is being installed in same raceway.

1. Use pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation, and must be non-flammable.
2. Use pulling means; including fish tape, cable, rope, and basketweave wire/cable grips that will not damage cables or raceway.
3. Bend to radii not less than the minimum bending recommended by manufacturer or 12 times the outer diameter of cable. Do not exceed the pulling tension recommended by manufacturer.
4. All box connectors shall have insulated throat.

B. Cable shall be installed in a manner to prevent harmful stretching of the conductor, injury to the insulation or damage to the outer protective covering. Install exposed cable, parallel and perpendicular to surfaces or exposed structural members, and follow surface contours where possible. The ends of cables shall be sealed with moisture-seal tape before pulling, and it shall be left sealed until connections are made.

C. Conductor Splices: Keep to a minimum.

D. No splices shall be allowed on critical circuits and feeders.

E. Splices shall be made only at outlets, junction boxes, or accessible raceways.

F. Wire nuts may only be used to splice conductors sized No. 10 AWG and smaller.

G. Compression connectors shall be used to splice conductors No. 8 AWG and larger.

H. All splices, including those made with insulated wire nuts, shall be insulated with electrical tape or heat-shrink tubing to a level equal to that of the factory insulated conductors.

I. Splicing of underground conductors in panelboards is not permitted.

J. Splices shall be made with solderless connectors conforming to UL 486A, UL 486C, UL 486E and FS W-S-610.

K. Install splices and insulating tapes that possess equivalent or better mechanical strength and insulation ratings than conductors being spliced.

L. Use splice and tap connectors that are compatible with conductor material.

M. Splice methods and material shall be of a type recommended by the manufacturer of the splicing material for the particular type of cable being spliced and shall be approved by the OR prior to installation.

N. Wiring at Outlets: Install with at least 6 inches of slack conductor at each outlet.

O. Connecting Outlets and Components: Connect outlets and components to wiring and to ground including as indicated and instructed by the manufacturer. Tighten connectors and terminals, screws and bolts, according to equipment manufacturer's published

torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals according to tightening torques specified in UL 486A.

P. Critical Circuits: Conductors for critical circuits, emergency lighting, security systems, and fire alarm systems shall be kept completely independent from any other system as well as each other.

Q. Cable/Conductor Installation: Cables/Conductors sized 250 kCMIL and greater shall be installed with the use of a hydraulic cable bender. Cable supports shall be required for stress relief. A splice shall not be pulled into a duct or conduit under any circumstance.

R. Neutral and Ground: Separate neutral and ground wires shall be provided for each overcurrent protective device. Each branch circuit shall have its own neutral and ground conductor. Common neutral or ground is not acceptable. Neutral conductors shall extend from the neutral bus where the phase conductors originate. Install conductors only after the raceway system is complete.

S. Electrical Identification: Install electrical identification devices specified in Section 26 05 53, "Identification for Electrical Systems" at terminations, immediately after installing wires and cables.

3.04 FIELD QUALITY CONTROL

A. Testing, General:
1. Cables shall be tested prior to installation and again upon completion of the installation. Testing shall be accomplished before connection is made. Tests shall be performed in the presence of the OR.
2. Upon installation of wires and cables and before electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
3. Perform each visual and mechanical inspection and electrical test state in NETA ATS. Certify compliance with test parameters.
4. Test wire and cable for continuity or circuitry, and also for short circuits.

B. Insulation Resistance Tests: Feeder and branch circuit insulation tests shall be performed after installation, but before connection to equipment.
1. Conductors shall test free from short circuits and grounds, and have a minimum phase to-phase and phase-to-ground insulation resistance of 30 megohms when measured with a 500-volt DC insulation tester. The Contractor shall submit a letter type test report to the Owner's Representative prior to final inspection of the work. The report shall list the tests performed and results obtained.
2. Apply the test voltage for at least one minute after meter reading has stabilized.

C. Malfunctioning Products: Correct malfunctioning products on site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units, and retest.

END OF SECTION
26 05 19

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY
A. This Section includes methods and materials for grounding systems and equipment.

1.02 REFERENCES
A. The publications listed below form a part of this Specification to the extent referenced. The publications listed below are referenced as the latest edition published as of the date of this document. The publications are referred to within the text by the basic designation only.

1. American Society for Testing and Materials (ASTM)
    a. ASTM B 3 Standard Specification for Soft or Annealed Copper Wire
    b. ASTM B 33 Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes
    c. ASTM B 8 Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
2. Institute of Electrical and Electronics Engineers (IEEE)
    a. IEEE 1100 Powering and Grounding Sensitive Electronic Equipment
    b. IEEE 81 Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
    c. IEEE C62.41 Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits
3. National Fire Protection Association (NFPA)
    a. NFPA 70 National Electrical Code 2008
    b. NFPA 780 Standard for the Installation of Lightning Protection Systems
4. Occupational Safety and Health Administration (OSHA)
    a. 29 CFR 1910.7 Definitions and Requirements for a Nationally Recognized Testing Laboratory (NRTL)
5. Underwriters Laboratories (UL)
    a. UL 467 Grounding and Bonding Equipment
    b. UL 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors

1.03 SUMMARY
A. This Section includes solid grounding of electrical systems and equipment and basic requirements for grounding for protection of life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other Sections of this Specification. Install grounding systems in accordance with this Section and as indicated on the drawings.

1.04 SUBMITTALS
A. The following shall be submitted in accordance with Section 01 33 00, "Submittal Procedures:"

B. Product Data:
1. Connectors and Connection Materials
2. Grounding Fittings
3. Qualifications
4. Qualification data for firms and persons specified in "Quality Assurance" article

to demonstrate their capabilities and experience. Include lists of complete projects with project names and addresses, names and addresses of architects and owners, and other information specified.

C. Test Reports:
   1. Field Tests and Observation Reports: Reports shall be certified by the testing organization and indicating and interpreting the test reports for compliance with performance requirements.

D. Operation and Maintenance Data: Prepare and distribute operations and maintenance data as specified in Section 01 78 23, "Operation and Maintenance Data."

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: A nationally recognized testing laboratory as defined by 29 CFR 1910.7, or a full member company of NETA.

B. Testing Agency Field Supervision: Use persons currently certified by NETA or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in PART 3. Comply with NFPA 70 and UL 467.

C. Listing and Labeling: Provide products specified in this Section that are listed and labeled as defined in NFPA 70, Article 100.
   1. Listing and Labeling Agency: Qualifications as defined in 29 CFR 1910.7.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, manufacturers offering products that may be incorporated into work include, but are not limited to, the following:
   1. Chance/Hubbell.
   2. O-Z/Gedney Co.; a business of the EGS Electrical Group.
   3. Thomas & Betts Electrical.

2.02 WIRING AND CABLE GROUNDING CONDUCTORS

A. Comply with Section 26 05 19, "Low-Voltage Electrical Power Conductors and Cables." Conform to NFPA 70 for conductor properties, including stranding.

B. Material: Copper. Use only copper wire for both insulated and bare grounding conductors.

C. Size: As shown on the drawings.

D. Equipment Grounding Conductors: Insulated with green color insulation. Insulated conductors larger than #6 AWG with black color insulation shall be allowed to be re-identified with green tape.
   1. The equipment grounding conductor shall be routed in the same raceway as its related phase and neutral conductors. Cord-connected equipment requiring an equipment ground shall include the equipment grounding conductor as an integral part of the power cord. Where power is supplied to electronic equipment through a cable and connector, the connector shall contain a pin to continue the equipment grounding conductor to the equipment chassis. Conduit or cable shields shall not be used as the equipment grounding conductor.
   2. Equipment grounding conductors shall be sized as shown on the drawings. If a

grounding conductor size is not shown on the drawings, it shall be sized as required by NFPA 70. The equipment grounding conductor shall be bonded to bonding bushings at each end of each raceway section with a bonding jumper the same size as the initially established minimum size equipment grounding conductor – installed as shown by Figure 1. Where flexible metal conduit is used, a bonding terminal integral to an end connector listed for grounding shall be installed.

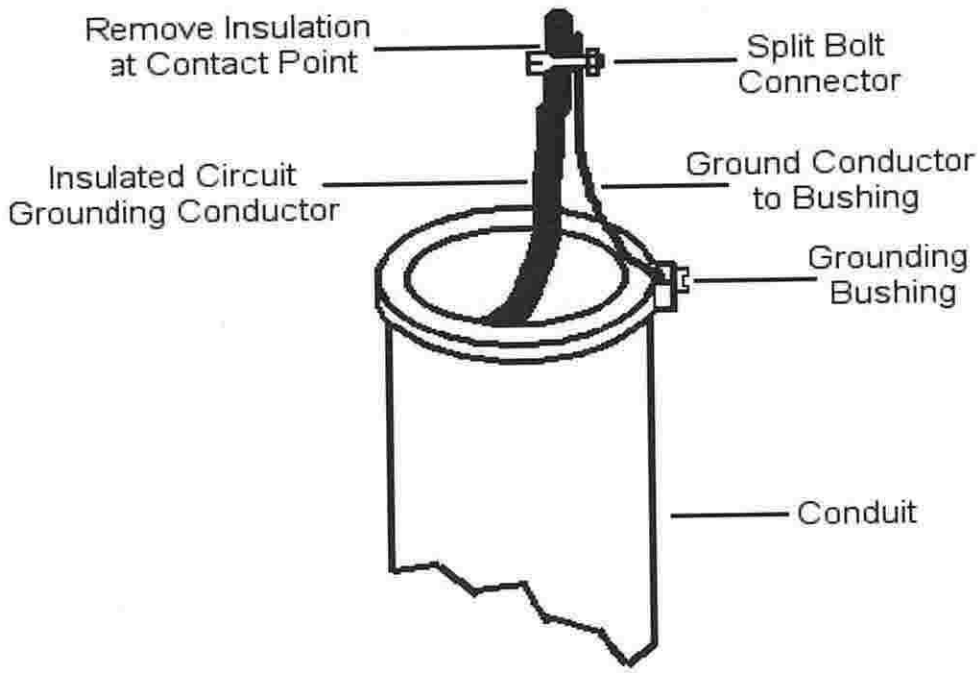

Figure 1 – Bonding of Conduit and Equipment Grounding Conductor

3. Grounding terminals in all receptacles on multi-outlet assemblies shall be hardwired to an equipment grounding conductor. Strips that depend upon serrated or toothed fingers for grounding shall not be used.
4. A separate equipment grounding conductor shall be provided for each overcurrent device and as required by NFPA 70.

E. Isolated Grounding Conductors: Insulated, with green color insulation and yellow and red bands.

F. Grounding Electrode Conductors: Stranded copper cable.

G. Underground Conductors: Bare, tinned, stranded copper conductors, except as otherwise indicated.

H. Bare Copper Conductors: Conform to the following:
   1. Solid conductors: ASTM B 3.
   2. Assembly of stranded conductors: ASTM B 8.
   3. Tinned conductors: ASTM B 33.

2.03 MISCELLANEOUS CONDUCTORS

A. Grounding Bus: Bare, annealed-copper. Size as indicated on drawings.

B. Braided Bonding Jumpers: Where electrical continuity across the shock mounts is necessary, bonding jumpers shall be installed across each shock mount. Jumpers of this application shall have a maximum thickness of 0.025-inch, so that the damping efficiency of the mount is not impaired. In severe shock and vibration environments, solid straps may be corrugated, or flexible wire braid may be used. Braids are to be terminated with copper ferrules.

C. Raceway Bonding Jumpers: Copper, minimum size #6 AWG unless otherwise noted.

2.04 CONNECTOR PRODUCTS

PART 3 - EXECUTION

3.01 APPLICATION

A. Equipment Grounding Conductors: All metallic non-current carrying parts of electrical equipment shall be grounded with equipment grounding conductors whether or not shown on the drawings. Equipment grounding conductors shall be green insulated copper conductors unless otherwise indicated. When these conductors are not sized nor shown on the contract drawings, size them in accordance with the NEC. In no case, however, shall these conductors be smaller than No. 12 AWG. Install green, equipment grounding conductor with all feeder and branch circuit conductors.

1. Air-Duct Equipment Circuits: Install an equipment grounding conductor to duct-mounted electrical devices operating at 120 V and above, including air cleaners and heaters. Bond conductor to each unit and to air duct.
2. Water Heater, Heat-Tracing, and Antifrost Heater Circuits: Install a separate equipment grounding conductor to each electric water heater, heat-tracing assembly, and antifrost heating cable. Bond conductor to heater units, piping, connected equipment, and components.

B. Signal and Communication Systems:

1. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.
2. Enclosures: Ground all enclosures of electrical and electronic wiring and distribution equipment in accordance with requirements of NFPA 70.

C. Separately Derived Systems: Ground as shown on the drawings, according to NFPA 70.

D. Grounding Bushing: Conduit fittings and joints shall be electrically continuous with bonding resistance of 1 milliohms or less between joined parts. Provide grounding bushing on all feeder conduit (both ends and at pull/junction boxes in between).

E. Conduit or Cable Shields: Conduit or cable shields shall not be used as the equipment grounding conductor.

F. Metallic Non-current Carrying Parts: All metallic non-current carrying parts of electrical and mechanical equipment throughout the facility shall be bonded by welding with a separate equipment grounding conductor, #4 AWG (with green insulation) or larger and connected to the multipoint ground system. All metallic non-current carrying parts of

electrical and mechanical equipment shall be grounded with equipment grounding conductors whether or not shown on the drawings.

3.02 INSTALLATION

A. The grounding system shall meet the requirements of NFPA 70. Grounding system shall be as indicated on the contract drawings and as specified herein. Reference IEEE 1100 when installing equipment. In no case shall NFPA 70 be violated.

B. Equipment Enclosure Grounding:

1. Bare wire, wrapped around connecting screws or mounting bolts and screws is not acceptable as a grounding connection. All ground lugs shall be of a noncorrosive material suitable for use as a grounding connection, and must be compatible with the type of metal being grounded. Ground lugs shall be mounted on clean, bare metal surfaces that are free of paint, rust, etc.

C. Raceway Grounding:

1. Surface metal raceways, wireways, or cable rack systems shall be installed in a manner that ensures electrical continuity, or short bare copper bonding jumpers shall be installed between adjacent raceway sections to ensure proper bonding. Unless otherwise indicated, the minimum size for these bonding jumpers shall be #6 AWG.

D. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding-clamp connectors.

E. Interior Metal Piping and Air Ducts: Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fans, blowers, electric heaters, and air cleaners. Use braided-type bonding straps.

F. Fault Protection: Prevent equipment parts subject to human contact during operation and maintenance from being electrically energized when powering faults or components fail. Ground parts with a low impedance path to the chassis or cabinets in which they are mounted.

G. Gas Piping System: Bond aboveground portion of gas piping system upstream from the equipment shutoff valve, in accordance with NFPA 70.

3.03 CONNECTIONS

A. Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series. Thoroughly clean surfaces and remove rust and foreign material so that connections are made with clean, bare metal at points of contact. Coat and seal connections having dissimilar metals with inert materials to prevent future penetration of moisture to contact surfaces.

B. Exothermic-Welded Connections: Use for connections to structural steel, for underground connections, ground plates and where indicated on drawings. Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

C. Terminations: Terminate insulated equipment grounding conductors for feeders with pressure type grounding lugs. Where metallic raceways terminate at nonmetallic or nonconductive housings, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to the ground bus in the housing. Bond electrically non-continuous conduits at both entrances and exits with grounding bushings and bare grounding conductors.

D. Raceway Grounding: Surface metal raceways, wireways, or cable rack systems shall be installed in a manner that ensures electrical continuity. Insulated copper bonding jumpers shall be installed between adjacent raceway sections to ensure proper bonding. Uninsulated conductors shall not be used. Unless otherwise indicated, the minimum size for these bonding jumpers shall be #6 AWG. All metallic raceway penetrations into a facility structure shall be bonded to the earth electrode system.

E. Tightening of Connectors: Tighten grounding and bonding connectors and terminators, including screws and bolts, in accordance with torque tightening values specified in UL 486A.

F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Mechanical connections using a Burndy "Hyground Connector", Thomas and Betts Compression Connector or equivalent equipment when operated at the manufacturer's recommended pressure to develop a minimum force of 12 tons is acceptable as approved pressure connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on ground conductor. Hydraulically crimped connectors are not acceptable in the lightning protection system.

3.04 FIELD QUALITY CONTROL

A. Independent Testing Agency: Engage an independent electrical testing organization to perform tests described below. Ensure no connection to utility power is made during testing.

1. Tests: Subject the completed grounding system to a test using a ground test null balance megger at system ground well, where a 10 ohm measurement is required. Measure ground resistance not less than 2 full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by the 2-point method in accordance with IEEE 81.

a. Earth electrode system ground shall not exceed 5 ohms.

b. All grounds, bonds, and continuity tests that fail to meet the minimum standards and resistivity levels as set forth in these electrical specifications shall have their materials removed and replaced and shall have all workmanship redone. If after retesting they fail to meet minimum requirements, the work shall be redone until such work and retesting passes the minimum design parameter requirements. c. All sections of joined conduit, cable tray, or structural steel columns and beams shall have the first 10 consecutive connections of each system tested for continuity/grounding/bonding. If they test within acceptable limits, then test every 10th consecutive connection thereafter. If any test point is higher than specified in these electrical sections then test

the next 10 consecutive connections and/or as many points as required to get a satisfactory reading below the specified rating. If more than 10 test points of each system are above the specified values, then all continuity/ grounding/bonding points in that system shall be tested.

B. Report: Prepare test reports, certified by the testing organization of ground resistance at each test location. Include observations of weather and other phenomena that may affect test results.

3.05 ADJUSTING AND CLEANING

A. Restore surface features, including vegetation, at areas disturbed by work of this Section. Reestablish original grades, except as otherwise indicated. Where sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, cable laying, and other activities to their original condition. Include top soiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Section 26 05 00, "Common Work Results for Electrical." Maintain restored surfaces.

END OF SECTION
26 05 26

SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes secure support from the building structure for electrical items by means of hangers, supports, anchors, sleeves, inserts, seals, and associated fastenings.

1.02 REFERENCE STANDARDS

A. The publications listed below form a part of this Specification to the extent referenced. The publications listed below are referenced as the latest edition published as of the date of this document. The publications are referred to within the text by the basic designation only.

B. ASTM International (ASTM)
   1. ASTM A 36 Standard Specification for Carbon Structural Steel
   2. ASTM A 53 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

C. National Fire Protection Association (NFPA)
   1. NFPA 70 National Electrical Code 2008

D. Underwriters Laboratories (UL)

1.03 SUBMITTALS

A. Product data for each type of product specified.

1.04 QUALITY ASSURANCE

A. Electrical Component Standards: Components and installation shall comply with NFPA 70. Electrical components shall be listed and labeled by UL or other approved, nationally recognized testing and listing agency that provides third-party certification follow-up services.

PART 2 – PRODUCTS

2.01 COATINGS

A. Supports, support hardware, and fasteners shall be protected with zinc coating or with treatment of equivalent corrosion resistance using approved alternative treatment, finish, or inherent material characteristic. Product for use outdoors shall be hot-dip galvanized.

2.02 MANUFACTURED SUPPORTING DEVICES

A. Raceway Supports: Clevis hangers, riser clamps, conduit straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring steel clamps.

B. Fasteners: Types, materials, and construction features as follows:
   1. Expansion Anchors: Carbon steel wedge or sleeve type.
   2. Toggle Bolts: All steel springhead type.
   3. Powder Actuated Fasteners: Not Allowed.

C. U-Channel Systems: 16-gage steel channels, with 9/16-inch diameter holes, at a minimum of 8 inches on center, in top surface. Provide fittings and accessories that mate and match with U-channel and are of the same manufacture.
D. Conduit Sealing Bushings: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for non-armored electrical cables in conduits subject to exposure to water and/or oil penetration at conduit joints. Provide plugs with number and size of conductor gripping holes as required to suit installation. Construct body of malleable iron casting with hotdipped galvanized finish. Support systems shall be capable of carrying the weight of the box and its contents.
E. Fasteners for Plastic-Laminated and Metal Signs: Self-tapping stainless steel screws or No. 10/32 stainless steel machine screws with nuts and flat end lock washers. Provide steel channel supports with 9/16-inch diameter holes at a maximum of 8 inches on center, in at least one surface. Fittings and accessories to mate and match with channels and to be from the same manufacturer.

2.03 FABRICATED SUPPORTING DEVICES

A. General
    1. Shop or Field-fabricated supports or manufactured supports assembled from U-channel components.

B. Steel Brackets: Fabricated of angles, channels, and other standard structural shapes. Connect with welds and machine bolts to form rigid supports.

C. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
    1. Sheet Metal: Fabricate from galvanized sheet metal; round tube closed with welded spiral seams or welded longitudinal joint. Fabricate sleeves from the following gage metal for sleeve diameter noted:
        a. 3-inch and smaller: 20-gage
        b. 4-inch to 6-inch: 16 gage
        c. over 6-inch: 14 gage
        d. Steel Pipe: Fabricate from Schedule 40 galvanized steel pipe.

D. Supplementary Structural Supports: ASTM A 36 steel shapes.
    1. Supports and supporting devices shall be designed and installed in accordance with IBC Section 1613 for seismic category C.
    2. Provide the installation of supplementary structural supports required for attachment of hangers and other devices supporting electrical equipment and conduits.
    3. Members welded to main structural members shall be equal to the specification for the main structural member.
    4. Size support members for their actual loads and safety factors without excessive deflection and with consideration for rigidity under vibration.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install supporting devices to fasten electrical components securely and permanently in accordance with NFPA 70. Coordinate with the building structural system and with other electrical installation.

B. Raceway Supports: Comply with NFPA 70 and the following requirements:

1. Conform to manufacturer's recommendations for selection and installation of supports.
2. Strength of each support shall be adequate to carry design load plus 25 percent for future use, multiplied by a safety factor of at least four. Where this determination results in a safety allowance of less than 200 pounds, provide additional strength until there is a minimum of 200 pounds safety allowance in the strength of each support.
3. Install individual and multiple (trapeze) raceway hangers and riser clamps as necessary to support raceway. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assembly and for securing hanger rods and conduits.
4. Support parallel runs of horizontal raceways together on trapeze-type hangers.
5. Support individual horizontal raceways by separate pipe hangers. Spring steel fasteners may be used in lieu of hangers only for 1 1/2-inch and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings only. For hanger rods with spring steel fasteners, use 1/4-inch diameter or larger threaded steel. Use spring steel fasteners that are specifically designed for supporting single conduits or tubing.
6. Space supports for raceway in accordance with Table I of this Section. Space supports for raceway types not covered by the above in accordance with NFPA 70.
7. Support exposed and concealed raceway within 12 inches of unsupported boxes and access fittings. In horizontal runs, support at the boxes and access fittings may be omitted where boxes or access fittings are independently supported and raceway terminals are not made with chase nipples or threadless box connectors.
8. In vertical runs, arrange support so the load produced by the weight of the raceway and the enclosed conductors are carried entirely by the conduit supports with no weight load on raceway terminals.
9. Neither raceways nor boxes shall be fastened to suspended ceiling supports.

C. Miscellaneous Supports: Support miscellaneous electrical components as required to produce the same structural safety factors as specified for raceway supports. Install metal channel racks for mounting cabinets, panelboards, disconnects, control enclosures, pull boxes, junction boxes, transformers, and other devices.

D. Open Overhead Spaces: In open overhead spaces, cast boxes threaded to raceways need not be supported separately except where used for fixture support; support sheet metal boxes directly from the building structure or by bar hangers. Where bar hangers are used, attach the bar to raceways on opposite sides of the box and support the raceway with an approved type of fastener not more than 24 inches from the box. Cast metal boxes having thread-less connectors and sheet-metal boxes shall be supported directly from the building structure or by bar hangers.

E. Sleeves: Install in concrete slabs and walls and all other fire-rated floors and walls for raceway and cable installations. For sleeves through fire-rated wall or floor construction, apply UL-listed firestopping sealant in gaps between sleeves and enclosed conduits and cables in accordance with requirements of Section 07 92 00, "Joint Sealants."

F. Fastening: Unless otherwise indicated, fasten electrical items and their supporting hardware securely to the building structure, including but not limited to conduits, raceways, cables, cable trays, square duct, cabinets, panel boards, transformers, boxes, disconnect switches, lighting fixtures, and control components in accordance with the following:

1. Fasten by means of wood screws, nails, screw-type nails, carriage bolts, or lag screws of equal holding strength on wood; toggle bolts on hollow masonry units concrete inserts or expansion bolts on concrete or solid masonry; and machine screws, welded threaded studs, or spring-tension clamps on steel. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used instead of expansion bolts and machine or wood screws. Do not weld conduit, pipe straps, or items other than threaded studs to steel structures. In partitions of light steel construction, use sheet metal screws.
2. Holes cut to a depth of more than 1 1/2 inches in reinforced concrete beams or to a depth of more than 3/4-inch in concrete shall not cut the main reinforcing bars. Patch holes that are not used with like and kind materials.
3. Coordinate any cutting or boring of structural beams with Structural Engineer prior to any work being done.
4. Ensure that the load applied to any fastener does not exceed 25 percent of the proof test load. Use vibration- and shock-resistant fasteners for attachments to concrete slabs.
5. Coordinate with structural engineer on expansion joints used to support raceway.

G. Tests: Provide all calibrated jacks, jigs, and fixtures, indicate scales required for reliable testing. Obtain the Structural Engineer's approval before transmitting loads to the structure. Test to 90 percent of rated proof load for fastener. If fastening fails test, revise all similar fastener installations and retest until satisfactory results are achieved. Test pull-out resistance of one of each type, size, and anchorage material for expansion anchors and toggle bolts.

3.02 TABLE I: SPACING FOR RACEWAY SUPPORTS

HORIZONTAL RUNS

Raceway Size (Inches)	No. of Conduits In Run	Location	RMC & IMC (1)	EMT (1)
1/2,3/4	1 or 2	Flat ceiling or wall.	5	5
1/2,3/4	1 or 2	Where it is difficult to provide supports except at intervals fixed by the building construction.	7	7
1/2,3/4	3 or more	Any location.	7	7
1/2	13 or more	Any location.		
1 & larger		1 or 2 flat ceiling or wall	6	6
1 & larger		1 or 2 where it is difficult To provide supports except at intervals fixed by the building construction	10	10
1 & larger		3 or more any location	10	10

Any	Concealed	10	10
VERTICAL RUNS			
1/2, 3/4	Exposed	7	7
1, 1-1/4	Exposed	8	8
1-1/2 and larger	Exposed	10	10
Up to 2	Shaftway	14	10
2-1/2	Shaftway	16	10
3 & larger	Shaftway	20	10
Any	Concealed	10	10

NOTES:

(1) Maximum spacing of supports (feet).

(2) Maximum spacing for IMC above apply to straight runs only.
Otherwise, the maximums for EMT apply.

Abbreviations:
EMT: Electrical metallic tubing
IMC: Intermediate metallic conduit
RMC: Rigid metallic conduit

END OF SECTION
26 05 29

SECTION 26 05 33
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. The publications listed below are referenced as the latest edition published as of the date of this document. The publications are referred to within the text by the basic designation only.

1. American National Standards Institute (ANSI)
    a. ANSI C80.1 Rigid Steel Conduit, Zinc-Coated
    b. ANSI C80.3 Electrical Metallic Tubing, Zinc-Coated
    c. ANSI C80.6 Intermediate Metal Conduit Zinc-Coated
2. National Electrical Contractors Association (NECA)
    a. NECA Standard of Installation
3. National Electrical Manufacturers Association (NEMA)
    a. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum)
    b. NEMA FB1 Fitting, Cast Metal Boxes, and Conduit Bodies, and Cable Assemblies
    c. NEMA ICS-6 Industrial Control System Enclosure
    d. NEMA OS1 Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
    e. NEMA RN1 Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit
4. National Fire Protection Association (NFPA)
    a. NFPA 70 National Electrical Code 2008
5. Occupational Safety and Health Administration (OSHA)
    a. 29 CFR 1910.7 Definitions and Requirements for a Nationally Recognized Testing Laboratory (NRTL)
6. Underwriters Laboratories (UL)
    a. UL 1 Flexible Metal Conduit
    b. UL 1242 Intermediate Metal Conduits
    c. UL 360 Liquid-tight Flexible Metal Conduit
    d. UL 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors
    e. UL 5 Surface Metal Raceways and Fittings
    f. UL 50 Enclosures for Electrical Equipment
    g. UL 514A Metallic Outlet Boxes
    h. UL 514B Fittings for Conduit and Outlet Boxes
    i. UL 6 Rigid Metal Conduit
    j. UL 797 Electric Metallic Tubing
    k. UL 870 Wireways, Auxiliary Gutter, and Associated Fittings
7. Steel Structures Painting Council (SSPC)
    a. SSPC PS-10.01 Hot-Applied Coal Tar Enamel Painting System

1.02 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring. Refer to Section 26 05 26, "Grounding and Bonding for Electrical Systems" for

Related grounding requirements.

1.03 RACEWAY COMPONENTS

A. Raceways include the following:
   1. Rigid metal conduit (RMC).
   2. Intermediate metal conduit (IMC).
   3. Electrical metallic tubing (EMT).
   4. Flexible metal conduit (FMC).
   5. Liquidtight flexible conduit (LFMC).
   6. Wireway.
   7. Nonmetallic tubing and conduit.

1.04 BOXES, ENCLOSURES AND CABINETS

A. Boxes, enclosures, and cabinets include the following:
   1. Device boxes.
   2. Outlet boxes.
   3. Pull and junction boxes.
   4. Conduit bodies.
   5. Cable access boxes.
   6. Cabinets and hinged cover enclosures.

1.05 SUBMITTALS

A. The following shall be submitted in accordance with Section 01 33 00, "Submittal Procedures":
   1. Nonstandard boxes, enclosures and cabinets: Include layout drawings showing components, wiring, supports, and seismic bracing.
   2. Surface raceway
   3. Wireway and fittings
   4. Floor boxes
   5. Hinged cover enclosures and cabinets
   6. Operation and Maintenance Data: Submit in accordance with Section 01 78 23, "Operation and Maintenance Data."

1.06 QUALITY ASSURANCE

A. Comply with the latest edition of NFPA 70 for components and installation. Boxes shall be sized in accordance with NFPA 70 Article 376. Comply with NECA.

B. Listing and Labeling: Provide products specified in this Section that are listed and labeled. The terms "Listed and Labeled" as defined in NFPA 70 Article 100.

C. Listing and Labeling Agency Qualifications: A NRTL as defined in 29 CFR 1910.7.

D. Layout Coordination: Coordinate layout and installation of raceways and boxes with other construction elements to ensure adequate headroom, working clearance and access.

PART 2 – PRODUCTS

2.01 GENERAL

A. Enclosures shall conform to NEMA standards. All materials procured under this Section

shall be in accordance with FAA 1217f and FAA STD 019E.

2.02 METAL CONDUIT AND TUBING

A. Rigid Metal Conduit (RMC)

B. ANSI C80.1 and UL 6.

C. Plastic-Coated Steel Conduit and Fittings: NEMA RN1.

D. Intermediate Metal Conduit (IMC): ANSI C80.6 and UL 1242.

E. Electrical Metallic Tubing (EMT) and Fittings: UL 797 and ANSI C80.3 with compression-type fittings. Screw-type fittings are not acceptable. Use for lighting, building power, fire alarm, environmental, and communication circuits in concealed areas where not subject to physical damage, such as suspended ceilings and furred walls. Connectors shall have insulated-throat, smooth bell shaped end.

F. Flexible Metal Conduit (FMC): Zinc-coated steel; UL 1 and WW-C-566. Conduit and fittings shall be type listed for grounding. Provide FMC in minimum 24 inches or 10 diameter lengths for connection to motors and equipment subject to vibration and movement.

G. Liquidtight Flexible Metal Conduit (LFMC): Flexible steel conduit with PVC jacket; UL 360.

H. Flexible Non-Metallic Conduit: Shall not be used.

I. Fittings: NEMA FB1 and UL 514B, compatible with conduit and of the threaded type. Set screw fittings are not allowed. Conduit expansion and deflection fittings shall be watertight. Fabricate from material compatible with conduit to be used. Expansion and deflection fittings shall be equipped with bonding jumper cable to provide electrical continuity. Bushings inside boxes or enclosures shall be insulated grounding type.

J. Underground Fittings: Shall be protected by field wrapping, 0.01-inch thick pipe wrapping plastic tape applied with 50 percent overlap.

2.03 WIREWAYS

A. Material: Sheet metal sized and shaped as indicated.

B. Fittings and Accessories: UL 870. Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps and other fittings to match and mate with wireway as required for complete system. Provide insulated grounding bushings on all conduit terminations to wireways and galvanized rigid steel as indicated in PART 3 of this Section. Select features where not otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

C. Wireway Covers: Hinged type with clamps to close, unless noted otherwise.

D. Finish: Manufacturer's standard enamel finish. Provide NEMA rating appropriate for use intended.

2.04 OUTLET AND DEVICE BOXES

A. Boxes shall not contain concentric knockouts.

B. Sheet Metal Boxes: NEMA OS1 and UL 514A.

C. Cast Metal Boxes: NEMA FB1, type FD, cast ferro-alloy box with gasketed cover.

D. Exposed Outlet Boxes: UL 514A steel, malleable iron or cast iron boxes with threaded conduit entry for surface-mounting in areas having exposed conduit systems.

E. Flush Outlet Boxes: UL 514A hot-dip galvanized steel, square or rectangular, 2 1/8 inches deep by 4 inches square, with extension ring where necessary.

F. Boxes for Lighting Fixtures: Flush-mounted or in concealed areas to be octagonal, 4 inches by 2 1/8 inches deep, galvanized steel, with fixture stud supports and attachments to properly support ceiling and bracket type lighting fixtures. Surface-mounted to be malleable or cast iron boxes with threaded conduit hub.

G. Fittings: UL 514B.

H. Boxes in concrete shall be cast metal.

2.05 PULL AND JUNCTION BOXES

A. Small Sheet Metal Boxes: NEMA OS1 and UL 514A.

B. Cast Metal Boxes: Threaded-hub type conforming to UL 514A and UL 514B. Galvanized Steel conforming to UL 514A and UL 514B.

2.06 CABINETS AND ENCLOSURES

A. Hinged Cover Enclosures: NEMA 250, steel enclosure with continuous hinge cover and handle. Finish inside and out with manufacturer's standard enamel.

B. Cabinets: NEMA 250, type 1 code gauge galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Hinged doors for large enclosures (particularly panelboards) shall have a minimum of a double latch or 4 screws for ease of opening and closing doors. Include metal barriers to separate wiring of different systems and voltage, and include accessory feet where required for freestanding equipment. Cabinets shall be constructed with interior dimensions not less than those indicated on the drawings. Provide 5/8 inch plywood backboard unless otherwise indicated. Key latch to match panelboards. Provide two keys with each cabinet unless otherwise notified.

C. Safety: UL 50.
D. Control Enclosures: NEMA ICS-6.
E. Telephone and Signal Cabinets: Construct in accordance with NFPA 70 Article 312.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive raceways, boxes, enclosures and cabinets for compliance with installation tolerances and other conditions affecting performance of the raceway system. Do not proceed with installation until unsatisfactory conditions have been corrected. Examine raceways prior to installation. No crushed or deformed raceways shall be installed.

3.02 WIRING METHODS

A. Use the following wiring methods:
   1. Connection to Vibrating Equipment (including transformers and hydraulic, pneumatic, or electric solenoid or motor-driven equipment): LFMC.
   2. Damp or Wet Locations: RMC.
   3. Exposed: RMC or IMC. Rigid metal conduit shall be used in the electrical/mechanical room to a height of 8 feet above finished floor.
   4. Concealed: EMT, IMC, RMC (EMT shall only be used for lighting, receptacles, communications, fire alarm, security and environmental wiring in concealed locations indoors).
   5. Boxes and Enclosures: NEMA Type 1, except in damp or wet locations use NEMA Type 4X, stainless steel.
   6. Conduit Use: Install RMC or IMC for all branch circuit panelboard feeders, distribution panel board feeders, transformer feeders, motor control center feeders and distribution switchboard feeders. Install EMT for communication, lighting and power branch circuits. USE RMC for all exposed conduit systems within electrical and mechanical equipment rooms and electrical closets from floor level to a height of 8 feet above finished floor. Conduit for communications, lighting and power branch circuits may be transitioned to EMT above 8 feet above finished floor.

3.03 INSTALLATION

A. Install raceways, boxes, enclosures and cabinets as indicated, according to manufacturer's written instructions. Minimum size raceway shall be ¾ inch, unless otherwise noted. Conduit for telephone and signal systems shall be as follows:
   1. ¾ inch conduit may be used for lengths not exceeding 100 feet.
   2. 1 inch conduit shall be used for lengths exceeding 100 feet.
   3. No run shall contain more than four 90 degree bends, or the equivalent.
   4. Provide pull and junction boxes as required to meet the above criteria.

B. Conduit/Raceway Installation: Conceal conduit, including EMT, unless otherwise indicted, within finished walls, ceilings and floors. Raceways shall not be attached to the ceiling suspension system. Raceways shall not be attached to or supported by roof decks. Do not anchor or strap raceways to wall furring channels or to other raceways. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot water pipes. Do not install raceways near uninsulated high temperature services without prior approval of the Contracting Officer's Technical Representative. Install horizontal raceway runs above water and steam piping.
   1. Install raceways level and square and at proper elevations. Provide adequate headroom. Conduits and raceways shall run parallel or perpendicular to building structural members.
   2. Install conduit to drain moisture to nearest outlet or pull box.

3. Inside radii of bends in conduits shall not be less than 6 times the nominal diameter.
4. No run shall contain more than four 90 degree bends, or the equivalent between conduit terminations.
5. Signal raceway 2 inches and smaller shall have no run of ¾ inch exceed 50 feet; or 100 feet for 1 inch or larger and a maximum of four 90 degree bends, or the equivalent. Install pull boxes or junction boxes where necessary to comply with these requirements.
6. Provide conduit bodies, pull and junction boxes required to meet the bends criteria.
7. Conduit bodies shall be used for all critical power circuits.
8. Install a pull wire in all empty tubing and conduit systems. Pull wire shall be No. 14 AWG zinc-coated steel or plastic with a minimum 200 pound tensile strength. Provide 10 inches of slack at each end of the pull wire.
9. Complete raceway installation before starting conductor installation. Raceways shall be fished and swabbed before conductors are pulled.

C. Support of Raceways: Support raceways and boxes as specified in Section 26 05 29, "Hangers and Supports for Electrical Systems." Boxes for fixtures on suspended ceilings shall be supported independently of the ceiling supports. Boxes shall not be supported from sheet metalroof decks.

D. Raceway Protection: Use temporary closures to prevent foreign matter from entering raceway. Prevent the lodgment of plaster, dirt or trash in raceways, boxes, fittings, and equipment during construction. Clogged raceways shall be entirely freed of obstructions or shall be replaced. Clean each conduit run before pulling in conductors. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portion of bends is not visible above finished slab.

E. Bends and Offsets: Make bends and offsets so the inside diameter is not reduced. Unless otherwise indicated, keep the legs of a bend in the same plane and the straight legs of offsets parallel. IMC bends shall be fabricated with tooling specifically designed for bending IMC. Signal conduit that is 1 inch and larger shall have a minimum inside radii 12 times the nominal conduit diameter. No run shall contain more than four 90 degree bends or the equivalent. Provide pull and junction boxes required to meet the bends criteria. For critical power conduits, only conduit bodies are allowed.

F. Raceway Fittings: Use raceway fittings compatible with raceway and suitable for use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings, except as otherwise indicated.

G. Concealed Raceways: Run concealed raceways with a minimum of bends in the shortest practical distance considering the type of building construction and obstructions, except as otherwise indicated.

H. Raceways Embedded in Slabs: Install in middle third of the slab thickness where practical and leave at least 1 inch concrete cover. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement. Space raceways laterally to prevent voids in the concrete. Run conduit larger than 1 inch trade size parallel to or at right angles to main reinforcement. When at right angles to reinforcement, place conduit close to slab support.

I. Raceways in Damp, Concealed or Underground Locations: Raceways or sections of Raceways which pass through to damp, concealed, or underground locations shall be of a type allowed for such locations by NFPA 70 and shall extend a minimum of 12 inches beyond the damp, concealed, or underground area.

J. Floor and Wall Penetrations: Penetrations through walls or floors shall be sealed to prevent moisture and rodent entry and to deter air transfer. Seal penetrations of walls, which separate individually temperature or humidity controlled areas to prevent air circulation. Type of sealants shall be as specified in Section 07 92 00, "Joint Sealants."

K. Installation at Structural Members: Install raceways parallel to or at right angles to nearby surfaces of structural members and follow the surface contours as much as practical. Run parallel or banked raceways together, on common supports where practical. Make bends in parallel or banked runs from same centerline to make bends parallel. Use factory elbows only where they can be installed parallel; otherwise, provide field bends for parallel raceways.

L. Joining of Raceway Fittings: Join raceway fittings designed and approved for the purpose and make joints tight. Use bonding locknuts and bushings at connections subject to vibration. Use bonding jumpers where joints cannot be made tight. Use insulated bushings for all conduits to protect conductors. Provide expansion fittings for all raceways passing through the building expansion joints and for conduit runs longer than 300 feet.

M. Terminating: Where terminating in threaded hubs, screw the raceway or fitting tight into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align the raceway so the coupling is square to the box and tighten the chase nipple so no threads are exposed.

N. Pull Wires: Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or monofilament plastic line having not less than 200 pound tensile strength. Leave not less than 12 inches of slack at each end of the pull wire.

O. Stub-Up Connections: Extend conduits through concrete floor for connection to freestanding equipment with an adjustable top or coupling threaded inside for plugs and set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; flexible metal conduit may be used 6 inches above the floor. Where equipment connections are not made under this Contract, install screwdriver-operated threaded plugs flush with floor.

P. Flexible Connections: Use maximum of 6 feet of flexible conduit for recessed and semi-recessed lighting fixtures; for equipment subject to vibration, noise transmission or movement; and for all motors. Use liquid-tight flexible conduit in wet or damp locations. Provide #6 AWG stranded insulated copper bonding jumper terminated on an approved grounding fitting at each end of the flex metal conduit.

Q. Metal Conduits: Metal conduits shall be mechanically and electrically continuous between outlets, junction boxes and pull boxes, panels, cabinets and similar equipment. Conduits shall enter and be secured to enclosures so that each system is electrically continuous throughout.

R. Enclosures and Cabinets: Install hinged cover enclosures and cabinets plumb. Support at each corner.

S. Grounding Connections: Provide grounding connections for raceways, boxes, and components. Tighten connectors and terminals, including screws and bolts, according to equipment manufacturer's published torque tightening values. Where manufacturer's torque requirements are not indicated, tighten connectors and terminals according to tightening torques specified in UL 486A. Provide ground bushings for all feeder conduits at switchgear, switchboards, panelboards, pull boxes and all other termination points. Where knockouts are used, provide double locknuts, one on each side with a grounding bushing or grounding locknut used on the inside (use grounding bushings on conduit 1-inch and larger).

T. Field-Cut Conduit: Where conduit has to be cut in the field, it shall be cut square. The cut ends of the field-cut conduit shall be reamed to remove burs and sharp edges.

U. Field-Threaded Conduit: Where threads have to be cut on conduit, the threads shall have the same effective length and shall have the same thread dimensions and taper as specified for factor-cut threads on conduit.

V. Boxes: Shall be provided in the wiring or raceway system for pulling wires, making connections and mounting devices or fixtures. Each box shall have the volume required by NFPA 70 for the number and size of conductors in the box. Label all junction/pull boxes with panelboard name and circuit number with permanent marker.

W. Outlet Boxes: Each outlet box shall have a machine screw which fits into a tapped hole in the box for the ground connection. Attach boxes to ceilings which are not suspended in at least two places. Distribute lighting fixture load over the ceiling boxes.

X. Mounting Light Fixtures: Boxes for fixtures shall not be less than 4 inches square and shall be above ceiling or in structure. Provide flex conduit to light fixture from box. Conduit shall not pass through light fixture.

Y. Concealed Wiring: Boxes installed for concealed wiring shall be provided with extension rings or plaster covers. The front edge of the box shall be flush or recessed not more than 1/4-inch from the finished wall surface (whether the finished surface is drywall, or drywall and a sound absorbing material).

Z. Boxes in Masonry Block or Tile Walls: Shall be square-cornered title-type, or standard boxes shall have square-cornered tile-type covers.

AA. Wet Locations: Cast metal boxes installed in wet locations, in concrete and boxes installed flush with exterior surfaces shall be gasketed.

BB. Mounting: Install switch box on the strike side of the door at mounting height of 48 inches. Unless otherwise indicated, mounting height of receptacle boxes shall be 18 inches. Height of wall-mounted outlet box is defined as the height from finished floor to horizontal centerline of the cover plate. Where outlets are indicated adjacent to each other, mount outlets in a symmetrical pattern with tops at the same elevation. Where outlets are indicated adjacent, but with different mounting heights, line up outlets on a

vertical line. Verify the final location of each outlet before installation. Remove and relocate outlet boxes placed in an unacceptable position. At fire-rated partitions, offset boxes to prevent back-to-back installation.

CC. Box Openings: Provide only the openings necessary to accommodate the conduits at the individual location. When this is not practical, plug unused openings.

DD. Junction, Transition, and Pull Boxes: Install junction, transition, and pull boxes so that covers are not readily accessible. Boxes in concealed areas of ceiling or wall shall be accessible through removable panels. Locate pull boxes to permit easy pulling of wire or cables. Securely attach boxes to structural and framing members using compatible fasteners of adequate size. Bolt wall-mounted boxes to steel profiles fastened to the wall.

EE. Grounding: Provide each box with a green machine screw. Screw into tapped hole in the box for ground wire or lug connection.

FF. RMC or IMC Below Slab on Grade or Underground: The conduit shall conform to SSPC PS-10.01 or shall be field wrapped with 0.01 inch thick pipe wrapping plastic tape applied with 50 percent overlay.

GG. EMT Entering Enclosure Without Threaded Hubs: Provide a connector with threads and cast or machined locknut. The connector body and locknut shall be installed so that firm contact is made on each side of the enclosure.

3.04 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, to ensure that coatings, finishes, and cabinets are without damage or deterioration at substantial completion. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer. Repair damage to PVC or paint finishes with matching touchup coating recommended by the manufacturer. Cap stubbed up raceways, including raceways in cabinets, immediately upon installation. The use of paper or rag wads is not acceptable.

B. Galvanic Corrosion Protection: Avoid dissimilar metals in contact anywhere in conduit runs. Where contact cannot be avoided at conduit terminations, treat the connection with joint compound that eliminates galvanic corrosion. Where dissimilar metals are in contact, such as at aluminum cable tray or enclosures and steel supports, separate contact surfaces by using gaskets, non absorptive tape or coating to prevent galvanic corrosion.

3.05 CLEANING

C. Upon completion of installation of system, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches, and abrasions.

END OF SECTION
26 05 33

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

1. This Section included identification of electrical materials, equipment, and installations. It includes requirements for electrical identification components, including but not limited to buried electrical line warnings; identification labeling for raceways, cables, and conductors; operational instruction signs; warning and caution signs; and equipment labels and signs.

1.02 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. The publications listed below are referenced as the latest edition published as of the date of this document. The publications are referred to within the text by the basic designation only.

B. American National Standards Institute (ANSI)
   1. ANSI A13.1 Scheme for the Identification of Piping Systems.

C. National Fire Protection Association (NFPA)
   1. NFPA 70 National Electrical Code.2008

1.03 SUBMITTALS

A. The following shall be submitted in accordance with Section 01 33 00, "Submittal Procedures."

B. Product Data: For each type of product specified.

C. Schedule of Identification Nomenclature: Provide a schedule of identification nomenclature to be used for identification signs and labels.

D. Labels and Signs: Samples for each color, lettering style and other graphic representation required for identification materials.

E. Operation and Maintenance Data: Prepare and distribute operations and maintenance data as specified in Section 01 78 23, "Operation and Maintenance Data."

1.04 QUALITY ASSURANCE

A. Components and installation shall comply with NFPA 70. Comply with requirements of ANSI A13.1 with regard to type and size of lettering for raceway and cable labels.

1.05 SEQUENCING AND SCHEDULING

A. Coordinate installing electrical identification after completing of finishing where identification is applied to field-finished surfaces. Coordinate installing electrical identifying devices and markings prior to installing acoustical ceilings and similar finishes that conceal such items.

PART 2 – PRODUCTS

2.01 GENERAL

A. Materials procured and installed in this Section, as well as identification and nameplates shall be in accordance with FAA 1217f.

2.02 RACEWAY AND CABLE LABELS

A. Manufacturer's Standard Products:
   1. Where more than one type is listed for a specified application, selection can be Installer's option, but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.

B. Size: Conform to ANSI A13.1 for minimum size of letters for legend and minimum length of color field for each raceway or cable size.
   1. Color: Black legend on orange field.
   2. Legend: Indicates voltage and service.

C. Adhesive Labels: Preprinted, flexible, self-adhesive vinyl. Legend is laminated with a clear, weather- and chemical-resistant coating.

D. Pre-tensioned, Wraparound Plastic Sleeves: Flexible, preprinted, color-coded, acrylic bands sized to suit the diameter of the line it identifies and arranged to stay in place by pre-tensioned gripping action when placed in position.

E. Colored Adhesive Tape: Self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

F. Underground Line Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape not less than 6 inches wide by 4 mils thick, compounded for permanent direct-burial service, and embedded continuous metallic strip or core.

G. Printed Legend: Indicates type of underground line.

H. Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.

I. Plasticized Card Stock Tags: Vinyl cloth with preprinted and field-printed legends. Orange background, except as otherwise indicated, with eyelet for fastener.

J. Brass Tags: Metal tags with stamped legend, punched for fastener, 2 inches by 2 inches by 0.05-inch thick.

2.03 ENGRAVED NAMEPLATES AND SIGNS

A. Manufacturer's Standard Products: Where more than one type is listed for a specified application, selection can be Installer's option, but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and this Specification.

B. Engraving Stock: Melamine plastic laminate, 1/16-inch minimum thick for signs up to 20 square inches or 8 inches in length; 1/8-inch thick for larger sizes:

1. Engraved Legend: White letters on black face.
2. Punched for mechanical fasteners.

C. Baked-Enamel Signs for Interior Use: Preprinted aluminum signs, punched for fasteners, with colors, legend and size as indicated or as otherwise required for the application. 1/4-inch grommets in corners for mounting.

D. Exterior, Metal-Backed, Butyrate Signs: Weather-resistant, non-fading, preprinted, cellulose acetate butyrate signs with 0.0396-inch galvanized steel backing, with colors, legend and size appropriate to the application. 1/4-inch grommets in corners for mounting.

E. Fasteners for Plastic-Laminated and Metal Signs: Self-tapping stainless steel screws or No. 10/32 stainless steel machine screws with nuts and flat and lock washers.

2.04 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Cable Ties: Fungus-inert, self-extinguishing, one-piece, self-locking, type 6/6 nylon cable ties with 3/16-inch minimum width; 50 lb minimum tensile strength; minus 40 to plus 185 degree F temperature range; and color as indicated where used for color-coding.

B. Paint: Alkyd-urethane enamel over primer as recommended by enamel manufacturer.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install identification devices according to manufacturer's written instructions. Install labels where indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.

B. Lettering, Colors, and Graphics: Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations used in the contract documents or required by codes and standards. Use consistent designations throughout the project.

C. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work.

D. Self-Adhesive Identification Products: Clean surfaces of dust, loose material, and oily films before applying.

E. Painted Identification: Install painted identification as follows:
1. Clean surfaces of dust, loose material, and oily films before painting.
2. Prime surfaces. For galvanized metal use single-component, acrylic vehicle coating formulated for galvanized surfaces. For concrete masonry units use heavy-duty, acrylic resin block filler. For concrete surfaces use clear, alkali-resistant, alkyd binder-type sealer.
3. Apply one intermediate and one finish coat of silicone alkyd enamel.
4. Apply primer and finish materials according to manufacturer's instructions.

F. Raceway Identification: Identify raceways with color banding and lettering appropriately sized for conduit. Band exposed and accessible raceways of the systems listed below

for identification:

1. Bands: Pre-tensioned, snaparound, colored plastic sleeves; colored adhesive tape; or a combination of both. Make each color band 2 inches wide, completely encircling conduit, and place adjacent bands of 2-color markings in contact, side-by-side.
2. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25 feet in congested areas.
3. Colors: As follows:
    a. Fire alarm system – red.
    b. Fire suppression supervisory and control system - red and yellow.
    c. Telecommunications system - green and yellow.

G. Circuit Box Identification Labels: Install circuit identification labels on boxes. Label externally as follows:

1. Exposed Boxes: Pressure-sensitive, self-adhesive plastic label on cover, as well as "permanent magic marker" on inside cover.
2. Concealed Boxes: Plasticized card stock tags, as well as "permanent magic marker" on inside cover.
3. Labeling Legend: Permanent, waterproof listing of panel and circuit number or equivalent.
4. Underground Electrical Line Paths: During trench backfilling, for exterior underground power, control, signal and communications lines, install continuous underground warning tape located directly above line at 6 to 8 inches below finished grade. Where multiple lines installed in a common trench or concrete envelope, do not exceed an overall width of 16 inches, use a single line marker. Install warning tape for underground wiring, both direct buried and in raceway.
5. Color-Code Conductors: The following field-applied color-coding methods may be used in lieu of factory-coded wire listed in Section 26 05 19, "Low-Voltage Electrical Power Conductors and Cables", for sizes larger than No. 4 AWG. Contractor shall demonstrate non-availability of factory-colored wire before using this application:
    a. Colored, pressure-sensitive plastic tape in half-lapped turns for a distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply the last 2 turns of tape with no tension to prevent possible unwinding. Use 1-inch wide tape in colors as specified. Adjust tape bands to avoid obscuring cable identification markings.
    b. Where conductors are color-coded by this method, they shall be color-coded in accessible raceways, panelboards, outlets, and switches, as well as at all terminations. Conductors in accessible raceways shall be color-coded so that by removing or opening any cover, the coding will be visible.
    c. Phase, ground, and neutral conductors shall be color-coded in accordance with Section 26 05 19, "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES."
    d. Green insulated conductors shall not be re-identified for purposes other than grounding.
    e. White or neutral gray conductors shall not be re-identified for purposes other than grounded neutrals.

H. Power Circuit Identification: Use metal tags for cables, power feeders in pull boxes, junction boxes, handholes, and switchboard rooms:
   1. Legend: 1/4-inch steel letter and number stamping or embossing with legend corresponding to indicated circuit designations and conductor size.
   2. Fasten tags with nylon cable ties; fasten bands using integral ears.

I. Conductor Identification: Apply identification to conductors as follows:
   1. Conduits and Conductors to be extended in the Future: Indicate source and circuit numbers.
   2. Multiple Power or Lighting Circuits in Same Enclosure: Identify each conductor with source, voltage, circuit number and phase. Use color-coding for voltage and phase indication of secondary circuit.
   3. Multiple Control and Communication Circuits in Same Enclosure: Identify each conductor by its system and circuit designation at enclosure and terminations. Use a consistent system of tags, color-coding or cable marking tape.
   4. Warning, Caution, and Instruction Signs: Install warning, caution, and instruction signs where indicated or required to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved, plastic-laminated instruction signs with approved legend where instructions or explanations are needed for system or equipment operation. Install butyrate signs with metal backing for outdoor items.
   5. Equipment Identification: Apply equipment identification labels of engraved plastic laminate on each major unit of equipment, including central or master unit of each system. This includes communication, signal and alarm systems, unless units are specified with their own self-explanatory identification. Provide equipment, required under Division 16 with nameplate indicating equipment name, system voltage(s) and phase. Except as otherwise indicated, provide a single line of text with 1/2-inch high-lettering on 1 1/2-inch high label; where 2 lines of text are required, use larger 2-inch high-label. Use white lettering on black field. Apply labels for each unit of the following categories of equipment.
      a. Panelboards, electrical cabinets and enclosures.
      b. Access doors and panels for concealed electrical items.
      c. Motor starters.
      d. Push-button stations.
      e. Power transfer equipment.
      f. Contactors.
      g. Remote-controlled switches.
      h. Dimmers.
      i. Control devices.

J. Conduit Labeling: Label conduit at each end and at pull boxes with characters a minimum 1/4-inch high.

K. Other Components Labeling: Apply identification labels of engraved plastic laminate for disconnect switches, breakers, push buttons, pilot lights, and similar items for power distribution control components above, except panelboards, and alarm/signal components where labeling is specified elsewhere. For panelboards, provide framed, typed circuit schedules with explicit description and identification of items controlled by each individual breaker. Install labels at locations indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.

END OF SECTION
26 05 53

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes various types of receptacles, connectors, multi-outlet assemblies, wall switches, and cover plates.

1.02 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. The publications listed below are referenced as the latest edition published as of the date of this document. The publications are referred to within the text by the basic designation only.

1. Federal Standards (FS)
    a. FS WC-596 General and Associated Detailed Specifications: Connector, Plug Receptacle, and Cable Outlet, Electrical Power
2. Institute of Electrical and Electronics Engineers (IEEE)
    a. IEEE C62.41 Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits
3. National Electrical Manufacturers Association (NEMA)
    a. NEMA WD-1 General Requirements for Wiring Devices
4. National Fire Protection Association (NFPA)
    a. NFPA 70 National Electrical Code
5. Occupational Safety and Health Administration (OSHA)
    a. 29 CFR 1910.7 Definitions and Requirements for a Nationally Recognized Testing Laboratory (NRTL)
6. Underwriters Laboratories (UL)
    a. UL 20 General Use Snap Switches
    b. UL 498 Electrical Attachment Plugs and Receptacles
    c. UL 943 Ground Fault Circuit Interrupters
    d. UL 1472 Solid-State Dimming Controls

1.03 SUBMITTALS

A. The following shall be submitted in accordance with Section 01 33 00, "Submittal Procedures."

B. Product data for each product specified.

1.04 QUALITY ASSURANCE

A. Comply with NFPA 70, for devices and installation.

B. Listed and Labeled: Provide products that are listed and labeled for their applications and installation conditions and for the environments in which installed. The terms "listed" and "labeled" are as defined in NFPA 70, Article 100.

C. Listing and Labeling Agency Qualifications: Listing and Labeling Agency must be a NRTL as defined in 29 CFR 1910.7.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide products by one of the following:

B. Wiring Devices

1. Arrow Hart Div., Cooper Industries.
2. Bryant Electric, Inc.
3. General Electric Co.
4. Hubbell Inc.
5. Leviton Mfg. Co., Inc.
6. Pass & Seymour/Legrand.
7. Lutron

2.02 WIRING DEVICES

A. Comply with NEMA WD-1 and UL approved specification grade.

B. Enclosures: Interior shall be NEMA 1 equivalent, except as otherwise indicated. Exterior receptacles shall be mounted in waterproof cast outlet boxes with weatherproof-while-in-use covers.

C. Receptacles: All receptacles shall be specification grade in accordance with NEMA WD-1. Wiring terminals shall be of the screw-type. Receptacles with push-in connections or a combination of screw-type and push-in connectors are not acceptable.

1. Straight-Blade: Except as otherwise indicated, comply with FS WC-596 and Specification Grade of UL 498. Provide NRTL labeling of devices to verify compliance.
   a. Rated 20 amperes at 125 and 250 volts AC. 125 volt AC receptacles shall have NEMA WD-1 type 5-20R configuration.
   b. Specification Grade with body of fire resistant non-absorptive thermoplastic material.
   c. 2-pole, 3-wire grounding type with polarized parallel slots.
   d. Side wired with two screws for each terminal and one screw for grounding.
   e. Grounding pole connected to mounting yoke.
   f. Outlet grounding shall be accomplished by the installation of a #12 AWG green insulated equipment ground conductor from the ground bus in the panel board to the receptacle grounding screw of the receptacle. A green pigtail #12 AWG conductor shall also be installed from the receptacle grounding screw to the grounding lug on the outlet box.
2. Special Receptacles: NEMA as indicated on drawings.

D. Ground-Fault Circuit Interrupter Receptacles: UL 943, duplex type for mounting in standard outlet box. Device shall be capable of detecting current leak of 6 milliamperes or greater and tripping per requirements of UL 943 for Class A GFCI devices.

E. Wall Switches

1. Snap Switches: AC switches, NRTL listed and labeled as complying with UL 20 and with FS WC-596. Single-pole and three-way wall switches shall be specification grade, rated 120/277 volts, and shall be fully rated 20 amperes, AC only. Wire terminals shall be of the screw type. Switches with push-in connections or a combination of screw-type and push-in connections are not acceptable. Switches shall be the quiet-operating type. Finish color shall be ivory.

D. Dimmer Switches: Modular full-wave solid-state units with integral, quiet on-off switches

and audible and electromagnetic noise filters. Finish color shall be ivory, except those in the TRACON and ATCT shall be black.

1. Devices shall be UL-listed specifically for the low voltage loads. Manufacturer shall provide file card upon request. Universal dimmers shall not be acceptable.
2. Dimmers shall incorporate an air gap which shall be accessible without removing the faceplate. The air gap switch shall be capable of meeting all applicable requirements of UL 20 and UL 1472for air gap switches with dimmers.
3. Dimmers shall provide power failure memory. Should power be interrupted and subsequently returned, the lights will come back on to the same levels set prior to the power interruption. Restoration to some other default level is not acceptable.
4. Dimmers shall meet IEEE C62.41, tested to withstand voltage surges of up to 6000V and current surges of up to 200A without damage.
5. Dimmers shall meet the UL 20 and UL 1472 limited short circuit test requirements for snap switches.
6. Dimmer control shall be linear slide. Dimmer shall provide a smooth and continuous Square Law dimming curve.
7. Dimmer shall be voltage regulated so that plus/minus 10 percent variation in line voltage shall cause not more than a plus 5 percent variation in load voltage when dimmer is operating at 5 percent light output.
8. Faceplate shall snap on to device with no visible means of attachment. Heat-fins shall not be visible on front of device. At locations with multiple devices, one seamless, multi-gang faceplate shall be provided. Contractor is responsible for coordination of proper backbox and faceplate type.

G. Device Plates: Provide single and combination plates that mate and match with corresponding wiring devices. Color and finish as indicated. Features include the following:

1. Plate-Securing Screws: Metal with heads colored to match plate finish.
    a. Material for Finished Spaces: Brushed stainless steel with beveled edge.
    b. Material for Unfinished Spaces: Raised type galvanized steel.
2. Wet Locations: Plates installed in wet locations shall be gasketed.
3. Telephone and Communications Outlets: Shall be provided with a blank coverplate unless otherwise indicated.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install devices and assemblies plumb and secure, with alignment tolerances of 1/16-inch. Install wall plates when painting is complete. Protect devices and assemblies during painting. Receptacles shall be installed 18 inches above finished floor, unless noted otherwise. Wall switches shall be installed 48 inches above finished floor, unless noted otherwise.

B. Arrangement of Devices: Except as otherwise indicated, mount flush with long dimension vertical, and grounding terminal of receptacles at bottom. Group adjacent switches under single, multi-gang wall plates. Install switches up or to left for ON position. Mount receptacles in uniform position and same polarity. Install connectors for under access flooring as required by manufacturer and as indicated on drawing detail.

C. Wall Switches: Not more than one switch shall be installed in a single gang position. Where switches have grounding terminals, they shall be grounded with a green grounding pigtail connected from the switch grounding screw directly to the grounding lug on the outlet box where the green equipment grounding conductor is terminated. Install unshared neutral conductors on line and load side of dimmers according to the manufacturer's written instructions.

D. Device Plates: Plates shall be installed with all four edges in continuous contact with finished wall surfaces without use of mats or similar devices. Plates installed in wet locations shall be gasketed. Use of sectional type device plates shall not be permitted.

3.02 IDENTIFICATION

A. Comply with Section 26 05 53, "Identification for Electrical Systems." For receptacles, identify the panel board and circuit and number from which served. Use machine-printed, pressure sensitive, abrasion-resistant label tape on both faces of plate and durable wire markers or tags within outlet boxes.

3.03 FIELD QUALITY CONTROL

A. Test wiring devices for proper polarity and ground continuity. Operate each operable device at least 6 times. Test ground-fault circuit interrupter operation with both local and remote fault simulations according to manufacturer's recommendations. Replace damaged or defective components. Check tightness of connections to switches and receptacles.

3.04 CLEANING

A. Provide internally clean devices, device outlet boxes, and enclosures. Replace stained or improperly painted wall plates or devices.

END OF SECTION
26 27 26

SECTION 28 31 64
FIRE DETECTION AND ALARM SYSTEM

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Fire alarm control panel (FACP).
B. Manual fire alarm stations.
C. Automatic smoke detectors.
D. Fire alarm signaling appliances.
E. Auxiliary fire alarm equipment.

1.02 RELATED SECTIONS

A. The conditions of the Contract, including the General Conditions and Supplementary Conditions, and General Requirements, apply to work covered by this Section.

B. Comply with other Divisions for coordination of work.

1.03 DEFINITIONS

A. Equipment and materials shall be approved for their designed use and performance. The term "approved" shall mean Factory Mutual (FM) approved and/or Underwriters Laboratories (UL) listed and acceptable to the approval authorities.

1.04 REFERENCES

A. Work performed shall conform to the latest editions of the following National Fire Protection Association Standards as applicable:
   1. NFPA 70 National Electrical Code.
   2. NFPA 72 National Fire Alarm Code.

B. Where appendix materials are included in the above references, each appendix shall be considered to be a requirement of the respective NFPA document as applicable.

C. Work performed shall also conform to the the latest editions of the following miscellaneous codes and standards as applicable:
   1. Underwriters Laboratories, Inc. (UL) Fire Protection Equipment Directory.
   2. Underwriters Laboratories, Inc. (UL) Electrical Construction Materials Directory.
   3. Factory Mutual System (FM) FM Approval Guide.

D. The system shall comply with all other applicable federal, state and local codes and ordinances.

E. Where a requirement within this specification is more stringent than a similar requirement within a code or standard, the specification requirement shall take precedence.

1.05 SYSTEM DESCRIPTION

A. This system shall be capable of two-way communication over signaling line circuits between intelligent/analog addressable initiation devices and/or addressable interfacing/control modules and the fire alarm control panel. The fire alarm control panel (FACP) shall be UL-listed.

B. The complete system shall use all new and unused equipment and materials that are clean and free from internal and external contamination.

C. To accommodate and facilitate job site changes, all circuits shall be individually configurable onsite.

D. All fire alarm system components including initiation, notification and control equipment shall be approved, compatible for interconnection, and shall be by a single manufacturer in all cases where possible.

E. All equipment shall be new and unused with a warranty of at least one year from the date of final inspection and acceptance by the approval authorities.

F. All initiating device circuits shall be arranged as Class A, Style D in accordance with NFPA 72.

G. All notification appliance circuits shall be arranged as Class B, Style Y in accordance with NFPA 72.

H. All signaling line circuits shall be arranged as Class A, Style 6 or 7 in accordance with NFPA 72.

I. All circuits of the fire alarm control panel shall be designed for future expansion. In no case shall circuit capacities exceed 80 percent of the design capacity as specified by the manufacturer.

J. All fire alarm wiring shall be FPL and in conduit, color-coded per NFPA 70.

K. Activation of any alarm initiating device shall cause the following to occur:
    1. Audible and visual indicators within the FACP and the remote annunciator shall activate.
    2. The FACP integral alpha-numeric display shall provide identification of the exact initiating device in alarm by device number as well as type of device and custom location message.
    3. The FACP shall automatically initiate all horns and strobes throughout the facility. Horns shall remain active until silenced at the FACP. Strobes shall remain active until FACP reset.
    4. Output functions shall be as indicated in the Sequence of Operations matrix.
    5. Transmission of an alarm condition to the Central Station Monitoring service via the DACT.

L. Operation of any valve tamper or low air pressure switch shall cause the following to occur:
    1. Audible and visual indicators within the FACP and the annunciator shall activate indicating a supervisory condition.
    2. The integral alpha-numeric display within the FACP shall provide identification of the exact equipment according to OR approved programming text.
    3. Transmission of a supervisory condition to the Central Station Monitoring service via the DACT.

N. The occurrence of a supervised malfunction/trouble within a supervised circuit or component of the FACP or system device shall cause the following to occur:

1. Audible and visual indicators within the FACP and any remote annunciator shall activate indicating a trouble condition.
2. The integral alpha-numeric display within the FACP shall provide identification of the exact equipment; component or circuit trouble, according to OR approved programming text.
3. Transmission of a trouble condition to the Central Station Monitoring service via the DACT.

1.06 SUBMITTALS

A. The Engineer shall review and recommend "accept/reject" or take other appropriate action on the Contractor's submittals including shop drawings, samples, documentation and as-built drawings. This review is to verify conformance to project specifications and design concepts expressed in the contract documents. This action shall be taken with all reasonable promptness as to cause no delay in the work, while allowing adequate time to permit complete review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details (i.e. dimensions) or for substantiating installation or performance of equipment or systems designed by the Contractor, all of which remain the Contractor's responsibility to the extent required by the contract documents. Review shall not constitute approval of safety precautions of construction, means, methods, techniques, sequences of procedures, or approval of a specific assembly of which the item is a part.

1. If submittals, upon review by the Engineer, are found not to conform to the Requirements of these specifications, the Contractor shall be required to resubmit with modifications. The Contractor shall be responsible for the Owner's extra expenses (at the rate of $125 per hour plus expenses and costs) for subsequent review(s) of rejected submittals necessitated by the Contractor's failure to make the requested modifications. Such extra fees shall be deducted from payments by the Owner to the Contractor. Acceptance of the submittals by the Engineer shall, in no case, relieve the Contractor of his responsibility to meet the requirements of this specification

B. Personnel

1. The Contractor shall submit with his bid, a list of all Technicians and installers whom shall be on-site or have a level of responsibility and involvement with this project.
2. A copy of each Technician's NICET Certification shall be included in the submitted documents.

C. Work Schedule

1. The Contractor shall submit with his bid a proposed work schedule and Representative chart. This schedule shall indicate the time necessary for:
   a. Project start-up.
   b. Shop drawing submittals.
   c. Installation.
   d. Fire Alarm Contractor testing.
   e. Final acceptance testing.
2. The proposed work schedule will be reviewed and finalized during the pre-construction meeting and will be updated at each weekly construction coordination meeting.

D. Permits, Licenses, and Certificates

1. Prior to start of installation, the Contractor shall obtain and submit copies of all permits, licenses, certificates and approvals necessary to conduct this work.

E. Equipment Lists

1. The Contractor shall submit a detailed equipment list identifying types, models and quantities of all materials, devices and equipment proposed. This submittal shall include manufacturer's data sheets showing the types and models of all equipment, devices, material and wiring proposed. Evidence of UL listings shall be submitted with the data sheets. Each and all items of the fire alarm system shall be listed as a product of a single manufacturer under the appropriate category by UL. All control equipment is to be listed under UL category UOJZ as a single control unit. Partial listings shall not be acceptable. The submittal shall include, but not be limited to the following:
    a. Conduit, raceways, junction boxes, terminal cabinets, device backboxes, fittings, hangers, and mounting hardware.
    b. Wire, cable, connectors, terminal strips, and electrical tape.
    c. Fire alarm control equipment and annunciators, including all components, modules, and enclosures.
    d. Manual fire alarm stations, detectors, auxiliary function relays and solenoids, and notification appliances.
    e. Power supplies (main and remote), standby batteries and battery charger.
    f. Any other materials, devices, or equipment to be provided.
2. When a data sheet shows more than one (1) product, the proposed product shall be clearly indicated by arrows or other suitable means.

F. Shop Drawings

1. Prior to installation, the Contractor shall submit five (5) full copy sets of shop drawings, five (5) full sets of data sheets as required in previous sections, updated to reflect any changes, and installation manuals/instructions detailing the manufacturer's installation recommendations for all equipment to be installed, to the Engineer for approval. The shop drawings shall consist of the following:
2. A drawing legend sheet identifying:
    a. All symbols used on the drawings, by type of device or equipment, indicating manufacturer, and manufacturer's part number. This information shall correspond to the manufacturer's catalog data sheets required elsewhere in this section.
    b. All conventions, abbreviations and specialized terminology used on the drawings, as necessary to understand and interpret the information contained therein.
    c. All color codes and conduit, conductor/circuit and device numbering systems.
    d. A complete drawing list/index identifying all drawings in the shop drawing package by title, drawing number and specification cross-reference.
3. Clean architectural floor plans, free of all non-fire alarm related details,

drawn to scale, and a system riser diagram with a title block on each drawing. Floor plan drawings required for this submittal shall be generated in AutoCAD format, using the bid drawings as backgrounds.

4. The floor plan drawings shall indicate:
    a. Location of all devices, equipment, risers and electrical power connections. Addressable systems shall indicate device addresses for all addressable components shown on each drawing.
    b. Number, size, and type of conductors and conduit. The Contractor shall clearly indicate on the drawings any locations were surface mounted conduit is to be installed.
    c. Point-to-point wiring connections showing individual circuits, circuit/conduit routing and circuit loading. This information shall be depicted in sufficient detail to readily locate specific conduits, raceways and circuits in the field and to identify the specific conductors/circuits contained therein. All penetrations of fire-rated barriers shall be individually noted. French curve routing is not acceptable for depicting new conduits, raceways and circuits.
5. Standby battery capacity calculations. Battery calculations shall list the type of devices (detection, monitoring, control and notification), and modules, quantities, unit and extended amperage draw for quiescent and alarm conditions, total amperage draw and battery amp/hour rating. For design criteria, the calculated load shall be the design load plus the required 20 percent spare capacity. In addition, the battery capacity used to meet the calculated load shall be a maximum of 80 percent of the amp/hour rating listed by the manufacturer.
6. Voltage drop calculations shall list the percentage of drop.
7. A complete address list identifying each device and notification signaling zone.
8. A Cause and Effect matrix, or a Sequence of Operations section defining the system operation. This matrix or sequence shall cross-reference each initiating device type and indicate system operation in the event of each type of alarm, and specific locations if applicable, trouble and supervisory condition recognized by the system.
9. Each drawing shall be cross-referenced to all related drawings and specific drawing details as necessary for the submittal as a whole to clearly depict the proposed installation.
10. Each drawing shall show revision number and date indicated in the title block. Revisions shall be clouded or otherwise highlighted between submissions. Revisions made without clouding or other highlights will not be reviewed and any approval of the revised drawings will not apply to those unnoted revisions.

G. The Contractor will not be authorized to start installation until all of the required submittals are received, reviewed and approved in writing by the Engineer. Installation prior to receipt of approved shop submittals shall be at the risk of the Contractor.

H. All drawing submittals shall be submitted on the same size sheets. The drawings shall be sequentially numbered throughout the entire set.

I. At the time of completion of the submittal package, the Contractor shall independently perform a quality assurance review of the entire submittal package, internally, to ensure completeness and conformance with the specification and design drawings. Written conformance of this review, which certifies compliance with the specification, design drawings, and applicable codes, is required. All employees involved in development of the submittal package and quality assurance review of the submittal package shall be identified.

1.07 PROJECT RECORD DESCRIPTIONS

A. The Contractor shall submit to the Engineer four (4) copies of the following:

1. Record wiring and conduit/wire layout diagrams which indicate wire type, color-code, size, conduit fill percentage, and device interconnection. These drawings shall be drawn to scale, not less than 1/8-inch equals 1-foot, on sheets not smaller than 24 inches by 36 inches.
2. Record riser diagrams that indicate the arrangement of all initiating, notification and control devices.
3. Record device location drawings with device numbers provided for all initiating, notification and control devices. Final selected power tap settings on all notification devices shall be indicated. The location of all junction boxes shall be shown.
4. Original technical literature produced by the manufacturer on all major parts of the system including control panel, subpanels, annunciators, modules, initiating and notification devices, power supplies, switches, and auxiliary controls.
5. Complete standby battery calculations for the FACP and all subpanels.
6. Complete Bill of Materials listing all system components, manufacturer, quantity, and part number.
7. Complete documentation of the manufacturer's warranties on both equipment and installation.
8. The Contractor shall provide one (1) full size reproducible copy of each Record drawing plus a diskette in AutoCAD Version 14.0 of the Record drawings.
9. Complete system control panel operating instructions.
10. Detailed maintenance and repair procedures, covering all panels, devices, and other components of the system.
11. A CD containing the complete system programming.

1.08 QUALIFICATIONS

A. The fire alarm equipment manufacturer and installer shall be competent firms that are regularly engaged in the design, installation, testing, and servicing of fire alarm systems for commercial buildings.

B. Approval of cut-sheets, shop drawings, calculations, and other materials submitted by the Contractor shall not relieve the Contractor's responsibility for full compliance with the design drawings and specification unless written approval is requested by the Contractor and obtained from the Engineer for each non-complying feature.

C. The Contractor shall utilize the services of a fire alarm equipment distributor that is a factory authorized representative and a stocking distributor of the equipment manufacturer and maintains a constant inventory of the parts typical of those used in the system installation covered under this specification.

D. The Contractor and equipment manufacturer shall each have a minimum of seven years of continuous experience in the design and/or installation of fire alarm systems and shall have completed a minimum of five projects of similar scope and complexity which were completed using addressable/analog systems with integrated fire extinguishing control (double-interlock preaction releasing control) systems. It is intended that these projects incorporated the same equipment, manufacturer, and model number, as is being proposed for this project.

E. System design, configuration, installation, programming and testing shall be supervised by a NICET III (or IV) fire alarm engineering technician, trained by the manufacturer.

F. Manufacturer must have service facilities within 60 miles of the project.

1.09 WARRANTY AND SERVICE AGREEMENT

A. The Contractor shall provide, as part of the installation cost of the system, a warranty and service agreement to cover the installation of the system as well as planned and emergency service for a period of one year following final system acceptance testing and sign-off.

B. The warranty and service agreement shall include the following:

1. Labor, parts, and equipment for components placed under warranty.
2. Labor, parts, and equipment to accomplish any manufacturer recommended upgrades or component replacements.
3. During the warranty period, the fire alarm equipment manufacturer shall periodically perform complete inspections of the system including all recommended tests and maintenance in accordance with the manufacturer's instructions and all applicable NFPA codes and standards.
4. This testing shall include all manual pull stations, detection devices, annunciators, control equipment, notification circuits, and individual notification appliances.
5. During the warranty period the fire alarm equipment manufacturer shall clean all smoke and heat detectors at least once or more frequently if operating experience indicates the need for more frequent cleaning of individual detectors.
6. The fire alarm equipment manufacturer shall provide a written record of all sensitivity settings of system smoke detectors on a six month frequency. The manufacturer is responsible for monitoring the drift or cleanliness level of the detectors based on sensitivity measurements and for taking appropriate action to prevent false alarms from occurring.
7. Complete written reports covering each test interval shall be submitted to the OR within five working days of completion of field testing. These reports shall comply with the requirements of NFPA 72.
8. Written information concerning contacting the fire alarm equipment distributor for normal and emergency service on a 24-hour basis with appropriate phone numbers and contacts' names.
9. Written guarantee of 4-hour response time for emergency service related to alarm conditions and 12-hour response time related to trouble and supervisory conditions.
10. Provision for ten minor programming changes at the option of the OR and at different times as selected by the OR. Minor programming changes involve

address changes, message changes, function changes, or other similar changes to fifteen or fewer devices.

1.10 SPURIOUS ALARMS

A. If the Owner experiences an unacceptable number of spurious or unexplained false alarms during the installation and warranty periods, the Contractor shall be responsible for providing the necessary labor, material, and technical expertise to correct the problem to the satisfaction of the Owner.

B. The following number of spurious alarms shall be considered unacceptable:
   1. Automatic (system connected) smoke detectors: More than two spurious alarms per six months during the system installation and warranty periods.
   2. Any spurious alarms shall be considered unacceptable for manual fire alarm stations.

1.11 SPARE PARTS

A. The following is a list of required spare parts. The fire alarm manufacturer may add items to this list.
   1. Automatic detection devices: Two percent of the installed quantity of each type, but no less than two devices of each type.
   2. Manual fire alarm stations: Two percent of the installed quantity of each type, but no less than two devices of each type.
   3. Audible and visible devices: One percent of the installed quantity of each type, but no less than two devices of each type.
   4. Six keys of each type.
   5. Six special tools required for system use and maintenance.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Provide a complete fire alarm system as indicated with all components manufactured by a single manufacturer.

B. System shall be compatible with existing systems in the facility and shall be capable of being connected to existing central console.

C. Provide the product manufactured by Notifier, Edwards or Simplex-Grinnell.

2.02 FIRE ALARM CONTROL PANEL

A. The system shall utilize the analog point-addressable, multiplex technology providing a distinct system "address" for each individual initiating device.

B. System components shall be modular in design to ensure future expansion capability of the system. Spare capacity shall pertain to quantities of devices, circuits, conduit, conductor ampacities (size) and lengths.

C. The system shall have spare installed capacity enabling it to support a 20 percent increase in the number of initiating devices, and in the number of control and notification appliance circuits. The system shall have one spare signaling line circuit (SLC) for future expansion. No devices shall be installed on the spare circuit.

D. All AC power connections shall be hardwired on individual dedicated branch circuits which serve no other loads. The circuit panels chosen for the dedicated branch circuits shall not include other circuits that supply motor related loads. The circuit and connections shall be mechanically protected within approved electrical enclosures, conduits or raceways. The power circuit disconnecting means shall be clearly labeled "FIRE ALARM SYSTEM POWER". The disconnecting means shall be located in a locked enclosure, which is accessible only to authorized personnel. The AC power conduit for the fire alarm system shall be dedicated conduit for the fire alarm AC power only.

E. Normal backup power to panel and subpanels shall be provided by 24 VDC rechargeable batteries sized to operate the complete system under maximum load for 24 hours. Following this 24-hour period, the batteries shall be capable of operating the system under alarm conditions for a period of 5 minutes.

F. The panel shall be equipped with an integral battery charger which automatically keeps the batteries fully charged. Wires, which lead from the backup battery terminals, shall be fully supervised for open and short circuit conditions.

G. The panel shall automatically switch to backup battery power in the event that the incoming power level drops to 80 percent of rated voltage. All system functions including detection, supervision, annunciation, alarm transmission, evacuation signaling and control functions shall function identically on either primary or backup power.

H. All panel auxiliary devices and all electronic components shall be designed and installed such that no spurious signals or operations occur within the system which are the result of radio/cellular phone transmissions. The system shall not be adversely affected by either a 5-watt hand-held 2-way radio or a 4-watt cellular telephone being operated to within 12 inches of any system panel or device.

2.03 REMOTE ANNUNCIATOR PANELS

A. Remote annunciation panels shall indicate all alarm, supervisory and trouble signals received until such time as the alarm condition is cleared and the display manually reset.

B. Remote annunciation panels shall be of the 80-character minimum alpha/numeric LCD type display indicating each device description and location using nomenclature approved by the Engineer.

C. Remote annunciation panels shall incorporate a UL-listed silencing feature to silence the panel alarm buzzer and the building audible devices. Visual devices throughout the facility shall continue to operate until the alarm has cleared and the main fire alarm control panel is reset.

D. Operating electrical power shall be derived from the control panel via a supervised circuit, or from an integral power supply meeting the requirements of this Specification. Power for an integral power supply shall be supplied by the building's emergency ("E") circuit via a permanent (non-plug) connection and standby batteries as required by this Specification.

2.04 INITIATING DEVICES

A. General

1. Initiating devices shall be analog/addressable or shall be provided with addressable interface devices (waterflow switches, conventional heat detectors). Wiring between addressable interface devices and initiating devices shall be supervised.
2. There shall be no limit to the amount of sensors, stations or interface/control Modules which may be activated or "in alarm" simultaneously.

B. Manual Pull Stations

1. Manual pull stations shall be provided at all locations indicated on the drawings. Manual pull stations shall be electrically operated and shall not require a pull force of more than 5 pounds or movement of more than 4 inches to initiate an alarm signal. Each pull station shall be installed at a convenient level for operation but in no case shall devices be installed more than 4 feet above finished floor level.
2. Each pull station shall be analog/addressable, double-action and non-break glass type. Each manual pull station shall require a key or special tool for reset. A common key or tool design is required for all stations.

C. Smoke Detectors/Duct Detectors

1. Spot-type smoke detectors shall be provided at all locations indicated on the drawings. All smoke detectors shall be the analog/addressable photoelectric-type.
2. Detectors must be the plug-in type with a separate base. Each detector shall incorporate an LED to indicate both normal operation (pulsed light) and alarm activation (steady light). The detector/base design should be such that individual detectors may be locked into bases.

D. Addressable Interface Modules

1. The Contractor shall provide, install, and test addressable circuit interfaces as necessary to comply with the Sequence of Operation matrix shown on drawings.
2. All circuit interfaces used for supervisory or control functions shall be mounted within 3 feet of the monitored switch or circuit.
3. Addressable circuit interface modules shall be provided for initiating HVAC shutdown and monitoring sprinkler waterflow, low air pressure, fire pump running, fire pump loss of power, fire pump phase reversal and valve tamper switches. The Contractor shall provide sufficient quantities of modules to provide proper control and status functions.
4. The Contractor shall be responsible for wiring the remote shutdown/control relays to the controller of the equipment being shutdown or released.

E. Valve Tamper Switches

1. Each interior control valve will be provided with a tamper switch (provided by others). The valve tamper switches shall be monitored by the FACP.

F. Waterflow Switch

1. A waterflow switch will be provided at the locations indicated on the drawings. The water flow switch shall be monitored by the FACP.

G. Low Air Pressure Switch
   1. A low air pressure switch will be provided at the locations indicated on the drawings (provided by others). The low air pressure switch shall be monitored by the FACP.

H. Fire Pump
   1. The fire pump shall me monitored by the fire alarm system for the following conditions: fire pump running, fire pump loss of primary power and fire pump phase reversal.

2.05 SIGNALING APPLIANCES

A. Horns provided for each audible circuit shall be specifically UL-listed for fire alarm system service. All horns shall be suitably protected against moisture. The Contractor shall use a sound level meter to verify that individual horns are capable of providing a sound level which is a minimum of 15 dBA over the normal ambient conditions based on normal operation of the audible circuits. All tests shall be documented by the Contractor on a per device basis. The Contractor is responsible for modifying or adding horns or circuits, as necessary, in order to meet the audibility requirements without expense to the Owner.

B. Strobe circuits shall be coordinated with audible circuits such that activation of an audible circuit results in activation of the companion strobe circuit. The strobe circuits shall be arranged such that they continue to operate in the event that the audible circuits have been silenced and remain operating until the main FACP has been reset. Strobe circuits should also be coordinated with the audible circuits such that they are zoned in the same manner as the audible circuits. Strobe circuits shall be arranged to synchronize all strobes within an area of view.

C. Strobes such as 15/75 candela are not acceptable because they cannot produce 25 percent of the on-axis rating (75 candela) at 90 degrees in accordance with UL 1971, Figure 27.1. Both the audible and strobe circuits shall be designed for expandability. The maximum load per circuit shall not exceed 80 percent of circuit capacity. The Contractor is responsible for ensuring that the strobe circuit capacity contemplates the inherent momentary current surge of the strobe devices. All wall mounted strobes shall be installed such that the centerline of the device is 80 inches above the finished floor. All ceiling mounted horn/strobe devices shall be low profile and installed as indicated on the drawings.

D. All additional relays and devices needed for the complete system to operate properly.

2.06 DIGITAL ALARM COMMUNICATOR TRANSMITTER (DACT)

A. The 4-zone DACT shall be integral to the Fire Alarm Control Panel. The DACT shall be compatible with the DACR and shall comply with all requirements of NFPA 72 and listed under UL Product Category UOJZ. Each DACT shall be the manufacturer's current commercial product completely assembled, wired, tested at the factory, and delivered ready for installation and operation.

B. The Contractor shall provide and install two (2) telephone lines for connection to the DACT.

C. The DACT shall initiate transmission using a loop-start format; ground start lines shall not be acceptable. The DACT shall connect to two telephone lines. To initiate a transmission, the DACT shall use the dedicated telephone line, obtain a dial tone and dial the Central Station. The DACT shall make a minimum of five attempts to connect to the Central Station. If a connection is not made, the DACT shall attempt to connect to the Central Station by seizing the second telephone line. The Contractor shall provide transient voltage surge protection for these telephone lines.

D. A failure of one telephone line shall report a trouble condition at the DACT panel and at the Central Station via the secondary telephone line. When the DACT makes a connection to the Central Station, the required alarm or test information shall be transmitted. Confirmation of the signal shall be accomplished by repetition of the signal, parity checks or equivalent checksumtype transmission. Each DACT shall transmit a test signal, a minimum of once every 24 hours or once every 4 hours if the signal is transmitted to a telephone line that utilizes call forwarding to the Central Station. If long distance service is used, the second telephone line shall be provided by a different long distance service provider. The DACT shall provide a minimum of four alarm input connections from the building fire alarm control panel. DACT shall be provided in accordance with NFPA 72.

2.07 LINE VOLTAGE SURGE ARRESTOR

A. Line voltage surge arrestors shall be provided to suppress all voltage transients which might damage fire alarm control panel components. The arrestor shall wire in series to the power supply of the protected equipment with screw terminations.

B. Nominal 120 volt surge arrestor.
   1. All AC power connections to the panel and subpanels shall be protected by a separate UL-listed (UL 1449) fast acting electrical transit and two voltage surge suppressors which incorporate low Z earth grounding. Each surge suppressor provided shall be housed in a separate metal NEMA 1 enclosure with hinged cover and key-operated latch. A separate listed key-operated switch with appropriate contact ratings shall be provided with each surge suppressor installation to allow for disconnecting of the AC power source to the panel or subpanels.
   2. Line voltage surge arrestors, for nominal 120 volt, shall be UL 1449 listed with a 330 volt suppression level and have a maximum response time of 5 nanoseconds. The arrestor shall also meet IEEE C62.41 category B tests for surge capacity.
   3. The arrestor shall feature multi-stage construction and be provided with a long life indicator lamp (either light emitting diode or neon) which extinguishes upon failure of protected components. Any unit fusing shall be externally accessible.

C. Nominal 24 volt surge arrestor.
   1. Line voltage surge arrestors, for nominal 24 volt, shall be UL 497B Listed and have a maximum response time of 1 nanosecond
   2. The arrestor shall feature multi-stage construction and be self-resetting. Any unit fusing shall be externally accessible.

2.08 ALARM WIRING

A. The SLC wiring shall be solid copper cable in accordance with the manufacturers requirements. Copper signaling line circuits and initiating device circuit field wiring shall be No. 18 AWG size conductors at a minimum. Notification appliance circuit conductors, that contain audible alarm devices, other than speakers, shall be solid copper No. 14 AWG size conductors at a minimum. Wire size shall be sufficient to prevent voltage drop problems. Circuits operating at 24 VDC shall not operate at less than 21.6 volts. Circuits operating at any other voltage shall not have a voltage drop exceeding 10 percent of nominal voltage. Power wiring, operating at 120 VAC minimum, shall be a minimum No. 12 AWG solid copper having similar insulation.

PART 3 – EXECUTION

3.01 PREPARATION

A. Coordinate work of this Section with other affected work.

B. The Contractor shall take any necessary measures to prevent damage to the facilities and equipment, and shall take any necessary measures to keep the premises dry at all times. Damage resulting from the work and testing under this Section, whether intentional or not, shall be repaired by the Contractor at no cost to the Owner.

C. Neither the Engineer nor Owner shall be responsible for providing a safe working place for the Contractor, subcontractors, or their employees, or any individual responsible to them for the work. The responsibility rests with the Contractor.

D. The Contractor shall be responsible for obtaining and paying any and all permits required by federal, state, and local regulations prior to beginning work. Copies of all permits shall be submitted to the OR as evidence of compliance.

3.02 INSTALLATION

A. Qualifications: Work shall be performed only by those licensed for their specific trade in accordance with federal, state and local regulations. The installation of the 120 VAC power and control circuits and connections shall be supervised and/or performed only by those licensed by the State of Mississippi for that work.

B. Quality of Work: All work shall be performed in a high quality, professional, highly skilled and timely manner.

C. Working Hours: Installation work shall be done only during those times which are approved in advance by the Owner. Normally regular working hours are defined as 7:00 a.m. to 4:00 p.m.

D. Working Conditions

1. Ceiling heights in the facility vary. As such, ladders or scaffolding may be required to facilitate some installation work. The Contractor shall be responsible for obtaining and paying the cost of any such equipment. Under no circumstances may such equipment owned by the Owner be used for installation work.
2. Any work which will result in the impairment of any existing fire protection equipment within the facility shall not be carried out without first obtaining approval from the OR. Any violation of impairing the existing fire protection

equipment without prior written approval may result in termination of the project for the Contractor.

E. Verification: Contractor shall become familiar with all details of the work, verify all dimensions, and shall advise the OR of any discrepancy before performing the work.

F. All equipment shall be approved for the purpose for which it is used and installed in accordance with the manufacturer's instructions and within approval limitations. All surface mounted devices shall use an FS box.

G. Surface mounted conduit is not permitted without prior approval from the Engineer. Where circuits are run above ceilings, they shall be run in conduit. All circuits and conduit shall be supported from the building structure or suitable hangers/supports using suitable fasteners. All circuits shall be arranged in accordance with NFPA 70.

H. Devices mounted to gypsum board walls and/or plaster ceilings shall be flush mounted. Interconnecting circuits shall be concealed within the wall cavity or above ceilings. Conductors concealed within the wall cavity and above hard ceilings shall be installed in conduit.

I. The Contractor is responsible for completing all core drills necessary for installation of conduits or circuits. Penetrations through fire rated barriers shall be properly firestopped.

J. The selection of cable types and wire with respect to conductor size, shielding requirements and separation between circuits shall be in compliance with the requirements of the manufacturer of the FACP without exception. All conductors shall be solid copper. The use of stranded wire is prohibited. All initiating, signaling, and notification circuit wire/cable shall be specifically listed for use with fire alarm systems. In the event that performance testing indicates that conductor performance or separation is inadequate, the Contractor shall make all necessary corrections without expense to the Owner.

1. Initiating Device Circuits shall be West Penn Wire 97 Series or approved equal.
2. Signaling Line Circuits shall be West Penn D97 Series or approved equal.
3. Notification Appliance Circuits shall be West Penn 97 Series or approved equal for strobe circuits and West Penn Wire 98 Series or approved equal for horn circuits.

NOTE: Plenum rated cable shall be substituted for the above where required and shall be West Penn Wire or approved equal. Twisted, shielded versions of the above listed cables for initiating and notification circuits shall be provided where required by the FACP equipment/component manufacturer.

K. The selection of conductors shall comply with NFPA 70. All wiring shall be specifically listed for fire alarm system application. All cable and individual conductors shall be color-coded. Different color-codes shall be used for initiating circuits, notification circuits, control circuits, and communication circuits. In all circuits where polarity must be observed, two different colors shall be used.

L. All AC power or AC control wiring shall be run in rigid conduit or flexible metallic conduit in compliance with NFPA 70. In no case shall AC power or AC control wiring be run in the same conduit as any other fire alarm circuits. A minimum separation distance of 2

inches between AC power or control wiring and all other circuits shall be maintained within the FACP, all subpanels, and within all other interfaces of the fire alarm system. The exception to this would be at terminal blocks within the panels or at the interface with devices. At these locations, the maximum possible separation shall be attained.

M. To prevent insulation damage or device damage, the following requirements apply:
   1. Any threaded rigid conduit or flexible conduit terminating at metal boxes or cabinets shall be provided with insulating bushings (grommets) at throat of connector.
   2. Any rigid conduit connectors must be the all steel compressing type with insulated throats. The exception to this is indenture type, which may be used on exposed unfinished areas to obtain a tighter fit to the surface.
   3. Provide a clamp or other approved restraining device where cables or wires, which are not in conduit, enter junction boxes.

N. Permanent factory/machine produced wire markers with numbers shall be used to identify the terminations of all conductors within the FACP. Permanent wire markers with numbers shall also be used at all devices which have numbered terminals. Provide a schedule of numbers on the appropriate drawings. Wire markers shall be produced by machine. Handwritten markers shall not be used.

O. In no case shall conductors be joined by splicing unless approved beforehand by the Owner. All terminations shall be at devices. The use of wire nuts is prohibited. All devices where conductors are joined or terminate shall be housed in properly sized junction boxed or similar metal enclosures. All terminal blocks shall be permanently mounted to appropriate metal enclosures using metal screws. Use of adhesive strips or similar means to mount terminal blocks or any other system device is prohibited. T-tapping of conductors is prohibited.

P. In all cases where shielded cable is used, the shielding shall be maintained continuously throughout the circuit and shall terminate within the FACP, subpanels and devices in compliance with manufacturer's requirements and system listings.

Q. All wires shall be checked for grounds, shorts and correct resistance, capacitance and other applicable parameters prior to termination of the circuits at the FACP or subpanels and prior to the installation of devices. The minimum resistance to ground or between any two conductors shall be 10 megohms, verified with a megger tester. The maximum resistance from the FACP to the end of the circuit shall not exceed 40 OHMS per circuit. The Contractor shall provide written documentation and certification of this testing on a per circuit basis. The Contractor shall give a minimum of two days notice to the Owner in advance of all testing so that these tests may be witnessed at the discretion of the Owner.

R. All new junction boxes that are not recessed shall be painted red, both internally and externally. Junction box covers shall also be painted red on both sides. All painting shall be completed off property. All junction boxes, for which the circuit use is not readily discernible, shall be permanently labeled. All junction boxes which contain devices shall be labeled. All labels shall consist of engraved phenolic signs which have been approved by the Engineer prior to installation. The use of handwritten signs to perform this identification is not acceptable.

S. Detection devices shall not be installed within 3 feet of any supply or return air diffuser. Detectors shall be mounted in accordance with NFPA 72 and manufacturer's requirements, and equipment listings. All detectors, which are to be installed below suspended ceilings, shall be centered within the tile. Tee bars shall be used to support junction boxes of all suspended ceiling mounted devices, without exception.

T. All devices that are mounted to hard ceilings or to walls shall include plaster rings, bases, backboxes or other similar components which are intended for use by the manufacturer for the application.

U. Identification of all addressable devices is required through the use of engraved phenolic signs. These signs shall be permanently mounted adjacent to the device or on the junction box cover as appropriate. All signs to be used as well as the mounting locations shall be approved by the Engineer prior to installation.

V. Where fire alarm system relays interface with equipment being controlled, these connections shall be accomplished only under direct supervision of knowledgeable representatives responsible for the installation, testing or maintenance of the particular equipment being controlled. The Contractor shall complete all interface wiring without expense to the Owner. All remotely located relays controlling equipment shall be positioned within 3 feet of the device being controlled. Where relays cannot be installed within 3 feet, the wiring between the relay and the device being controlled must be fully supervised.

W. Wire/circuits shall not be allowed to continue through a junction box without being terminated. Wire/circuits may pass through junction boxes which serve as pull boxes.

3.03 FIELD QUALITY CONTROL

A. The Contractor shall provide a qualified (as defined by NFPA 72) project superintendent for the overall management and supervision of the work.

B. The project superintendent shall ensure that adequate supervision is provided during all periods of installation of the fire alarm system. The project superintendent and all job site supervisors shall have a minimum of five years of continuous experience in the installation of fire alarm systems of similar scope and complexity and shall be NICET III certified.

C. Upon completion of the installation, the Contractor shall test all alarm initiating devices, supervisory devices, control devices and notification appliances for proper response and effectiveness. A trouble condition shall be initiated on at least 10 percent of each type of system device. Operation of all notification appliances including the FACP and remote LCD panels shall be verified. Testing by the Contractor shall include thorough sound level measurements of all audible notification appliances with these tests being fully documented and certified in writing. All testing up to and including the final acceptance tests shall be recorded using a temporary printer.

D. An itemized written test report in accordance with NFPA 72 shall be submitted to the OR and Engineer. This report shall provide complete details of the testing completed for all devices as well as circuit testing parameters. The Contractor shall certify in writing that all testing has been successfully completed in accordance with NFPA 72. Data shall be

submitted indicating the sensitivity level of all system smoke detectors. The 100 percent system functional test results shall be reviewed with the Engineer.

E. Before the acceptance test will be allowed, the Contractor shall provide all record documents (drawings, calculations, O&M manuals, etc.) to the OR.

F. Following completion of a 100 percent system functional test, the Contractor shall perform a thorough acceptance test of the system at the direction and to the satisfaction of the OR. This test shall not be carried out until at least thirty days after completion of all Contractor's testing, modifications and repairs following the original Contractor's functional test and submittal of the functional testing documentation to the OR. A separate report shall be prepared by the Fire Alarm Contractor documenting this testing in full conformance with NFPA 72. A total of four (4) copies of this report shall be provided to the OR. Testing of the fire alarm system shall be conducted at times specified by the OR.

G. The Contractor shall provide at least fifteen working days written notice for all tests or as otherwise specified herein.

H. In the event that the acceptance test of the system results in the need for system repairs or modifications, the Contractor shall demonstrate the operability of the system to the full satisfaction of the Owner following the completion of repairs or modifications. If the work has not been completed or the final acceptance tests are unsatisfactory, the Contractor shall be responsible for the Owner's extra expenses for re-inspection and witnessing the re-testing of the work. Such extra fees shall be deducted from the payments made by the Owner to the Contractor.

3.04 ACCEPTANCE TESTING

A. The entire systems shall be subjected to an inspection and acceptance test, witnessed by the OR, for the purpose of determining the system is in accordance with the drawings, specifications, and applicable codes and standards

B. The acceptance test shall not be scheduled until at least fifteen working days after completion of all Contractor's testing, modification and repairs following the original Contractor's functional test and submittal of the functional testing documentation to the OR. During the fifteen-day burn-in period, the system shall not show evidence of any abnormal condition or spurious activation. A separate report shall be prepared by the Contractor documenting this testing in full conformance with NFPA 72. A total of four (4) copies of this report shall be provided to the OR.

C. The Contractor shall notify the OR at least twenty-one days prior to the proposed date of acceptance testing. The Contractor is responsible for coordinating all required parties and providing all necessary equipment and manpower to perform the required tests.

D. The Contractor shall test all alarm initiating devices, supervisory devices, control devices and notification devices for proper response and effectiveness. A temporary printer shall be used to create a document proving functional testing of all initiating devices, controlled devices, and supervision of all system circuits. A trouble condition shall be initiated at each system device to verify circuit supervision. Operation of all annunciating devices included with the FACP shall be verified. Testing shall include thorough sound

level measurements of audible notification devices with these tests being fully documented by means of marked-up drawings and certified in writing.

E. All system smoke detectors shall be suitably protected against contamination up to the time of the final acceptance tests. The manufacturer's intended dust covers shall be used for protection of the devices.

F. An itemized written test report, in accordance with NFPA 72, shall be submitted to the Owner. This report shall provide complete details of the testing completed for all devices as well as circuit testing parameters. The Contractor shall certify in writing that all testing has been successfully completed in accordance with NFPA 72. Data shall be submitted indicating the sensitivity level of all system smoke detectors.

G. In the event that the acceptance test of the system results in the need for system repair or modification, the Contractor shall demonstrate the operability of the system to the full satisfaction of the Owner following the completion of repairs or modifications and an additional fifteen-day burn-in period.

3.05 TRAINING OF EMPLOYEES

A. An employee of the Contractor, the fire alarm equipment manufacturer, and a manufacturer's representative, shall provide instruction to the Owner's key employees on the operation and maintenance of the complete system. The Contractor shall provide two training sessions of 1 to 2 hours in length. These training sessions may need to be conducted after normal working hours in order to accommodate all working shifts.

B. The training shall be arranged in two segments. The first segment shall include a detailed overview of the system operation for the benefit of all Maintenance Staff. The second segment shall include a detailed review of system operation, control, level 1 programming, troubleshooting, and periodic testing and maintenance.

C. Six (6) bound copies, which summarize the training instruction, shall be submitted to the Owner for future reference.

D. A typical training session shall be video recorded by the Contractor and three (3) copies of the DVD turned over to the OR for future training of employees.

3.06 OPERATING INSTRUCTIONS

A. Provide operating instructions at control equipment and at each remote control station. Instructions shall clearly indicate all necessary steps for the operation of the system. Submit the proposed legend for operating instructions for approval prior to installation. Instructions shall be in engraved white letters on red rigid plastic or red enameled steel backgrounds, and shall be of adequate size to permit them to be easily read. Provide framed instructions, which include a plan view layout of all equipment. Provide brass identification tags with engraved numbers on all operating valves. Refer to these numbered valves in operating instructions. Instruction shall clearly indicate step-by-step procedures for activating systems, shutting down systems, and restoring systems to service.

END OF SECTION
28 31 64

Insurance and Risk Management Provisions
Demolition & Construction Services (Victim Assistance Suite)

The following is the minimum insurance and limit that the Contractor/Vendor must maintain. If the Contractor/Vendor maintains higher l limits that 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, with an A.M. Best rating of at least A- VI, subject to final approval by Fulton County. Respondents shall submit with the bid/proposal evidence of insurability satisfactory to Fulton County Government as to form and content. Either of the following forms of evidence is acceptable:

- A letter from an insurance carrier stating that upon your firm/company being the successful Bidder/Respondent that a Certificate of Insurance shall be issued in compliance with the Insurance and Risk Management Provisions outlined below.
- A Certificate of Insurance complying with the Insurance and Risk Management Provisions outlined below (Request for Bid/Proposal number and Project Name, Number and Description must appear on the Certificate of Insurance).
- A combination of a specific policy written with an umbrella policy covering liabilities in excess of the required limits is acceptable to achieve the applicable insurance coverage levels.

Proof of insurance must be provided to Fulton County Government prior to the start of any activities/construction as described in the bid document(s). Any and all Insurance Coverage(s) and Bonds required under the terms and conditions of the contract shall be maintained during the entire length of the contract, including any extensions or renewals thereto, and until all work has been completed to the satisfaction of Fulton County Government.

Accordingly the Respondent shall provide a certificate evidencing the following:

1. **WORKERS COMPENSATION/EMPLOYER'S LIABILITY INSURANCE – STATUTORY (In compliance with the Georgia Workers Compensation Acts, including but not limited to U.S. Longshoremen and Harbor Workers Act and any other State or Federal Acts or Provisions in which jurisdiction may be granted)**

Employer's Liability Insurance	BY ACCIDENT	EACH ACCIDENT	$500,000
Employer's Liability Insurance	BY DISEASE	POLICY LIMIT	$500,000
Employer's Liability Insurance	BY DISEASE	EACH EMPLOYEE	$500,000

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

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

3. **BUSINESS AUTOMOBILE LIABILITY INSURANCE**
Bodily Injury & Property Damage Each Occurrence $1,000,000
(Including operation of non-owned, owned, and hired automobiles).

4. **UMBRELLA LIABILITY** Per Occurrence $1,000,000
(In excess of above noted coverages)

5. ***BUILDERS' RISK:***

To be written on a Builders Risk "Special Perils" form at 100% Completed Value for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism, malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than caused by flood), and such other perils or causes of loss as may be specifically required by Supplementary Conditions) until Final Completion and Acceptance of the Project. Such policy of insurance shall contain at least the following sub-limits of insurance and deductibles:

Sub-limits:
Property in Transit **$500,000**
Property in Offsite Storage **$500,000**
Plans & Blueprints **$25,000**
Debris Removal **25% of Insured Physical Loss**
Ordinance of Law (Increased Cost of Construction) **$500,000**
Flood and Earthquake **Full Contract Value**
Deductibles:
Flood and Earthquake **$50,000 (Maximum)**
Water Damage other than Flood **$100,000**
All other Perils **$10,000**

6. **CONTRACTORS POLLUTION LIABILITY** Each Occurrence $1,000,000

Asbestos Abatement Operations (if required on the Project) –
To provide coverage on a combined General Liability and Pollution Liability on an Occurrence Policy Form. Policy not to have a Sunset Clause.
To include three (3) years of extended Completed Operations coverage or a three (3) year extended reporting period.

For All Other Operations -
Pollution Liability Coverage may be provided by endorsement to General Liability Policy or a separate Pollution Liability Policy to include three (3) years of extended Completed Operations coverage or a three (3) year extended reporting period.

Certificates of Insurance

The aforementioned insurance policies shall contain or be endorsed to contain a Provision that coverage afforded under such policies shall not expire, be cancelled or altered without at least forty-five (45) days written notice to Fulton County Government. Certificates of Insurance are to list Fulton County Government as an Additional Insured (except for Workers' Compensation), using ISO Additional Insured Endorsement form CG 20 10 (11/85) version, its' equivalent or on a blanket basis.

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

The Contractor/Vendor insurance shall apply as Primary Insurance before any other insurance or self-insurance, including any deductible, non-contributory, and Waiver of Subrogation provided in favor of Fulton County.

Additional Insured under the General Liability, Auto Liability, Umbrella Policies (with exception of Workers Compensation), with no Cross Suits exclusion.

Important:
It is understood that neither failure to comply nor full compliance with the foregoing insurance requirements shall limit or relieve the Contractor/Vendor from any liability incurred as a result of 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).

CONTRACTOR/VENDOR ACKNOWLEDGES HAVING READ, UNDERSTANDING, AND AGREEING TO COMPLY WITH THE AFOREMENTIONED STATEMENTS, AND THE REPRESENTATIVE OF THE CONTRACTOR/VENDOR IDENTIFIED BELOW IS AUTHORIZED TO SIGN CONTRACTS ON BEHALF OF THE RESPONDING CONTRACTOR/VENDOR.

COMPANY: _____ SIGNATURE: _____

NAME: _____ TITLE: _____

DATE: _____

PURCHASING FORMS & INSTRUCTIONS

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

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

- Form A: Non-Collusion Affidavit of Prime Bidder/Offeror
- Form B: Certificate of Acceptance of Request for Bid/Proposal Requirements
- Form C: Professional License Certifications
  - Form C1 – Georgia Utility License Contractor License (NA)
  - Form C2 – Georgia General Contractors License
  - Form C3 – Georgia Professional License
- Form D: Certification Regarding Debarment
- Form E: Disclosure Form and Questionnaire
- Form F: Georgia Security and Immigration Contractor Affidavit and Agreement
- Form G: Georgia Security and Immigration Subcontractor Affidavit

FORM A: NON-COLLUSION AFFIDAVIT OF BIDDER/OFFEROR

STATE OF GEORGIA

COUNTY OF FULTON

I, _____ certify that pursuant to Fulton County Code Section 102-397, this bid or proposal is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same work, labor or service to be done or the supplies, materials or equipment to be furnished and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of state and federal law and can result in fines, prison sentences and civil damages awards. I agree to abide by all conditions of this bid or proposal and certify that I am authorized to sign this bid or proposal for the bidder.

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

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

_____
(COMPANY NAME)

_____
(PRESIDENT/VICE PRESIDENT)

Sworn to and subscribed before me this _____ day of _____, 20__.

_____
(SECRETARY/ASSISTANT SECRETARY)

(Affix corporate seal here, if a corporation)

Notary Public: _____

County: _____

Commission Expires: _____

NOTE:

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

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

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

This is to certify that on this day, offeror acknowledges that he/she has read this solicitation document, pages #_____ to #_____ inclusive, including any addenda # _____ to #_____ exhibit(s) #_____ to #_____, attachment(s) # to #_____, and/or appendices #_____ to #,_____in its entirety, and agrees that no pages or parts of the document have been omitted, that he/she understands, accepts and agrees to fully comply with the requirements therein, and that the undersigned is authorized by the offeror to submit the proposal herein and to legally obligate the offeror thereto.

This is also to certify that the offeror has reviewed the form Fulton County contract included in the solicitation documents and agrees to be bound by its terms, or that the offeror certifies that it is submitting any proposed modification to the contract terms with its proposal. The offeror further certifies that the failure to submit proposed modifications with the proposal waives the offeror's right to submit proposed modifications later. The offeror also acknowledges that the indemnification and insurance provisions of Fulton County's contract included in the solicitation documents are non-negotiable and that proposed modifications to said terms may be reason to declare the offeror's proposal as non-responsive.

Company: _____

Signature: _____

Name: _____

Title: _____

Date: _____

(Corporate Seal)

FORM C1: CONTRACTOR'S GEORGIA UTILITY LICENSE CERTIFICATION

Contractor's Name: _____

Utility Contractor's Name: _____

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 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: _____

Performing work as: Prime Contractor ____ Sub-Contractor _____

Professional License Type: _____

Professional 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 D: CERTIFICATION REGARDING DEBARMENT

(1) The Offeror certifies that neither it or its subcontractors is presently debarred, suspended, proposed for debarment, declared ineligible, or otherwise excluded from doing business with any government agency. Any such exclusion may cause prohibition of your firm from participating in any procurement by the Fulton County Government.

(2) If the Offeror is unable to certify to any of the statements in this certification, such Offeror or subcontractor shall attach an explanation to this bid or proposal.

INSTRUCTIONS FOR CERTIFICATION

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

(1) The certification in this clause is a material representation of fact upon which reliance will be placed. If it is later determined that the prospective vendor knowingly rendered a false certification, the Purchasing Agent may pursue all available remedies, including suspension and/or debarment, for withdrawal of award or termination of a contract.

(2) The prospective Offeror shall provide immediate written notice to the Purchasing Agent if at anytime the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(3) Offeror shall be under a continuing duty to immediately inform the Purchasing Agent in writing of any changes, if as a result of such changes, the Offeror certification regarding debarment is affected.

DEBARMENT ORDINANCE

The following Section 102-449 of Fulton County Code of Laws establishes the procedure for the debarment of contractors.

(a) ***Authority to suspend.***

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

(b) ***Causes for Suspension. The causes for suspension include:***

(1) Conviction for commission of a criminal offense as an incident to obtain or attempting to obtain a public or private contract or subcontract, or in performance of such contract or subcontract;

(2) Conviction of state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property or other offense indicating a lack of business integrity or business honesty which currently, seriously and directly affects responsibility as a county contractor.

(3) Conviction of state or federal anti-trust statues arising out of the solicitation and submission of bids and proposals;

(4) Violation of contract provisions, as set forth below, of a character which is regarded by the Purchasing Agent to be so serious as to justify suspension action:

a. Failure to perform in accordance with the specifications within a time limit provided in a county contract;

b. A recent record of failure to perform or unsatisfactory performance in accordance with the terms of one or more contracts; provided, that failure to perform or unsatisfactory performance caused by acts beyond the control of the contractor shall not be considered to be a basis for suspension;

c. Material representation of the composition of the ownership or workforce or business entity certified to the county as a minority business enterprise; or

d. Falsification of any documents.

(5) For violation of the ethical standards set forth in Fulton County Code Chapter 9, Code of Ethics.

(6) Knowing misrepresentation to the county, of the use which a majority owned contractor intends to make a minority business enterprise (a business entity at least 51 percent of which is owned and controlled by minority persons, as defined in Fulton County Code Section 102-431) as a subcontractor or a joint venture partner, in performing work under contract with the County.

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

[SIGNATURES ON NEXT PAGE]

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

On this _____ day of _____, 20____

_____
(Legal Name of Offeror) (Date)

_____
(Signature of Authorized Representative) (Date)

_____
(Title)

FORM E: DISCLOSURE FORM AND QUESTIONNAIRE

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

   For the purposes of this form, the term "Offeror" means an entity that responds to a solicitation for a County contract by either submitting a proposal in response to a Request for Proposal or a Request for Qualification or a Bid in response to an Invitation to Bid. Describe accurately, fully and completely, their respective relationships with said Offeror, including their ownership interests and their anticipated role in the management and operations of said Offeror.

2. Please describe the general development of said Offeror's business during the past five (5) years, or such shorter period of time that said Offeror has been in business.

3. Please state whether any employee, agent or representative of said Offeror who is or will be directly involved in the subject project has or has ever: (i) directly or indirectly had a business relationship with Fulton County; (ii) directly or indirectly received revenues from Fulton County; or (iii) directly or indirectly receives revenues from the result of conducting business on Fulton County property or pursuant to any contract with Fulton County. Please describe in detail any such relationship.

LITIGATION DISCLOSURE:

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

1. Please state whether any of the following events have occurred in the last five (5) years with respect to said Offeror. If any answer is yes, explain fully the following:

   (a) whether a petition under the federal bankruptcy laws or state insolvency laws was filed by or against said Offeror, or a receiver fiscal agent or similar officer was appointed by a court for the business or property of said Offeror;

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

On this _____ day of _____, 20_____

_____
(Legal Name of Proponent) (Date)

_____
(Signature of Authorized Representative) (Date)

_____
(Title)

Sworn to and subscribed before me,

This _____ day of _____, 20___

_____
(Notary Public) (Seal)

Commission Expires _____
(Date)

FORM F: 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 F: 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 services[1] under a contract with **[insert name of prime contractor]** _____ 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.

_____
EEV/Basic Pilot Program* User Identification Number

_____
BY: Authorized Officer of Agent
(Insert Contractor Name)

_____
Title of Authorized Officer or Agent of Contractor

_____
Printed Name of Authorized Officer or Agent

Sworn to and subscribed before me this _____ day of _____, 20__.

Notary Public: _____

County: _____

Commission Expires: _____

[1]O.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 G: 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 G: 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 services[3] under a contract with **[insert name of prime contractor]** _____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.

_____
EEV/Basic Pilot Program* User Identification Number

_____
BY: Authorized Officer of Agent
(Insert Subcontractor Name)

_____
Title of Authorized Officer or Agent of Subcontractor

_____
Printed Name of Authorized Officer or Agent

Sworn to and subscribed before me this _____ day of _____, 20__.

Notary Public: _____

County: _____

Commission Expires: _____

[3]O.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].

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

The County effectuates Equal Employment Opportunity thru Policy #800-8, Non-Discrimination in Contracting and Procurement. This policy considers racial and gender workforce availability. The availability of each workgroup is derived from the work force demographics set forth in the 2000 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 an 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 firm will be required to submit an aggressive action plan setting forth steps the firm will take to address the identified underutilization.

DETERMINATION OF GOOD FAITH EFFORTS

During the course of the project, the Prime Contractor shall 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.

EQUAL BUSINESS OPPORTUNITY PLAN (EBO PLAN)

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

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

1. Potential opportunities within the scope of work of *this solicitation* that will allow for participation of racial, gender or ethnic groups.

2. Efforts that will be made by the bidder/proposer to encourage and solicit minority and female business utilization in *this solicitation*.

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

Prompt Payment: The prime contractor **must** certify in writing and **must** document 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 forty-eight (48) hours of receipt of payment from Fulton County. In no event shall a subcontractor, sub-consultant or supplier be paid later than fifteen (15) days as provided for by state law.

REQUIRED FORMS AND EBO PLAN

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

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

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

- Exhibit G – Prime Contractor's Subcontractor Utilization Report

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

EXHIBIT A – PROMISE OF NON-DISCRIMINATION

"Know all persons by these presents, that I/We (_____),
Name

_____ _____
Title Firm Name

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

1) No person shall be excluded from participation in, denied the benefit of, or otherwise discriminated against on the basis of race, color, national origin or gender in connection with any bid submitted to Fulton County for the performance of any resulting there from,

2) That it is and shall be the policy of this Company to provide equal opportunity to all businesses seeking to contract or otherwise interested in contracting with this Company without regard to the race, color, gender or national origin of the ownership of this business,

3) That the promises of non-discrimination as made and set forth herein shall be continuing in nature and shall remain in full force and effect without interruption,

4) That the promise of non-discrimination as made and set forth herein shall be made a part of, and incorporated by reference into, any contract or portion thereof which this Company may hereafter obtain,

5) That the failure of this Company to satisfactorily discharge any of the promises of non-discrimination as made and set forth herein shall constitute a material breach of contract entitling the Board to declare the contract in default and to exercise any and all applicable rights and remedies, including but not limited to cancellation of the contract, termination of the contract, suspension and debarment from future contracting opportunities, and withholding and/or forfeiture of compensation due and owning 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 the Fulton County Non-Discrimination in Purchasing and Contracting Ordinance.

SIGNATURE:_____

ADDRESS:_____

_____

TELEPHONE NUMBER:_____

EXHIBIT B – EMPLOYMENT REPORT

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

JOB CATEGORIES	**TOTAL EMPLOYED**		**TOTAL MINORITIES**		WHITE (Not Hispanic Origin)		BLACK or AFRICAN AMERICAN (Not of Hispanic Origin)		HISPANIC or LATINO		AMERICAN INDIAN or ALASKAN NATIVE (AIAN)		ASIAN		NATIVE HAWAIIAN or OTHER PACIFIC ISLANDER (NHOP)		TWO or MORE RACES	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
EXECUTIVE/SENIOR LEVEL OFFICIALS and MANAGERS																		
FIRST/MID LEVEL OFFICIALS and MANAGERS																		
PROFESSIONALS																		
TECHNICIANS																		
SALES WORKERS																		
ADMINISTRATIVE SUPPORT WORKERS																		
CRAFT WORKERS																		
OPERATIVES																		
LABORERS & HELPERS																		
SERVICE WORKERS																		
TOTAL																		

FIRMS'S NAME _____

ADDRESS _____

TELEPHONE _____

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

Submitted by: _____ Date Completed: _____

EXHIBIT C - SCHEDULE OF INTENDED SUBCONTRACTOR UTILIZATION

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

Prime Bidder/Proposer:_____

ITB/RFP Number:_____

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

_____

_____

1. My firm, as Prime Bidder/Proposer on this scope of work/service(s) is_____is not____a minority or female owned and controlled business enterprise. (Please indicate below the portion of work, including, percentage of bid/proposal amount that your firm will carry out directly):

   _____

   _____

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

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

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

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

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

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

Total Dollar Value of Subcontractor Agreements: ($)

Total Percentage Value: (%)

CERTIFICATION: The undersigned certifies that he/she has read, understands and agrees to be bound by the Bid/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**:_____

Firm or Corporate Name:_____

Address:_____

_____

Telephone: ( )_____

Fax Number: ( )_____

Email Address:_____

EXHIBIT D

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

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

To:_____
(Name of Prime Contractor Firm)

From:_____
(Name of Subcontractor Firm)

ITB/RFP Number:_____

Project Name:_____

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

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

_____	_____
(Prime Bidder)	**(Subcontractor)**
Signature_____	**Signature**_____
Title_____	**Title**_____
Date_____	**Date**_____

EXHIBIT E - DECLARATION REGARDING SUBCONTRACTING PRACTICES

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

_____hereby declares that it is my/our intent to
(Bidder)

perform 100% of the work required for_____
(ITB/RFP Number)

_____
(Description of Work)

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

1. That the bidder/proposer does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform **all elements** of the work on this project with his/her own current work forces;

2. If it should become necessary to subcontract some portion of the work at a later date, the bidder/proposer will comply with all requirements of the County's Non-Discrimination Ordinance in providing equal opportunities to all firms to subcontract the work. The determination to subcontract some portion of the work at a later date shall be made in good faith and the County reserves the right to require additional information to substantiate a decision made by the bidder/proposer to subcontract work following the award of the contract. Nothing contained in this provision shall be employed to circumvent the spirit and intent of the County's Non-Discrimination Ordinances;

3. The bidder will provide, upon request, information sufficient for the County to verify Item Number one.

AUTHORIZED COMPANY REPRESENTATIVE

Name:_____ **Title:**_____ **Date:**_____

Signature:_____

Firm:_____

Address:_____

Phone Number:_____

Fax Number:_____

Email Address:_____

EXHIBIT F - JOINT VENTURE DISCLOSURE AFFIDAVIT

ITB/RFP No._____

Project Name_____

This form must be completed and submitted with the bid/proposal if a joint venture approach is to be undertaken.

In order to evaluate the extent of small, minority and female business involvement being proposed by a Bidder/Proposer, certain relevant information must be provided prior to contract award. The information requested below is to clearly identify and explain the extent of small business participation in the proposed joint venture. All items must be properly addressed before the business entity can be evaluated.

1. Firms:

1) **Name of Business:**_____
Street Address:_____
Telephone No.:_____
Nature of Business:_____

2) **Name of Business:**_____
Street Address:_____
Telephone No.:_____
Nature of Business:_____

3) **Name of Business:**_____
Street Address:_____
Telephone No.:_____
Nature of Business:_____

NAME OF JOINT VENTURE (If applicable):_____

ADDRESS:_____

_____

PRINCIPAL OFFICE:_____

OFFICE PHONE:_____

Note: Attach additional sheets as required

1. Describe the capital contributions by each joint venturer and accounting thereof.

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

3. Describe any ownership, options for ownership, or loans between the joint ventures. Identify terms thereof.

4. Describe the estimated contract cash flow for each joint venturer.

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

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

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

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

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

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

11. Percent of Minority/Female Business Enterprises ownership by each joint venture in terms of profit and loss sharing:_____

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

13. Number of personnel to be involved in project, their crafts and positions and whether they are employees of the Minority/Female Business Enterprises enterprise, the majority firm or the joint venture: _____

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

Name	Race	Sex	Financial Decisions	Supervision Field Operation
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

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

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

FOR_____
(Company)

Date:_____ _____
(Signature of Affiant)

_____
(Printed Name)

_____
(Company)

Date:_____ _____
(Signature of Affiant)

_____
(Printed Name)

State of_____**:**

County of_____**:**

On this _____ day of _____, 20___, before me, appeared _____, the undersigned officer, personally appeared _____ known to me to be the person described in the foregoing Affidavit and acknowledges that he (she) executed the same in the capacity therein stated and for the purpose therein contained.

EXHIBIT – G PRIME CONTRACTOR/SUB-CONTRACTOR UTILIZATION REPORT

This report **must** be submitted by the **tenth day** of each month, along with a copy of your monthly invoice (schedule of values/payment application) to Contract Compliance. Failure to comply **shall** result in the County commencing proceedings to impose sanctions to the prime contractor, in addition to pursuing any other available legal remedy. Sanctions may include the suspending of any payment or part thereof, termination or cancellation of the contract, and the denial of participation in any future contracts awarded by Fulton County.

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

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

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

SUBCONTRACTOR UTILIZATION (add additional rows as necessary)

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

TOTALS						

Executed By: _____ _____

(Signature) *(Printed Name)*

Notary: _____ **Date:** _____ **My Commission Expires:** _____

Should you have questions regarding any of the documents contained in Section 6, please feel free to contact the Office of Contract Compliance at (404) 612-6300, for further assistance.

SECTION 8

GENERAL CONDITIONS

0700-1 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 Policy and Procedures 800-6 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 Director of the Real Estate and 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 and Asset Management Department of Fulton County, Georgia or the designee thereof.

Engineer of Record – Williams, Russell-Johnson, Inc. developed the specifications and drawings referred to herein.

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.

Program Manager - Not used in this contract. Delete all references.

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 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, backcharge, 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 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. 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 Real Estate and Asset Management and mails or otherwise furnishes the Construction Manager a copy of such appeal. The decision of the Director of Real Estate and Asset Management 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 form 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. If the unpaid balance of the contract price exceeds the cost of completing the work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the County on demand. This obligation 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 data of the terminations 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 due to the default of the Contractor, and if 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.

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, 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. 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, 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 Construction Manager issues a written order requiring the Contractor to suspend, delay or interrupt all or any part of the work and 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 may 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 prosecute 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 Procedure 800-6. 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 b 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 give 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 Change Order Policy 800-6.

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.

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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 _____, 200___, 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

SECTION 9

SPECIAL CONDITIONS

The construction for modifications to the Fulton County Solicitor General Victim Assistance Department Suite is located on the second floor of the Fulton County Court House and will require the Contractor to:

1. work in an occupied building and Fulton County reserves the right to define excessive noise and dust.

2. protect and secure all non-construction areas from dust and debris. The daily function of Court house must not be interrupted by renovation.

3. adhere to the Normal Court Operation Hours which are 8am to 5pm Monday thru Friday. The Fulton County Sherriff's Department Normal daily hours of operation are 8am to 5pm Monday through Friday; with 7 days a week, 24 hour a day shifts.

4. have limited use of the Freight elevator for materials, debris and personal use.

5. insure that no interruption to the activities of the courts or sheriff's department shall occur during.

6. advise ALL staff/employees that there will be NO Visitors without prior permission from Fulton County.

7. submit to Background Checks of ALL staff (at a cost of $15/employee), submit a Criminal History Consent Form and a copy of a valid driver's license (PRIOR TO THE ISSUANCE OF A Temporary Fulton County Identification Badge through the Sheriff's Department). Any personnel found without a proper Identification Badge displayed shall be escorted from and/or denied access to the facility.

8. secure and lock-up ALL equipment after hours on site. It is the contractor's responsibility to ensure that all equipment is secured.

9. ensure there are NO existing utilities interruptions. Do not interrupt utilities service facilities occupied by Fulton County Government or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

   a) Notify Owner not less than five (5) days in advance of proposed utility interruption or shutdown.

b) Do not proceed with utility interruptions without Owners written permission.

10. have a Project Manager and Superintendent on-site during construction hours.

11. coordinate all major construction which may impact daily activity with Fulton County .

12. coordinate dumpster location, material deliveries and demo debris activities with the Sherriff's Department and Fulton County. Contractor shall provide protection for all County Property.

13. advise staff that because parking is limited, there is no available on-site parking for their employees.

14. provide a safety plan and post all OSHA and safety regulation on construction site.

15. be responsible for the daily cleaning of designate restrooms.

16. remove any asbestos located throughout the building when the building is vacant.

17. attend protocol meetings, independent from the mandatory pre-construction or construction meetings.