

PROJECT MANUAL

AND

SPECIFICATIONS

FOR THE

JACKSON COUNTY ANIMAL SHELTER Additions and Renovation Phase 1



Jefferson, Georgia

July 14, 2021

Prepared by



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ASSOCIATES**
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INVITATION TO BID

BID CONTROL NUMBER ITB 210015



Renovations and Additions to the Animal Shelter

Jackson County Board of Commissioners

Public Works Department

Publish Date: July 14, 2021

Bid Opening Date & Time: August 17, 2021 at 10:00 am, local time
pertaining Questions Deadline Date & Time: August 09, 2021 at 5:00 pm
Mandatory Pre-bid Date & Time: August 03, 2021 at 2:00 pm at the
Animal Shelter.

Jackson County Board of Commissioners

67 Athens Street

Jefferson, GA 30549

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Bid Control Number ITB 210015

- 1. Invitation to Bid**
- 2. Instructions /General Terms and Conditions**
- 3. Bid Schedule/Response Form**
- 4. Attachments**

DATE: July 14, 2021

TO: General Contractors

SUBJECT: Request for Bid for Renovations and Additions to the Animal Shelter, Jackson County

INQUIRIES REGARDING REQUEST FOR BID SHOULD BE MADE TO MYRNA YARBROUGH, PURCHASING MANAGER, (706)367-6309

Jackson County Board of Commissioners (hereafter referred to as Jackson County) is requesting bids for renovations and additions to the Animal Shelter, Jefferson, Georgia per the attached specifications.

Each bidder must deposit with his bid a Bid Bond for 5% of the total bid. Performance and Payment Bonds in the amount for 100% of the contract price will be required if the contract is awarded.

One (1) original and three (3) copies of the Request for Bid must be submitted. Bids must be sealed, marked with the bidder's name and address and Labeled: **ITB 210015, "Renovations and Additions to the Animal Shelter"** and delivered to:

Jackson County Board of Commissioners
Attention: Myrna Yarbrough, Purchasing Manager
67 Athens Street
Jefferson, Georgia 30549

No later than August 17, 2021 at 10:00 AM EST.

A qualified interpreter for the hearing impaired is available upon request at least 10 (ten) days in advance of the bid opening date. Please call (706)367-6312 for more information. This service is in compliance with the American with Disabilities Act (ADA).

Jackson County reserves the right to reject any and all bid submittals, to waive any technicalities or irregularities and to award the bid based on the highest and best interest of Jackson County.

Jackson County

GENERAL INSTRUCTIONS FOR BIDDERS

I. PURPOSE:

The intent and purpose of this Bid Request is to request services for the Jackson County Board of Commissioner, hereinafter referred to as Jackson County for renovations and additions to the Animal Shelter.

II. SCOPE OF SERVICE:

A. WORK INCLUDED:

See attached specification.

B. QUALITY OF WORKMANSHIP: All work shall be quality work performed according to the standards of the industry, and to the complete satisfaction of Jackson County.

C. PERSONNEL QUALIFICATIONS:

Jackson County reserves the right to refuse to accept services from any personnel deemed by Jackson County to be unqualified, disorderly, or otherwise unable to perform assigned work.

D. DETAILED SPECIFICATIONS: See attached. This project will be under the supervision of the engineer who will be inspecting all work completed under this contract.

1. Upon being awarded the contract by Jackson County, the approved contractor will execute a contract with Jackson County to provide services. The contractor agrees to perform all work in accordance with the bid schedule and set bid prices as outlined in their signed proposal. The prices submitted in the bid proposal will be valid until the completion of all projects originally listed in the bid proposal.
2. The approved contractor agrees to commence work within thirty (30) days of receiving the Notice to Proceed and will complete all the original work as outlined in this Bid Request within the time specified. Any additional work will be discussed and a reasonable start and completion date will be negotiated.
3. Jackson County will only pay invoices that have been reviewed and approved by the engineer for the quantities submitted for payment.

- E. MATERIAL SPECIFICATIONS: All material used in the performance of this contract must meet state and local requirements for use by an approved vendor. The contractor will be responsible for verifying this information with the engineer.
- F. SCHEDULING AND COORDINATION: It is the responsibility of the contractor to coordinate all work schedules and inspections with the Jackson County Animal Shelter and the engineer. Failure to do so may result in the delay of processing invoices for payment.
- G. **OTHER REQUIREMENTS: A Bid Bond for 5% of the base bid on the bid form must be submitted with the bid. Performance and Payment Bonds in the amount of 100% of the contract price will be required if the contract is awarded.**

III. **MANDATORY PRE-BID CONFERENCE**: There will be a mandatory pre bid conference held on Thursday, August 03, 2021 at 2:00 PM EST at the Animal Shelter, 29 Galileo Church Road, Jefferson, GA. Bidders who do not attend will not be considered for the job award. Questions concerning this bid package or the bid process should be directed to Myrna Yarbrough at myarbrough@jacksoncountygov.com. Technical question concerning the work being requested in this BID REQUEST should be submitted to info@carterwatkins.com All questions should be submitted in writing no later than 5:00 pm on August 09, 2021 so that an appropriate addendum can be created and sent to all vendors prior to the closing of the bid on August 17, 2021.

IV. **GENERAL TERMS AND CONDITIONS**:

- A. PURCHASING ORDINANCE: This Invitation to Bid (ITB) is subject to the provisions of the Jackson County Purchasing Ordinance and any revisions thereto, which are hereby incorporated into this contract in their entirety except as amended or superseded herein.
- B. MANDATORY USE OF JACKSON COUNTY FORM AND TERMS AND CONDITIONS: Failure to submit a bid on the official Jackson County form provided for that purpose shall be a cause for rejection of the bid. Return of the complete document is required. Modification of or additions to any portion of the invitation may be cause for rejection of the bid; however, Jackson County reserves the right to decide, on a case by case basis, in its sole discretion, whether or not to reject such a bid as non-responsive.
- C. PRECEDENCE OF TERMS: Except for paragraphs A, B, C, J, K and N of the General Terms and Conditions, which shall apply in all instances, in the event there is a conflict between the General Terms and Conditions and any Special Terms and Conditions for use in a particular procurement, the Special Terms and Conditions shall prevail.
- D. CLARIFICATION OF TERMS: If any prospective bidder has questions about the specifications or other bid documents, the prospective bidder should contact the

Purchasing Manager whose name appears on the title page of the invitation, no later than seven days before the opening date. Any revisions to the invitation will be made only by addendum issued by the Purchasing Manager.

- E. TESTING/INSPECTION: Jackson County reserves the right to conduct any test or inspection it may deem advisable to assure materials and services conform to the specification.
- F. PAYMENT TERMS: Any payment terms requiring payment in less than 30 days will be regarded as requiring payment 30 days after invoice or delivery, whichever occurs last. This shall not affect offers of discounts for payment in less than 30 days, however.
- G. INVOICES: Invoices for services ordered, delivered and accepted by Jackson County shall be submitted by the contractor direct to the payment address shown on the contract.
- H. DEFAULT: In case of failure to deliver goods or services in accordance with the contract terms and conditions, Jackson County, after due oral or written notice, may procure substitute goods or services from other sources and hold the contractor responsible for any resulting additional purchasing and administrative costs. This remedy shall be in addition to any other remedies, which Jackson County may have.
- I. ASSIGNMENT OF CONTRACT: A contract shall not be assignable by the contractor in whole or in part without the written consent of Jackson County.
- J. ETHICS IN PUBLIC CONTRACTING: By submitting their bids, all bidders certify that their bids are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other bidder, supplier, manufacturer or subcontractor in connection with their bid, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit or money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.
- K. DEBARMENT STATUS: By submitting their bids, all bidders certify that they are not currently debarred from bidding on contracts by any agency of the State of Georgia, nor are they an agent of any person or entity that is currently debarred from submitting bids on contracts by any agency of the State of Georgia.
- L. NON-COLLUSION CERTIFICATION: Bidder declares that the bid is not made in connection with any other bidder submitting a bid for the same project, and that the bid is bona fide and is in all respects fair and without collusion or fraud.
- M. APPLICABLE LAW AND COURTS: Any contract resulting from this BID REQUEST shall be governed in all respects by the laws of the State of Georgia and any litigation with respect thereto shall be brought in the courts of the State of Georgia.

The contractor shall comply with applicable federal, state and local laws and regulations.

- N. QUALIFICATION OF BIDDERS: Jackson County may make such reasonable investigations as deemed proper and necessary to determine the ability of the bidder to perform the work/furnish the items and the bidder shall furnish to Jackson County all such information and data for this purpose as may be requested. Jackson County reserves the right to inspect bidder's physical plant prior to award to satisfy questions regarding the bidder's capabilities. Jackson County further reserves the right to reject any bid if the evidence submitted by, or investigations of, such bidder fails to satisfy Jackson County that such bidder is properly qualified to carry out the obligations of the contract and to complete the work/furnish the items contemplated therein.
- O. WITHDRAWAL OF BID DUE TO ERRORS:
1. The bidder shall give notice in writing of his claim of right to withdraw his bid without penalty due to an error within two (2) business days after the conclusion of the bid opening procedure. Bids may be withdrawn from consideration if the price was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of the bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and material used in the preparation of the bid sought to be withdrawn. The bidder's original work papers shall be the sole acceptable evidence of error and mistake if he elects to withdraw his bid. If a bid is withdrawn under the authority of this provision, the lowest remaining responsive bid shall be deemed low bid.
 2. No bidder who is permitted to withdraw a bid shall, for compensation, supply any material or labor or perform any subcontract or other work agreement for the person of firm to whom the contract is awarded or otherwise benefit, directly or indirectly, from the performance of the project for which the withdrawn bid was submitted.
 3. Supplier has up to forty-eight (48) hours to notify the Jackson County Purchasing Office of an obvious clerical error made in calculation of bid in order to withdraw a bid after bid opening. Withdrawal of bid for this reason must be done in writing within the forty-eight (48) hour period. Suppliers who fail to request withdrawal of bid by the required forty-eight (48) hours shall automatically forfeit bid bond (if one was required). Bid may not be withdrawn otherwise.
 4. Bid withdrawal is not automatically granted and will be allowed solely at Jackson County's discretion.

- P. LATE OFFERS: Jackson County will not be responsible for or consider late receipt of bids.
- Q. EO/AA STATEMENT: Jackson County, an Equal Opportunity Affirmative Action institution covered by Presidential Executive Order 11246 as amended, advises all contractors, subcontractors, vendors and suppliers that direct or indirect receipt of federal funds may require appropriate action on their part.
- R. ILLEGAL IMMIGRATION REFORM AND ENFORCEMENT ACT OF 2011
Vendors submitting a response to this RFP must complete the Contractor Affidavit under O.C.G.A. §13-10-91(b)(1) which is provided with the RFP package to verify compliance with the Illegal Immigration Reform and Enforcement Act of 2011.
- A. The form must be signed by an authorized officer of the contractor or their authorized agent.
 - B. The form must be notarized.
 - C. The contractor will be required to have all subcontractors and sub-subcontractors who are engaged to complete physical performance of services under the final contract executed between the County and the contractor complete the appropriate subcontractor and sub-subcontractor affidavits and return them to the County a minimum of five (5) days prior to any work being accomplished by said subcontractor or sub-subcontractor. Format for this affidavit can be provided to the contractor if necessary.

V. **SPECIAL TERMS AND CONDITIONS:**

- A. AVAILABILITY OF FUNDS: It is understood and agreed between the parties herein that Jackson County shall be bound hereunder only to the extent of the funds available or which may hereafter become available for the purpose of this agreement.
- B. AWARD OF CONTRACT: Jackson County will make award to the lowest responsive and responsible bidders. Due consideration will be given to price, quality as judged by tests and previous experience, and the ability of the bidders to render required services. Jackson County reserves the right to conduct any test it may deem advisable and to make all evaluations. Jackson County also reserves the right to reject any or all bids, in whole or in part, to waive informalities and to delete items prior to making the award, whenever it is deemed in the sole opinion of Jackson County to be in its best interest.
- C. BID ACCEPTANCE PERIOD: This bid shall be binding upon the bidder for 60 calendar days following the bid opening date. Any bid on which the bidder shortens the acceptance period may be rejected.

- D. BID PRICES: Bid prices submitted by the Contractor must remain firm for the entire length of the initial bid period and/or until the original list of projects as outlined in the specifications are completed.
- E. CANCELLATION OF CONTRACT: Jackson County reserves the right to cancel and terminate any resulting contract, in part or in whole, without penalty, upon 60 days written notice to the contractor. Any contract cancellation notice shall not relieve the contractor of the obligation to deliver and/or perform on all outstanding orders issued prior to the effective date of cancellation.
- F. CHANGES: By written notice to the contractor, Jackson County may from time to time make changes, within the general scope of the contract, in the goods or services to be provided by the contractor.
- G. CONTRACT DOCUMENTS: The contract entered into by the parties shall consist of this Invitation To Bid, the signed bid submitted by the contractor, the Jackson County Contract Form, General Terms and Conditions, Special Terms and Conditions, Specifications and Attachments, including all modifications thereof, all of which shall be referred to collectively as the Contract Documents.
- H. CONTRACT PERIOD: The contract period is defined above in paragraph II.D.1.
- I. IDENTIFICATION OF BID ENVELOPE: The signed bid should be returned in a separate envelope or package, sealed and identified as follows:

From:

Name of Bidder

Bid Due Date

Time

Street or Box Number

Bid Number

City, State, Zip Code

Bid Title

The envelope should be addressed to Jackson County Board of Commissioners, Attention: Myrna Yarbrough, Purchasing Manager, 67 Athens Street, Jefferson, GA, 30549.

If a bid not contained in the special envelope is mailed, the bidder takes the risk that the envelope even if marked as described above, may be inadvertently opened and the

information compromised which may cause the bid to be disqualified. Bids may be hand delivered to the office of the Purchasing Department issuing the invitation at the location given above. No other correspondence or other bids should be placed in the envelope.

- J. INDEMNIFICATION: The contractor agrees to indemnify, defend and hold harmless Jackson County and their officers, agents, and employees from any claims, damages and actions of any kind or nature whether at law or in equity, arising from or caused by the use of any materials, goods, or equipment of any kind or nature furnished by the contractor/any services of any kind or nature provided by the contractor.
- K. INDEPENDENT CONTRACTOR: The contractor shall not be an employee of Jackson County, but shall be an independent contractor. Nothing in this agreement shall be construed as authority for the contractor to make commitments, which shall bind Jackson County, or to otherwise act on behalf of Jackson County, except as Jackson County may expressly authorize in writing.
- L. INSPECTION OF WORK SITE: Contractors desiring to submit a proposal for this BID REQUEST are encouraged to visit the sites listed. Claims, as a result of failure to do so, will not be considered by Jackson County.
- M. INSURANCE:
1. The contractor shall provide Jackson County a Certificate of Insurance prior to the start of any work and agrees to maintain such insurance until the completion of the contract. The minimum limits of liability shall be:
 - A. Workers' Compensation - In compliance with Georgia State Law
 - B. Broad Form Comprehensive General Liability, \$1,000,000.00, to include:
 1. Premises – Operations
 2. Products / Completed Operations
 3. Contractual
 4. Personal Injury
 5. Owners and Contractors Protective
 2. Jackson County reserves the right to require higher limits on any contract provided notice of such requirements is stated in the proposal for such contract. Included in the certificate of insurance shall be a hold harmless agreement saving Jackson County harmless from any liability from the contractor or from any subcontractors or by anyone directly or indirectly employed by either. Jackson County is to be named as additional insured.
- A 30-day notice of cancellation or non-renewal in writing shall be furnished by certified mail to the certificate holder at the address indicated on the face of this

form. Also, when deemed necessary, the contractor will provide explosion, collapse and underground coverage (X, C and U coverage).

The contractor agrees to be responsible for, indemnify and save harmless Jackson County and their representatives from the payment of all sums of money by reason of any claim against Jackson County or their representatives under the Workmen's Compensation Act, and by reason of all or any other occurrences resulting in bodily injury or property damage that may happen to occur upon or about said work. The contractor agrees that it will, at all times, and at least for one year after the completion of the work, indemnify and save harmless Jackson County against liabilities resulting from bodily injury or property damage directly or indirectly arising out of the performance or nonperformance of the contract.

3. ALL BIDDERS PROVIDE THE FOLLOWING INFORMATION:

NAME OF INSURANCE CARRIER:

NAME OF INSURANCE AGENT:

TELEPHONE NUMBER:

BROAD FORM COMPREHENSIVE

GENERAL LIABILITY LIMIT: \$

AUTOMOBILE LIABILITY LIMIT: \$

POLICY EXPIRATION DATE:

If a bidder fails to provide all the above information or does not indicate an amount of coverage, the bidder's signature on this invitation constitutes certification that, if the bidder is awarded the contract, the bidder shall obtain the necessary coverage as specified within ten days of notification of award of the contract.

If at any time or times any claim or claims shall be made to Jackson County by a subcontractor or other persons for any money due for any work, labor or material done upon or supplied upon the work herein contracted for, done for, furnished, or supplied, to the party of the first part, Jackson County may retain such amount as may be due, or may thereafter become due under this contract, or may pay the same when said claim shall thereafter be finally established in court, and such amount is hereby assigned to Jackson County to pay such claim or claims, such payment to be done when so established, but the contractor shall not be entitled to demand or receive payment of this agreement until all disputes, disagreements, and questions between the parties herein affecting the right to any portion of the amount claimed, shall have been settled as above provided for, and Jackson County is hereby authorized to deduct from the said amount any money due it upon any account or claim.

N. PROTECTION OF PERSONS AND PROPERTY:

1. The contractor shall take every precaution at all times for the protection of persons and property, including Jackson County's employees and property and its own.
 2. The contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work under this contract.
 3. The contractor shall continuously maintain adequate protection of all work from damage and shall protect Jackson County property from injury or loss arising in connection with this contract. The contractor shall make good any such damage, injury or loss.
- O. **SAFETY:** The contractor shall maintain an adequate safety program to insure the safety of contractor employees, subcontractor employees, and all other individuals working under this contract. In addition, the contractor must also provide Jackson County with a written safety program that he intends to follow in pursuing work under this contract. No work under this contract will be permitted until Jackson County is assured that the contractor has an adequate safety program in effect.
- P. **SUBCONTRACTS:** No portion of the work shall be subcontracted without prior written consent of Jackson County. In the event that the contractor desires to subcontract some part of the work specified herein, the contractor shall furnish Jackson County the names, qualifications and experience of their proposed subcontractors. The contractor will, however, remain fully liable and responsible for the work to be done by his subcontractor(s) and shall assure compliance with all requirements of the contract.

Nothing in the agreement shall be constructed as authority for the contractor to make commitments, which shall bind Jackson County, or to otherwise act on behalf of Jackson County, except as Jackson County may expressly authorize in writing.

- Q. **SUPERINTENDENCE BY CONTRACTOR:** The contractor shall be responsible for all work means, methods, techniques, sequences and procedures and for coordinating all portions of the work under the contract except where otherwise specified herein. The contractor shall, at all times, enforce strict discipline and good order among the workers, and shall not employ any unfit person or anyone not skilled in their work.
- R. **WORK SITE DAMAGES:** Any damage, including damage to finished surfaces, resulting from the performance of this contract shall be repaired to Jackson County's satisfaction at the contractor's expense.
- S. **OTHER SPECIAL INSTRUCTIONS/TERMS:** See Section II G – Other requirements concerning bid and bid award.
- VI. **METHOD OF PAYMENT:** Jackson County will authorize payment to the contractor after providing satisfactory service and receipt of the contractor's invoice for services rendered. Payment will be made on a monthly basis at the prices as bid, Net 30.

BID DOCUMENT

Base bid = \$ _____

Completion time – _____

Alternates: (amount to be deducted or added to bid amount. Indicate add or deduct with a plus or minus).

Alternate #1 – Existing wall and roof panels to remain and receive coatings (see 012300 Alternates Section)

\$ _____

Alternate #2 -Remove provision of kennels from bid amount (Veterinary equipment to remain in base bid)

\$ _____

Signed: _____

Title: _____

Company Name: _____

Address: _____

City, State, Zip: _____

Phone number: _____

Email: _____

Contractor must acknowledge receipt of any addenda on either this form or by signing and returning a copy of the addenda with their bid package.

Illegal Immigration Reform and Enforcement Act of 2011
CONTRACTOR AFFIDAVIT UNDER O.C.G.A. §13-10-91(b)(1)

The Jackson County Board of Commissioners and Contractor agree that compliance with the Illegal Immigration Reform and Enforcement Act of 2011 are conditions of this Agreement for the physical performance of services.

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 on behalf of the Jackson County Board of Commissioners has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. §13-10-91. Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present and affidavit to the contractor with the information required by O.C.G.A. §13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

E-Verify Employment Eligibility Verification User Identification Number

Date of Authorization to Use Federal Work Authorization Program

NAME OF CONTRACTOR

Name of Project

Jackson County Board of Commissioners
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, _____, 20__ in _____ (City), _____ (State).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE ____ DAY OF _____, 20____

Notary Public

My Commission Expires: _____

This form must be returned with the bid package submitted.

All Work performed under this contract is subject to inspection by the engineer and Animal Shelter Director of Jackson County, Georgia. It shall be the Contractor's responsibility to coordinate with the above for inspection services. All Work shall be performed in accordance with current state and local laws and regulations for the State of Georgia.

ARTICLE 3

Time of Commencement and Completion

The Work to be performed under this Contract shall begin within thirty (30) days after the Contractor has received the Notice to Proceed (NTP) and will be completed within xxx days of starting the project.

ARTICLE 4

Contract Price

The Owner shall pay the Contractor, for the performance of the Work completed and approved by the engineer as provided in the Conditions of the Contract, in current funds, as calculated by the unit prices provided in the Contractor's response to the ITB. This price shall remain fixed during the entire length of the original contact period or until the satisfactory completion of all of the projects listed in the ITB. The Scope of Service as outlined ITB shall only be modified by a Change Order approved by all Parties. Each Change Order that is approved by Owner and Contractor will detail any unit price changes that are calculated according to the conditions outlined in the ITB.

ARTICLE 5

Payment

Payment for the Work as described in Article 4 above, shall be made monthly only for the portion of Work that is completed and inspected by the Road Department Superintendent during the month. Payment will be made within thirty (30) days after the completion of the Work, provided that the Contractor fully performed in accordance with the Contract Documents. The Contractor shall complete and submit an invoice for the monthly payment to the Jackson County Government, Attention: Accounts Payable, 67 Athens Street, Jefferson, Georgia 30549. Jackson County reserves the right to request proof of performance of all work completed under this contract.

ARTICLE 6

Georgia Illegal Immigration Reform and Enforcement Act of 2011

Contractor agrees and acknowledges that compliance with the requirements of the Georgia Illegal Immigration Reform and Enforcement Act of 2011 are conditions of this Contract. The Contractor Affidavit and Agreement executed by Contractor pursuant to O.C.G.A. §13-10-91(b)(1) is hereby incorporated into this Agreement by reference and made a part of this Contract. By the execution of this Contract, the Contractor affirms that the Illegal Immigration Reform and Enforcement Act of 2011 Contractor Affidavit submitted with the response to ITB 210015 is still valid, that the Contractor's Federal Work Authorization Number has not changed, that the Contractor will utilize the Federal Work Authorization Program during the duration of this contact, that the Contractor will ensure that all subcontractors and sub-subcontractors working on the Project covered by this Contract are participating in the Federal Work Authorization Program and have completed the Subcontractors and/or Sub-subcontractor Affidavit, and that the Contractor will advise the Owner of hiring a new subcontractor and/or sub-subcontractor and will provide the Owner with a Subcontractor/Sub-subcontractor Affidavit attesting to the subcontractor's/sub-subcontractor's name, address, user identification number, and date of authorization to use the Federal Work Authorization Program within five (5) days of hiring before the subcontractor/sub-subcontractor begins working on the Project. The Contractor understands and will ensure that all subcontractors and sub-subcontractors understand that knowingly and willfully making a false, fictitious, or fraudulent statement in an affidavit submitted in compliance with O.C.G.A. §13-10-91 shall be guilty of a violation of Code Section §16-10-20 and, upon conviction, shall be punished as provided for in such Code Section. Additionally, any contractor and/or sub-contractor convicted for false statements based upon a violation of this Code Section shall be prohibited from bidding on or entering into any public contract for twelve (12) months following the conviction

IN WITNESS WHEREOF, the Parties have executed this Contract on the date first written above.

OWNER:
Jackson County Board of Commissioners

CONTRACTOR:
Company's Legal Name

Tom Crow, Chairman

Representative

ATTEST:

ATTEST:

Notary Public

Notary Public

AIA[®] Document A305™ – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY: _____
(*Organization name and address.*)
SUBMITTED TO: _____
(*Organization name and address.*)
Jackson County, Georgia

TYPE OF WORK TYPICALLY PERFORMED

(*Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.*)

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:

(*Check all that apply.*)

- Exhibit A – General Information
- Exhibit B – Financial and Performance Information
- Exhibit C – Project-Specific Information
- Exhibit D – Past Project Experience
- Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION

The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

Organization's Authorized Representative
Signature

Date

Printed Name and Title

NOTARY

State of:

County of:

Signed and sworn to before me this ____ day of _____

Notary Signature

My commission expires:

ADDITIONS AND DELETIONS:

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

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



AIA[®] Document A305™ – 2020 Exhibit A

General Information

This Exhibit is part of the Contractor’s Qualification Statement, submitted by _____ and dated the _____ day of _____ in the year _____.
(In words, indicate day, month and year.)

§ A.1 ORGANIZATION

§ A.1.1 Name and Location

§ A.1.1.1 Identify the full legal name of your organization.

§ A.1.1.2 List all other names under which your organization currently does business and, for each name, identify jurisdictions in which it is registered to do business under that trade name.

§ A.1.1.3 List all prior names under which your organization has operated and, for each name, indicate the date range and jurisdiction in which it was used.

§ A.1.1.4 Identify the address of your organization’s principal place of business and list all office locations out of which your organization conducts business. If your organization has multiple offices, you may attach an exhibit or refer to a website.

§ A.1.2 Legal Status

§ A.1.2.1 Identify the legal status under which your organization does business, such as sole proprietorship, partnership, corporation, limited liability corporation, joint venture, or other.

- .1 If your organization is a corporation, identify the state in which it is incorporated, the date of incorporation, and its four highest-ranking corporate officers and their titles, as applicable.
- .2 If your organization is a partnership, identify its partners and its date of organization.
- .3 If your organization is individually owned, identify its owner and date of organization.

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- .4 If the form of your organization is other than those listed above, describe it and identify its individual leaders:

§ A.1.2.2 Does your organization own, in whole or in part, any other construction-related businesses? If so, identify and describe those businesses and specify percentage of ownership.

§ A.1.3 Other Information

§ A.1.3.1 How many years has your organization been in business?

§ A.1.3.2 How many full-time employees work for your organization?

§ A.1.3.3 List your North American Industry Classification System (NAICS) codes and titles. Specify which is your primary NAICS code.

§ A.1.3.4 Indicate whether your organization is certified as a governmentally recognized special business class, such as a minority business enterprise, woman business enterprise, service disabled veteran owned small business, woman owned small business, small business in a HUBZone, or a small disadvantaged business in the 8(a) Business Development Program. For each, identify the certifying authority and indicate jurisdictions to which such certification applies.

§ A.2 EXPERIENCE

§ A.2.1 Complete Exhibit D to describe up to four projects, either completed or in progress, that are representative of your organization's experience and capabilities.

§ A.2.2 State your organization's total dollar value of work currently under contract.

§ A.2.3 Of the amount stated in Section A.2.2, state the dollar value of work that remains to be completed:

§ A.2.4 State your organization's average annual dollar value of construction work performed during the last five years.

§ A.3 CAPABILITIES

§ A.3.1 List the categories of work that your organization typically self-performs.

§ A.3.2 Identify qualities, accreditations, services, skills, or personnel that you believe differentiate your organization from others.

§ A.3.3 Does your organization provide design collaboration or pre-construction services? If so, describe those services.

§ A.3.4 Does your organization use building information modeling (BIM)? If so, describe how your organization uses BIM and identify BIM software that your organization regularly uses.

§ A.3.5 Does your organization use a project management information system? If so, identify that system.

§ A.4 REFERENCES

§ A.4.1 Identify three client references:

(Insert name, organization, and contact information)

§ A.4.2 Identify three architect references:

(Insert name, organization, and contact information)

§ A.4.3 Identify one bank reference:

(Insert name, organization, and contact information)

§ A.4.4 Identify three subcontractor or other trade references:

(Insert name, organization, and contact information)



AIA[®] Document A305™ – 2020 Exhibit B

Financial and Performance Information

This Exhibit is part of the Contractor’s Qualification Statement, submitted by _____ and dated the _____ day of _____ in the year _____.
(In words, indicate day, month and year.)

§ B.1 FINANCIAL

§ B.1.1 Federal tax identification number:

§ B.1.2 Attach financial statements for the last three years prepared in accordance with Generally Accepted Accounting Principles, including your organization’s latest balance sheet and income statement. Also, indicate the name and contact information of the firm that prepared each financial statement.

§ B.1.3 Has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, been the subject of any bankruptcy proceeding within the last ten years?

§ B.1.4 Identify your organization’s preferred credit rating agency and identification information.
(Identify rating agency, such as Dun and Bradstreet or Equifax, and insert your organization’s identification number or other method of searching your organization’s credit rating with such agency.)

§ B.2 DISPUTES AND DISCIPLINARY ACTIONS

§ B.2.1 Are there any pending or outstanding judgments, arbitration proceedings, bond claims, or lawsuits against your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A, Section 1.2, in which the amount in dispute is more than \$75,000?
(If the answer is yes, provide an explanation.)

§ B.2.2 In the last five years has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management:
(If the answer to any of the questions below is yes, provide an explanation.)

.1 _____ failed to complete work awarded to it?

.2 _____ been terminated for any reason except for an owners’ convenience?

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.3 had any judgments, settlements, or awards pertaining to a construction project in which your organization was responsible for more than \$75,000?

.4 filed any lawsuits or requested arbitration regarding a construction project?

§ B.2.3 In the last five years, has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management; or any of the individuals listed in Exhibit A Section 1.2:
(If the answer to any of the questions below is yes, provide an explanation.)

.1 been convicted of, or indicted for, a business-related crime?

.2 had any business or professional license subjected to disciplinary action?

.3 been penalized or fined by a state or federal environmental agency?



AIA[®] Document A305[™] – 2020 Exhibit C

Project Specific Information

This Exhibit is part of the Contractor’s Qualification Statement, submitted by _____ and dated the _____ day of _____ in the year _____.
(In words, indicate day, month and year.)

PROJECT:

(Name and location or address.)

Jackson County Animal Shelter
29 Galilee Church Road Jefferson, GA

CONTRACTOR’S PROJECT OFFICE:

(Identify the office out of which the contractor proposes to perform the work for the Project.)

TYPE OF WORK SOUGHT

(Indicate the type of work you are seeking for this Project, such as general contracting, construction manager as constructor, design-build, HVAC subcontracting, electrical subcontracting, plumbing subcontracting, etc.)

CONFLICT OF INTEREST

Describe any conflict of interest your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A Section 1.2, may have regarding this Project.

§ C.1 PERFORMANCE OF THE WORK

§ C.1.1 When was the Contractor’s Project Office established?

§ C.1.2 How many full-time field and office staff are respectively employed at the Contractor’s Project Office?

§ C.1.3 List the business license and contractor license or registration numbers for the Contractor’s Project Office that pertain to the Project.

§ C.1.4 Identify key personnel from your organization who will be meaningfully involved with work on this Project and indicate (1) their position on the Project team, (2) their office location, (3) their expertise and experience, and (4) projects similar to the Project on which they have worked.

ADDITIONS AND DELETIONS:

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§ C.1.5 Identify portions of work that you intend to self-perform on this Project.

§ C.1.6 To the extent known, list the subcontractors you intend to use for major portions of work on the Project.

§ C.2 EXPERIENCE RELATED TO THE PROJECT

§ C.2.1 Complete Exhibit D to describe up to four projects performed by the Contractor's Project Office, either completed or in progress, that are relevant to this Project, such as projects in a similar geographic area or of similar project type. If you have already completed Exhibit D, but want to provide further examples of projects that are relevant to this Project, you may complete Exhibit E.

§ C.2.2 State the total dollar value of work currently under contract at the Contractor's Project Office:

§ C.2.3 Of the amount stated in Section C.2.2, state the dollar value of work that remains to be completed:

§ C.2.4 State the average annual dollar value of construction work performed by the Contractor's Project Office during the last five years.

§ C.2.5 List the total number of projects the Contractor's Project Office has completed in the last five years and state the dollar value of the largest contract the Contractor's Project Office has completed during that time.

§ C.3 SAFETY PROGRAM AND RECORD

§ C.3.1 Does the Contractor's Project Office have a written safety program?

§ C.3.2 List all safety-related citations and penalties the Contractor's Project Office has received in the last three years.

§ C.3.3 Attach the Contractor's Project Office's OSHA 300a Summary of Work-Related Injuries and Illnesses form for the last three years.

§ C.3.4 Attach a copy of your insurance agent's verification letter for your organization's current workers' compensation experience modification rate and rates for the last three years.

§ C.4 INSURANCE

§ C.4.1 Attach current certificates of insurance for your commercial general liability policy, umbrella insurance policy, and professional liability insurance policy, if any. Identify deductibles or self-insured retentions for your commercial general liability policy.

§ C.4.2 If requested, will your organization be able to provide property insurance for the Project written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis?

§ C.4.3 Does your commercial general liability policy contain any exclusions or restrictions of coverage that are prohibited in AIA Document A101-2017, Exhibit A, Insurance A.3.2.2.2? If so, identify.

§ C.5 SURETY

§ C.5.1 If requested, will your organization be able to provide a performance and payment bond for this Project?

§ C.5.2 Surety company name:

§ C.5.3 Surety agent name and contact information:

§ C.5.4 Total bonding capacity:

§ C.5.5 Available bonding capacity as of the date of this qualification statement:



AIA[®]

Document A305™ – 2020 Exhibit D

Contractor's Past Project Experience

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work
PROJECT DELIVERY METHOD	<input type="checkbox"/> Design-bid-build <input type="checkbox"/> Design-build <input type="checkbox"/> CM constructor <input type="checkbox"/> CM advisor <input type="checkbox"/> Other:	<input type="checkbox"/> Design-bid-build <input type="checkbox"/> Design-build <input type="checkbox"/> CM constructor <input type="checkbox"/> CM advisor <input type="checkbox"/> Other:	<input type="checkbox"/> Design-bid-build <input type="checkbox"/> Design-build <input type="checkbox"/> CM constructor <input type="checkbox"/> CM advisor <input type="checkbox"/> Other:	<input type="checkbox"/> Design-bid-build <input type="checkbox"/> Design-build <input type="checkbox"/> CM constructor <input type="checkbox"/> CM advisor <input type="checkbox"/> Other:
SUSTAINABILITY CERTIFICATIONS				



AIA[®]

Document A305™ – 2020 Exhibit E

Contractor's Past Project Experience, Continued

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work
PROJECT DELIVERY METHOD	<input type="checkbox"/> Design-bid-build <input type="checkbox"/> Design-build <input type="checkbox"/> CM constructor <input type="checkbox"/> CM advisor <input type="checkbox"/> Other:	<input type="checkbox"/> Design-bid-build <input type="checkbox"/> Design-build <input type="checkbox"/> CM constructor <input type="checkbox"/> CM advisor <input type="checkbox"/> Other:	<input type="checkbox"/> Design-bid-build <input type="checkbox"/> Design-build <input type="checkbox"/> CM constructor <input type="checkbox"/> CM advisor <input type="checkbox"/> Other:	<input type="checkbox"/> Design-bid-build <input type="checkbox"/> Design-build <input type="checkbox"/> CM constructor <input type="checkbox"/> CM advisor <input type="checkbox"/> Other:
SUSTAINABILITY CERTIFICATIONS				

SECTION 002513
PREBID MEETING

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

002513-1

DOCUMENT 002513 - PREBID MEETINGS

1.1 PREBID MEETING

- A. **Architect** will conduct a Prebid meeting as indicated below:
1. Meeting Date: Thursday April 29, 2021
 2. Meeting Time: 2:00 p.m., local time.
 3. Location: Project Site, 29 Galilee Church Road Jefferson, GA 30549
- B. Attendance:
1. Prime Bidders: Attendance at Prebid meeting is **MANDATORY**.
 2. Subcontractors: Attendance at Prebid meeting is recommended.
- C. Bidder Questions: Questions will not be answered at the Pre-bid in relation to the drawings. The pre-bid meeting is to allow bidder to see the site and existing conditions and ask any questions in regard to the process of submitting bids only. All drawings regarding the drawings and project manual are to be addressed to info@carterwatkins.com The deadline for all questions is [**five**] business days prior to bid.
- D. Agenda: Prebid meeting agenda will include review of topics that may affect proper preparation and submittal of bids, including the following:
1. Procurement and Contracting Requirements:
 - a. Advertisement for Bids.
 - b. Instructions to Bidders.
 - c. Bidder Qualifications.
 - d. Bonding.
 - e. Insurance.
 - f. Bid Security.
 - g. Bid Form and Attachments.
 - h. Bid Submittal Requirements.
 - i. Bid Submittal Checklist.
 - j. Notice of Award.
 2. Communication during Bidding Period:
 - a. Obtaining documents.
 - b. Access to Project Web site.
 - c. Bidder's Requests for Information.
 - d. Bidder's Substitution Request/Prior Approval Request.

SECTION 002513
PREBID MEETING

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

002513-1

-
- e. Addenda.
 - 3. Contracting Requirements:
 - a. Agreement.
 - b. The General Conditions.
 - c. The Supplementary Conditions.
 - d. Other Owner requirements.
 - 4. Separate Contracts:
 - a. Work by Owner.
 - b. Work of Other Contracts.
 - 5. Schedule:
 - a. Project Schedule.
 - b. Contract Time.
 - c. Liquidated Damages.
 - d. Other Bidder Questions.
 - 6. Site/facility visit or walkthrough.
- E. A copy of the sign-in sheet will be posted in the subsequent addendum.
- 1. Sign-in Sheet: Minutes will include list of meeting attendees.

END OF DOCUMENT 002513

SECTION 004373
PROPOSED SCHEDULE OF VALUES FORM

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

004373-1

SECTION 004373 - PROPOSED SCHEDULE OF VALUES FORM

1.1 BID FORM SUPPLEMENT

- A. A completed Proposed Schedule of Values form is required to be attached to the Bid Form.

1.2 PROPOSED SCHEDULE OF VALUES FORM

- A. Proposed Schedule of Values Form: Provide a breakdown of the bid amount, including alternates, in enough detail to facilitate continued evaluation of bid. Coordinate with the Project Manual table of contents. Provide multiple line items for principal material and subcontract amounts in excess of **[five]** percent of the Contract Sum.
- B. Arrange schedule of values using **[AIA Document G703-1992]** or other form providing complete breakdown of costs.
 - 1. Copies of AIA standard forms may be obtained from the American Institute of Architects; <https://www.aiacontracts.org/library>; (800) 942-7732.

END OF DOCUMENT 004373

SECTION 011113
SUMMARY OF THE WORK

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

011113-1

1.1 RELATED DOCUMENTS

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

1.2 PROJECT DESCRIPTION

- A. The Project consists of the construction of a front and rear addition to the animal shelter as well as renovations to the existing facility. See full scope of work as presented in the Construction Drawings.

B. SPECIAL NOTES –

1. The Shelter staff and animals will remain in the facility during the construction. The work will need to be performed in phases (Phase 1 – front and rear additions, and Phase 2 – staff and animals relocate to additions and existing facility renovations will occur).
2. Include all paving, sidewalks, fencing, kennels, mechanical, electrical, plumbing structural, civil, earthwork, etc. as shown in the drawings..
3. Existing metal building roof and wall panels are to be replaced.
4. All existing interior steel structure (rigid frames, bracing, columns, base plates, plumbing piping, and all metal surfaces to be prepped and painted. CMU at existing kennels to be prepped and painted with epoxy paint and existing flooring to be prepped to receive new flooring.

1.3 CONTRACTORS USE OF PREMISES

- A. General: Limit use of the premises only to construction activities in areas indicated.
1. Confine operations to areas within Construction limits to areas mutually agreed upon with the Owner. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
 2. Keep driveways and entrances serving the premises and the park grounds clean and available to the Owner. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

END OF SECTION

SECTION 01 21 13

ALLOWANCES

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

012113-1

JACKSON COUNTY ANIMAL SHELTER

MARCH 19, 2021

PART 1 - GENERAL

ALLOWANCES ARE AS FOLLOWS (IF ANY):

1. Hardware Allowance: (allowance to provide for the purchase of hardware materials only. Labor, preparation, etc. to be included in base bid amount). Figures below are not inclusive of Access Control (see access control allowance).

\$ 800.00 per interior door leaf. This includes new doors and replaced existing doors.

\$ 1,500.00 per exterior door leaf (coordinate access control and locking on exterior doors in order to provide correct frame configuration/cutouts).

2. Audio Visual –
Provide an allowance for camera system, cabling, mounting brackets, and faceplates of \$45,000.00. All camera feeds are to be run to point designated in Lobby and to Director's Office.
3. Access Control –
Provide an allowance of \$18,000.00 for the installation of a complete, operable access control system for the doors noted on Sheet A-103.
4. Brick Material –
Provide an allowance of \$500.00 per thousand brick. Allowance to include brick material only. All other items (mortar, grout, brick ties, weeps) to be included in the base bid.

END OF SECTION

SECTION 01 23 00

ALTERNATES

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

01 23 00-1

JACKSON COUNTY ANIMAL SHELTER

MARCH 19, 2021

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for Alternates.
- B. Definition: an Alternate is an amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in Contract Documents.
- C. Coordination: Coordinate related Work and modify or adjust adjacent work as necessary to ensure that work affected by each accepted Alternate is complete and fully integrated into the project.
- D. Notification: Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates.
- E. Schedule: Specification Sections contain requirements for materials and methods necessary to achieve the work described under each Alternate.
- F. Provide pricing of Alternates on bid form and indicate whether they are an add or deduct, from the base bid, with a plus or minus.

Alternate Additions/Deductions to the Base Bid (IF ANY) Refer to Addendums for future alternates.

- Existing roof panels & skylights and wall panels to remain and be painted to match color selection for new panels on additions. Roof to receive GAF Hydro Stop PremiumCoat finish. All joints at skylights, roof penetrations, etc. to be cleaned out and sealed with Dow 795 silicone. Prime wall panels with Sherwin Williams Kem Kromik Universal Metal Primer and coat with two coats of highest-quality Sherwin Williams Direct-to-metal alkyd enamel paint.
- Remove provision of Kennels (not veterinary equipment) from project.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 25 13
PRODUCT SUBSTITUTIONS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

01 25 13

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."
- C. Standards: Refer to Section "Definitions and Standards" for applicability of industry standards to produce specified.
- D. Procedural requirements governing the Contractor's selection of products and product options are included under Section "Materials and Equipment."

1.3 DEFINITIONS

- A. Definitions used in the Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:
1. Revisions to Contract Documents requested by the Owner or Architect.
 2. Specified options of products and construction methods included in Contract Documents.
 3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will be considered if received within 15 days after commencement of the work. Requests received more than 15 days after commencement Of the Work may be considered or rejected at the discretion of the Architect.
1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
 2. The Architect will consider only those requests accompanied by a copy of the Request

SECTION 01 25 13
PRODUCT SUBSTITUTIONS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

01 25 13

for Substitution form bound herein, filled out completely, signed, and including the required attachments.

3. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the work promptly or coordinate activities properly.
5. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
6. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
7. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
8. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be

SECTION 01 25 13
PRODUCT SUBSTITUTIONS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

01 25 13

coordinated.

9. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

- B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

PROPOSED REQUEST FOR SUBSTITUTION

TO: _____

FROM: _____

SECTION 01 25 13
PRODUCT SUBSTITUTIONS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

01 25 13

Name of Manufacturer

Street Address

City and State

Phone number and name of person to contact

PROJECT: _____

1. Specification Section and Paragraph numbers of product specified

2. Proposed Substitute

- A. Name and Model No:

- B. Description:

- C. Attach applicable Submittals as required by the referenced Specification Section, i.e. Product Data, Materials List, Shop Drawings, Samples, Design Data, Test Reports, and Certificates. Attach Shop Drawings to the effect of the proposed substitution on adjacent components of the work.
- D. Insert Numbers of applicable reference standards:
- E. Attach a color chart; if applicable.
- F. Attach installation instructions.

3. Manufacturer's Reputation: Attach the following:

- A. Evidence of reputation for prompt delivery.
- B. Evidence of reputation for efficiency in servicing products.

4. Comparison: Attach an itemized comparison of the proposed substitution with product specified. Significant qualities may include elements

SECTION 01 25 13
PRODUCT SUBSTITUTIONS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

01 25 13

such as size, weight, durability, performance, and visual effects.

5. Changes in Work: Attach data relating to changes required in other work to permit use of proposed substitution and changes required in construction schedule and overall contract time. Coordinate changes or modifications needed to other parts of the work and to construction performed by the Owner and separate Contractors that will be necessary to accommodate the proposed substitution.
6. Cost Data: Attach accurate cost data on proposed substitution in comparison with product specified.
7. Previous Installation: Provide the following information on similar projects on which proposed substitution was used, list projects in the locale of the project primarily and then in other areas that best represent its application on this project:

Name and Address of Project	Date of Installation	Name, Address and Phone Number of Architect
--------------------------------	-------------------------	--

- A.
- B.
- C.
- D.

8. In making a request for substitution, the Manufacturer, Installer, and Contractor each represents that:
 - A. He has examined the Drawings and Specifications and has determined that, to the best of his knowledge, the proposed substitution is appropriate for the use intended in the Drawings and Specifications.
 - B. He will provide the same or better warranty for substitution as for product or method specified.
 - C. The product is equal or better in quality and serviceability to the specified item.

9. In making a request for substitution, the Installer and Contractor each represents that:

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PRODUCT SUBSTITUTIONS

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-
- A. He will coordinate the installation of accepted substitution into the work, making such changes as may be required for the work to be complete in all respects.
 - B. He waives all claims for additional costs related to substitution which consequently become apparent.
 - C. Cost data is complete and includes all related costs under his Contract, but excludes costs under separate contracts and the Architect's redesign costs.
 - D. The substitution meets the requirements of the Contract Documents, regardless of the evidence submitted or any review or independent investigation by the Owner or the Architect.

Name of Manufacturer and signature of Manufacturer's Rep Date

Name of Installer and signature of Installer's Rep Date

Name of Contractor and signature of Contractor's Rep Date

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MODIFICATION PROCEDURES

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to this section.

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK

- A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Architect on AIA form G710, Architect's Supplemental Instructions.

1.4 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
1. Proposal requests issued by the Architect are for information only. Do not consider them instruction either to stop work in progress, or to execute the proposed change.
 2. Unless otherwise indicated in the proposal request, within 20 days of receipt of the proposal request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the proposed change.
 - a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have

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on the Contract Time.

- B. Contractor-Initiated Change Order Proposals: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a change proposal to the Architect.
1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Comply with requirements in Section "Product Substitutions" if the proposed change in the Work requires the substitution of one product or system for a product or system specified.

1.5 ALLOWANCES

- A. Allowance Adjustment: Base each Change Order Proposal for an allowance cost adjustment solely on the difference between the actual purchase amount and the allowance, multiplied by the final measurement of work-in-place, with reasonable allowances, where applicable, for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request, the Architect may issue a Construction Change Directive on AIA for G714, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Change Order Proposal, the Architect will issue a Change Order for signatures of the Owner and Contractor on AIA Form G701, as provided in the Conditions of the

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MODIFICATION PROCEDURES

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Contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 29 00
APPLICATION FOR PAYMENT

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1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

1.3 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

1. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.

- B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.

1. Identification: Include the following Project Identification on the Schedule of Values:

- a. Project name
- b. Name of the Architect
- c. Project number
- d. Contractor's name and address
- e. Date of submittal

2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:

- a. Generic name
- b. Related Specification Section
- c. Name of subcontractor
- d. Name of Manufacturer or fabricator

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APPLICATION FOR PAYMENT

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- e. Name of supplier
 - f. Change Orders (numbers) that have affected value
 - g. Dollar value
 - h. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent
3. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

1.4 APPLICATIONS FOR PAYMENT:

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
- B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for payment.
- D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.
- E. Transmittal: Submit 3 executed copies of each Application for Payment to the Architect by means ensuring receipt within 24 hours.
- F. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.
- G. Administrative actions and submittals that shall proceed or coincide with this application include:
 - 1. Occupancy permits and similar approvals
 - 2. Warranties (guarantees) and maintenance agreements
 - 3. Test/adjust/balance records
 - 4. Maintenance instructions
 - 5. Meter readings
 - 6. Start-up performance reports
 - 7. Change-over information related to Owner's occupancy, use, operation, and maintenance.
 - 8. Final cleaning

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APPLICATION FOR PAYMENT

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9. Application for reduction of retainage, and consent of surety
 10. Advice on shifting insurance coverages
 11. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial completion.

H. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:

1. Completion of Project closeout requirements
2. Completion of items specified for completion after Substantial Completion
3. Assurance that unsettled claims will be settled
4. Assurance that Work not complete and accepted will be completed without undue delay
5. Transmittal of required Project construction records to Owner
6. Certified property survey.
7. Proof that taxes, fees, and similar obligations have been paid
8. Release of liens
9. Removal of temporary facilities and services
10. Removal of surplus materials, rubbish, and similar elements
11. Change of door locks to Owner's access

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
1. Coordination
 2. General installation provisions
 3. Cleaning and protection

1.3 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
1. Where installation of one part of the work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations,

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PROJECT COORDINATION

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to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.2 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings including but not limited to:
 - 1. Pre-Construction Conference
 - 2. Progress Meetings – to be held every other week at an agreed-upon time/date.
- B. Construction schedules are specified in another Division-1 Section.

1.3 PRE-CONSTRUCTION CONFERENCE

- A. Schedule a pre-construction conference and organizational meeting at the Project site or other convenient location no later than 15 days after execution of the Agreement and prior to commencement of construction activities. Conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: The Owner, Architect and their consultants, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the work.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
 - 1. Tentative construction schedule
 - 2. Critical Work sequencing
 - 3. Designation of responsible personnel
 - 4. Procedures for processing field decisions and Change Orders
 - 5. Procedures for processing Applications for Payment
 - 6. Distribution of Contract Documents
 - 7. Submittal of Shop Drawings, Product Data and Samples
 - 8. Preparation of record documents
 - 9. Use of the premises
 - 10. Office, Work, and storage areas
 - 11. Equipment deliveries and priorities
 - 12. Safety procedures
 - 13. First aid
 - 14. Security
 - 15. Housekeeping

SECTION 01 31 19
PROJECT MEETINGS

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16. Working hours

1.4 PROGRESS MEETINGS

- A. Conduct progress meetings with subcontractors at weekly intervals. Notify the Owner and Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.
- B. Attendees: In addition to representatives of the General Contractor, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
 - 1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 2. Review the present and future needs of each entity present, including such items as:
 - a. Interface requirements
 - b. Time
 - c. Sequences
 - d. Deliveries
 - e. Off-site fabrication problems
 - f. Access
 - g. Site utilization
 - h. Temporary facilities and services
 - i. Hours of Work
 - j. Hazards and risks
 - k. Housekeeping
 - l. Quality and Work standards
 - m. Change Orders
 - n. Documentation of information for payment requests
 - o. Pre-installation discussions

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PROJECT MEETINGS

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- D. Reporting: No later than 3 days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Also, send the minutes to the Architect, via email, and include a brief summary, in narrative form, of progress since the previous meeting and report.
1. Schedule Updating: Revise the construction schedule after each progress meeting where revision to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

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SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.
3. Final completion construction photographs.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
2. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.
3. Section 311000 "Site Clearing" for photographic documentation before site clearing operations commence.

1.2 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit image files within [three] days of taking photographs.

1. Submit photos [on CD-ROM or thumb-drive]. Include copy of key plan indicating each photograph's location and direction.
2. Identification: Provide the following information with each image description [in file metadata tag]:

a. Name of Project.

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- b. Name and contact information for photographer.
 - c. Name of Owner and Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of location, vantage point, and direction.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.3 QUALITY ASSURANCE

1.4 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of [12] megapixels, and at an image resolution of not less than [3200 by 2400] pixels[, and with vibration-reduction technology]. Use flash in low light levels or backlit conditions.
- B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1.5 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by [Architect].
 - 1. Flag [construction limits] before taking construction photographs.
 - 2. Take [20] photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take [20] photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.

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4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Periodic Construction Photographs: Take [20] photographs [weekly] . Select vantage points to show status of construction and progress since last photographs were taken.
- E. Final Completion Construction Photographs: Take [100] photographs after date of Substantial Completion for submission as Project Record Documents. [Architect] will inform photographer of desired vantage points.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

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SUBMITTALS

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the work, including:
1. Contractor's construction schedule
 2. Daily construction reports
 3. Shop Drawings
 4. Product Data
 5. Samples
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
1. Permits
 2. Applications for payment
 3. Performance and payment bonds
 4. Insurance certificates
 5. List of Subcontractors
- C. The Schedule of Values submittal is included in Section "Applications for Payment."

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 3. Processing: Allow sufficient review time so that installation will not be delayed as a result

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of the time required to process submittals, including time for re-submittals.

- a. Allow three weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the work to permit processing.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on the label for processing and recording action taken.
 - a. Project name
 - b. Date
 - c. Name and address of Architect
 - d. Name and address of Contractor
 - e. Name and address of subcontractor
 - f. Name and address of supplier
 - g. Name of manufacturer
 - h. Number and title of appropriate Specification Section
 - i. Drawing number and detail references, as appropriate
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
1. On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".
1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units

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of the Work as indicated in the "Schedule of Values".

- B. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.
- C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
1. Dimensions
 2. Identification of products and materials included
 3. Compliance with specified standards
 4. Notation of coordination requirements
 5. Notation of dimensions established by field measurement.
 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings of sheets at least 8 1/2" x 11" but no larger than 30" x 42".
 7. Initial Submittal: Submit one correctable translucent reproducible print and two blue or black-line print for the Architect's review; the reproducible print will be returned.
 8. Final Submittal: Submit three blue or black-line prints; submit 5 prints where required for maintenance manuals. 2 prints will be retained; the remainder will be returned.
 9. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.
- C. SPECIFIC SHOP DRAWINGS TO BE SUBMITTED, IN ADDITION TO CUSTOMARY ITEMS, ARE AS FOLLOWS:
1. Pre-engineered metal building system with Georgia Registered Engineer's Stamp.
 2. Steel Stud Shop drawings with Georgia Registered Engineer's Stamp.
 3. Parking and sidewalk layout shop drawing.
 4. Roofing, flashing, and coping shop drawings.

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SUBMITTALS

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5. Millwork and Cabinetry.
6. Interior Finishes.
7. HVAC, Plumbing, and Electrical.
8. Cabinetry.
9. Kennels.
10. Overhead Sectional Door.

1.6 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations
 - b. Compliance with recognized trade association standards
 - c. Compliance with recognized testing agency standards
 - d. Application of testing agency labels and seals
 - e. Notation of dimensions verified by field measurement
 - f. Notation of coordination requirements
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
3. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.
4. Submittals: Submit 3 copies of each required submittal; submit 5 copies where required for maintenance manuals. The Architect will retain one, and will return the other marked with action taken and corrections or modifications required.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.

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- b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.7 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
 - 1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:
 - a. Generic description of the Sample
 - b. Sample source
 - c. Product name or name of manufacturer
 - d. Compliance with recognized standards
 - e. Availability and delivery time
 - 2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3) that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
 - c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.
 - 3. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
 - a. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.
 - 4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.
 - 5. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout

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the course of construction.

- a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
- b. Sample sets may be used to obtain final acceptance of the construction associated with each set.

- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

1.8 ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.

- B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked "Approved " or No Exceptions Taken" that part of the work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance. This does NOT preclude the Contractor from following the Construction Documents in any way. This does not comprise the Architect's "approval" of the submittal, other than for a cursory review, and does not allow the contractor to deviate from the documents in any fashion. It is simply a courtesy review of the submittal. The Architect has outlined the project in the Construction Document and any variation is taken at the Contractor's risk.
2. Final-But-Restricted Release: When submittals are marked "Make Corrections Noted" that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
3. Returned for Resubmittal: When submittal is marked "Rejected, Resubmit," do not proceed with that part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Rejected, Resubmit" to be used at the Project site, or elsewhere where Work is in progress.

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PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 42 19
REFERENCE STANDARDS AND DEFINITIONS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the General Conditions.
- B. Indicated: The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.
- C. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean "directed by the Architect," "requested by the Architect," and similar phrases.
- D. Approve: The term "approved," where used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in General and Supplementary Conditions.
- E. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
- G. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
- H. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
- I. Installer: An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor, for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
1. The term "experienced" when used with the term "Installer" means having a minimum of 5 previous Projects similar in size and scope to this Project, being familiar with the precautions required, and having complied with requirements of the authority having jurisdiction.
 2. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic

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name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

3. Assignment of Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or opinion. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
- J. Project Site is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.
- K. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Where the date of issue of a referenced standard is not specified, comply with The standard in effect as of date of Contract Documents.
- C. Conflicting Requirements: Where compliance with two or more standards is specified, and the standards establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Architect for a decision before proceeding.
 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum, as

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REFERENCE STANDARDS AND DEFINITIONS

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appropriate for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.

- D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.
 2. Although copies of standards needed for enforcement of requirements may be included as part of required submittals, the Architect reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.
- E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

1.4 GOVERNING REGULATIONS/AUTHORITIES

- A. The Architect has contacted authorities having jurisdiction where necessary to obtain information necessary for preparation of Contract Documents; that information may or may not be of significance to the Contractor. Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

1.5 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 43 13
MATERIALS AND EQUIPMENT

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."
- C. Standards: Refer to Section "Definitions and Standards" for applicability of industry standards to products specified.
- D. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section "Product Substitutions."

1.3 DEFINITIONS

- A. Definitions used in the Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

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MATERIALS AND EQUIPMENT

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1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.
 - B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
 - C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
 1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer
 - b. Model and serial number
 - c. Capacity
 - d. Speed
 - e. Ratings
- 1.5 **PRODUCT DELIVERY, STORAGE, AND HANDLING**
- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
 3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking,

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- protecting and installing.
4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
 1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. Substitutions will be permitted, if approved equal.
 2. Semi-proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. Substitutions will be permitted, if approved equal.
 3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
 4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are

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MATERIALS AND EQUIPMENT

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recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

- a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
5. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
6. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
7. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.
8. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division-1 for allowances that control product selection, and for procedures required for processing such selections.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work.
 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01 51 00
TEMPORARY FACILITIES

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.
- B. Temporary utilities required include but are not limited to:
 - 1. Water service and distribution
 - 2. Temporary electric power and light
 - 3. Telephone service.
 - 4. Internet Service with email, Computer, and Printer.
- C. Temporary construction and support facilities required include but are not limited to:
 - 1. Temporary heat
 - 2. Field offices and storage sheds
 - 3. Sanitary facilities, including drinking water
 - 4. Temporary enclosures
 - 5. Elevator use
 - 6. Temporary Project identification signs and bulletin boards
 - 7. Waste disposal services
 - 8. Rodent and pest control
 - 9. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities required include but are not limited to:
 - 1. Temporary fire protection
 - 2. Barricades, warning signs, lights
 - 3. Environmental protection

1.3 SUBMITTALS

- A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

1.4 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:

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TEMPORARY FACILITIES

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1. Building Code requirements
 2. Health and safety regulations
 3. Utility company regulations
 4. Police, Fire Department and Rescue Squad rules
 5. Environmental protection regulations
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."
1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 **PROJECT CONDITIONS**

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 - PRODUCTS

2.1 **MATERIALS**

- A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Lumber and Plywood: Comply with requirements in Division-6 Section "Rough Carpentry."
1. For job-built temporary offices, shops and sheds within the construction area, provide UL labeled, fire treated lumber and plywood for framing, sheathing and siding.
 2. For signs and directory boards, provide exterior type, Grade B-B high Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.
 3. For fences and vision barriers, provide exterior type, minimum 3/8" thick plywood.

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TEMPORARY FACILITIES

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- C. Gypsum Wallboard: Provide gypsum wallboard complying with requirements of ASTM C 36 on interior walls of temporary offices.
 - D. Paint: Comply with requirements of Division-9 Section "Finish Painting."
 - 1. For job-built temporary offices, shops, sheds, fences and other exposed lumber and plywood, provide exterior grade acrylic-latex emulsion over exterior primer.
 - 2. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.
 - 3. For interior walls of temporary offices, provide two coats interior latex flat wall paint.
 - E. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.
 - F. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

- A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
- H. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.

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TEMPORARY FACILITIES

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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- I. First Aid Supplies: Comply with governing regulations.
 - J. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
 - 1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Connect to existing service.
- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
 - 1. Sterilization: Sterilize temporary water piping prior to use.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.
 - 1. Except where overhead service must be used, install electric power service underground.
 - 2. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
- D. Temporary Lighting: Whenever overhead floor or roof deck has been installed, provide temporary lighting with local switching.

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TEMPORARY FACILITIES

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1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.
- E. Temporary Telephones: Provide temporary telephone service for all personnel engaged in construction activities, throughout the construction period. Install telephone on a separate line for each temporary office and first aid station. Where an office has more than two occupants, install a telephone for each additional occupant or pair of occupants.
1. At each telephone, post a list of important telephone numbers.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.
1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. Temporary Heat: Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
- D. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control.
1. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.
- E. Field offices: Provide insulated, weather-tight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:
- F. Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
1. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.
- G. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

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- H. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
1. Provide safety showers, eye-wash fountains and similar facilities for convenience, safety and sanitation of personnel.
- I. Drinking Water Facilities: Provide containerized tap-dispenser bottled-water type drinking water units, including paper supply.
1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7 to 13 deg C).
- J. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq feet or less with plywood or similar materials.
 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.
 4. Where temporary wood or plywood enclosure exceeds 100 sq ft in area, use UL-labeled fire-retardant treated material for framing and main sheathing.
- K. Temporary Elevator Use: Use of Service Elevator for movement of materials and personnel is permitted.
- L. Project Identification and Temporary Signs: Prepare project identification and other signs of the size indicated; install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative treated wood or steel. Do not permit installation of unauthorized signs.
1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
 2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.
- M. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

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- N. Rodent and Pest Control: Retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be relatively free of pests and their residues at Substantial Completion. Perform control operations in a lawful manner using environmentally safe materials.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.
- B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- D. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.
- E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- F. Environmental Protection: Provide protection, operate temporary facilities and conduct construction

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in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
 - 2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.
 - 2. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:
 - a. Replace air filters and clean inside of ductwork and housings.
 - b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
 - c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION

SECTION 01 58 13

PROJECT SIGNS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnish, install, and maintain project identification sign.
- B. Provide temporary on-site informational signs:
 - 1. As required by codes, laws, and regulatory agencies.
 - 2. To identify key elements of construction facilities.
 - 3. To direct traffic.
- C. Remove signs at completion of construction.
- D. Allow no other signs to be displayed.

1.2 PROJECT IDENTIFICATION SIGN

- A. Erect on the site at a lighted location of high public visibility, adjacent to the main entrance to site, as approved by Architect. Sign to be two (2) 8' wide by 4' tall plywood sheets mounted on two 6 x 6 pressure treated posts in the shape of a "V". Sign shall have:
 - Job Title – Animal Shelter Improvements
 - Jackson County Board of Commissioners names list along with County Seal
 - Architects name with logo at bottom left
 - Contractor's name with logo at bottom right.

PART 2 - PRODUCTS

2.1 SIGN MATERIALS

- A. Structure and Framing: May be new, wood or metal, in sound condition structurally adequate to work, and suitable for specified finish.
- B. Sign Surfaces: Two, exterior marine grade 4' x 8' plywood sheets with vinyl or painted lettering mounted to three 6 x 6 pressure-treated posts (forming a "V").
- C. Rough Hardware: Galvanized
- D. Paint: Exterior quality, as specified in Section 09 900.
 - 1. Use bulletin colors for graphics.
 - 2. Colors for structure, framing, sign surfaces, and graphics as shown.

PART 3 - EXECUTION

3.1 PROJECT IDENTIFICATION SIGN

- A. Paint all exposed surfaces of supports, framing, and surface materials; one coat of primer, and one coat of exterior paint.

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PROJECT SIGNS

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- B. Paint graphics in the styles, sizes and colors as indicated on drawing in this section of specifications.
- C. Provide the Project name at top center; Owner's name middle center; in smaller font provide Architect's name and address at lower left; Contractor's name and address at lower right; and any other name deemed appropriate for the project at lower center.

3.2 MAINTENANCE

- A. Maintain signs and supports in a neat, clean condition; repair damages to structure, framing, or sign.
- B. Relocate informational signs as required by progress of work.

3.3 REMOVAL

- A. Remove signs, framing, supports, and foundations at completion of project.

END OF SECTION

SECTION 01 70 00
PROJECT CLOSEOUT

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
1. Inspection procedures
 2. Project record document submittal
 3. Operating and maintenance manual submittal
 4. Submittal of warranties
 5. Final clearing
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Division-2 through -16.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the work is not complete.
 2. Advise Owner of pending insurance change-over requirements.
 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 5. Submit record drawings, maintenance manuals, and similar final record information.
 6. Deliver tools, spare parts, extra stock, and similar items.
 7. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.

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8. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
 9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
- B. Inspect Procedures: On receipt of a request for inspection the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The Architect will repeat inspection when requested and assured that the work has been substantially completed.
 2. Results of the completed inspection will form the basis of requirements for final acceptance.
 3. The initial inspection shall be scheduled at least 20 days prior to date of substantial completion.
 4. If necessary, the initial inspection will be repeated. Architects and Engineers cost for re-inspection will be paid by the Contractor and deducted from the contract sum by change order.

1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
 4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the work.
 5. Submit consent of surety to final payment.
 6. Submit a final liquidated damages settlement statement.
 7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Re-inspection Procedure: The Architect will re-inspect the work upon receipt of notice that the work,

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including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

1. Upon completion of re-inspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, re-inspection will be repeated, and the Architect's and Engineer's costs for re-inspection will be paid by the Contractor and deducted from the contract sum by change order.

1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the work.
 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 3. Note related Change Order numbers where applicable.
 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
 1. Upon completion of the work, submit record Specifications to the Architect for the Owner's records.

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- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.
1. Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.
- E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.
- F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.
- G. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information.
1. Emergency instructions
 2. Spare parts lists
 3. Copies of warranties
 4. Wiring diagrams
 5. Recommended "turn around" cycles
 6. Inspection procedures
 7. Shop Drawings and Product Data
 8. Fixture lamping schedule

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

- A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular

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maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Maintenance manuals
 2. Record documents
 3. Spare parts and materials
 4. Tools
 5. Lubricants
 6. Fuels
 7. Identification systems
 8. Control sequences
 9. Hazards
 10. Cleaning
 11. Warranties and bonds
 12. Maintenance agreements and similar continuing commitments
- B. As part of instruction for operating equipment, demonstrate the following procedures:
1. Start-up
 2. Shutdown
 3. Emergency operations
 4. Noise and vibration adjustments
 5. Safety procedures
 6. Economy and efficiency adjustments
 7. Effective energy utilization

3.2 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
- a. Remove labels that are not permanent labels
 - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

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- c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.
 - D. Removal of Protection: Remove temporary protection and facilities installed for protection of the work during construction.
 - E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
 - 1. Where extra materials of value remaining after completion of associated work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

SECTION 01 78 33
WARRANTIES AND BONDS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

01 78 33-1

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 2. General closeout requirements are included in Section "Project Closeout."
 3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions-2 through -16.
 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.
- B. Reinstatement of Warranty: When work covered by a warranty has failed and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

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WARRANTIES AND BONDS

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- C. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the Owner has benefited from use of the work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept work for the Project where a special warranty, certification, or similar commitment is required on such work or part of the work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the work, submit written warranties upon request of the Architect.
1. When a designated portion of the work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the work.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
1. Refer to individual Sections of Divisions-2 through -16 for specific content requirements, and particular requirements for submittal of special warranties.
- C. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

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WARRANTIES AND BONDS

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- D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the installer.
 2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor.
 3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 78 39
PROJECT RECORD DOCUMENTS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
1. Record Drawings.
 2. Record Specifications.
 3. Record Product Data.
- B. Related Sections include the following:
1. Division 1 Section "Summary of Multiple Contracts" for coordinating Project Record Documents covering the Work of multiple contracts.
 2. Division 1 Section "Closeout Procedures" for general closeout procedures].
 3. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 4. Divisions 2 through 16 Sections for specific requirements for Project Record Documents of products in those Sections.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
1. Number of Copies: Submit **one** set of marked-up Record Prints and one electronic copy.
 2. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal: Submit **one** set of **corrected Record electronic files** and **one** set of marked-up Record Prints. Architect will initial and date each **marked-up set** and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return **transparencies** and prints for organizing into sets, printing, binding, and final submittal.
 - b. Final Submittal: Submit **one** set of marked-up Record Prints, **one** set of record transparencies, and **three** copies printed from Record Transparencies. Print

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PROJECT RECORD DOCUMENTS

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each Drawing, whether or not changes and additional information were recorded.

- c. Final Submittal: Submit **one** set of marked-up Record Prints, **one** set of Record CAD Drawing files, **one** set of Record CAD Drawing plots, and **three** copies printed from record plots. Plot and print each Drawing, whether or not changes and additional information were recorded.

- 1) Electronic Media: **CD-ROM**.

- B. Record Specifications: Submit **one copy** of Project's Specifications, including addenda and contract modifications.

- C. Record Product Data: Submit **one copy** of each Product Data submittal.

- 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

- 1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

- a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

- 2. Content: Types of items requiring marking include, but are not limited to, the following:

- a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.

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PROJECT RECORD DOCUMENTS

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- e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
 2. Refer instances of uncertainty to Architect for resolution.
 3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.
 4. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. Architect will make the Contract Drawings available to Contractor's print shop.
- C. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:
1. Format: Same CAD program, version, and operating system as the original Contract Drawings.
 2. Format: **DWG**], operating in **Windows NT** operating system.
 3. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
 4. Refer instances of uncertainty to Architect for resolution.

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PROJECT RECORD DOCUMENTS

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5. Architect will furnish Contractor one set of CAD Drawings of the Contract Drawings for use in recording information.
 - a. Architect makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
 - b. CAD Software Program: The Contract Drawings are available in AUTOCAD 2000.

 - D. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
 1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
 2. Consult with Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

 - E. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
 3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect .
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

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1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders, Record Drawings, **[and] [Product Data]** where applicable.

2.3 RECORD PRODUCT DATA

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

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 01781

SECTION 01 79 00
DEMONSTRATION AND TRAINING

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Division 1 Section "Allowances" for administrative and procedural requirements for demonstration and training allowances.
 - 2. Division 1 Section "Project Management and Coordination" for requirements for pre-instruction conferences.
 - 3. Division 1 Section "Photographic Documentation" for preparing and submitting demonstration and training videotapes.
- C. Allowances: Furnish demonstration and training instruction time under the Demonstration and Training Allowance as specified in Division 1 Section "Allowances."
- D. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up.

1.3 SUBMITTALS

- A. Instruction Program: Submit **[four]** copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. At completion of training, submit **[four]** complete training manual[s] for Owner's use.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.

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- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.
 - E. Demonstration and Training Videotape: Submit **[four]** copies at end of each training module.

1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM (as applicable)

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
 - 1. Motorized doors, including **[overhead coiling doors]** .

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2. Equipment, including **[residential appliances]**.
 3. Fire-protection systems, including **[fire alarm] [fire pumps] [and] [fire-extinguishing systems]**.
 4. Intrusion detection systems.
 5. Conveying systems, including **[elevators]**.
 6. Medical equipment, including medical gas equipment and piping.
 7. Heat generation, including **[boilers] [feedwater equipment] [pumps] [steam distribution piping] [and] [water distribution piping]**.
 8. Refrigeration systems, including **[chillers] [cooling towers] [condensers] [pumps] [and] [distribution piping]**.
 9. HVAC systems, including **[air-handling equipment] [air distribution systems] [and] [terminal equipment and devices]**.
 10. HVAC instrumentation and controls.
 11. Electrical service and distribution, including **[transformers] [switchboards] [panelboards] [uninterruptible power supplies] [and] [motor controls]**.
 12. Packaged engine generators, including transfer switches.
 13. Lighting equipment and controls.
 14. Communication systems, including **[intercommunication] [surveillance] [clocks and programming] [voice and data] [and] [television]** equipment.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.

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- c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
 7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
 8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.

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- d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. Owner will furnish an instructor to describe Owner's operational philosophy.
 - 3. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner [, **through Architect,**] with at least [**seven**] days' advance notice.
- D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of [**a written**] performance-based test.
- E. Demonstration and Training Videotape: Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. Comply with requirements in Division 1 Section "Photographic Documentation."
 - 2. At beginning of each training module, record each chart containing learning objective and lesson outline.
- F. Cleanup: Collect used and leftover educational materials and [**give to Owner**]. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

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END OF SECTION

SECTION 02 41 19
SELECTIVE DEMOLITION

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

1.2 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.3 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at **Project site**.
- B. Engineering Survey: Submit engineering survey of condition of building.
- C. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property , **for environmental protection , for dust control and, for noise control**. Indicate proposed locations and construction of barriers.
- D. Schedule of selective demolition activities with starting and ending dates for each activity.
- E. Predemolition photographs or video.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

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1.4 CLOSEOUT SUBMITTALS

- A. Inventory of items that have been removed and salvaged.

1.5 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.6 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner will remove the following items:
 - a. No known items.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.
- G. Arrange selective demolition schedule so as not to interfere with Owner's operations.

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1.7 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. **Perform** an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
- C. Inventory and record the condition of items to be removed and salvaged.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

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- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 2. Arrange to shut off utilities with utility companies.
 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- C. Remove temporary barricades and protections where hazards no longer exist.

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3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 4. Maintain fire watch during and for at least 8 hours after flame-cutting operations.
 5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 6. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

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- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition **and cleaned** and reinstalled in their original locations after selective demolition operations are complete.

3.6 CLEANING

- A. Remove demolition waste materials from Project site **and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.**
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 03 30 00

CONCRETE WORK

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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PART 1 - GENERAL

1.01 SCOPE

A. This section shall include all labor, materials, accessories, equipment, and related services for the construction of concrete forms; detailing, fabrication, transportation, storage, handling, and placement of reinforcing; and mix design, testing, and placement of concrete as shown on the drawings and/or specified herein.

B. SLOPED FLOORING –

Note that many areas of the new concrete are sloped to allow proper drainage of kennel areas to trench drains. Provide a shop drawing showing all new slab work, control joints, expansion joints, slopes, etc. prior to proceeding with this work.

Existing areas where slope is desired are to utilize leveling compound and/or grout (at ceramic tile floors) to provide the minimum slope.

1.02 REFERENCE STANDARDS

A. The following publications, but referred to in this section by their basic designation, form a part of this section to the extent specified herein or called for on the drawings:

1. American Concrete Institute (ACI), publications:
 - a. Standard Tolerances for Concrete Construction and Materials.
 - b. Specification for Structural Concrete for Buildings.
 - c. Recommended Practice for Measuring, Mixing, and Placing Concrete.
 - d. Hot weather Concreting.
 - e. Cold Weather Concreting.
 - f. Standard Practice for Consolidation of Concrete.
 - g. Building Code Requirements for Reinforced Concrete.
 - h. Recommended Practice for Concrete Formwork.
 - i. Recommended Practice for Shotcreting.
 - j. Detailing Manual
2. Concrete Reinforcing Steel Institute (CRSI), publications:
 - a. CRSI-Manual of Standard Practice
 - b. CRSI-Placing Reinforcing Bars
3. American Society for Testing and Materials (ASTM) publications:

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CONCRETE WORK

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- a. Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement.
 - b. Standard Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement with Supplementary Requirements S1.
 - c. Standard Specification for Rail Steel Deformed and Plain Bars for Concrete Reinforcement.
 - d. Standard Specification for Axle Steel Deformed and Plain Bars for Concrete Reinforcement.
 - e. Standard Method of Making and Curing Concrete Test Specimens in the Field.
 - f. Standard Specification for Concrete Aggregates.
 - g. Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens.
 - h. Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - i. Standard Specification for Ready-Mixed Concrete.
 - j. Standard Specification for Aggregate for Masonry Mortar.
 - k. Standard Specification for Portland Cement.
 - l. Standard Method of Sampling Fresh Concrete.
 - m. Standard Method of Making and Curing Concrete Test Specimens in the Laboratory.
 - n. Standard Specification for Air-Entraining Admixtures for Concrete.
 - o. Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - p. Standard Specification for Chemical Admixtures for Concrete.
 - q. Standard Specifications for Performed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resistant Bituminous Types)
3. American Welding Society (AWS) publication
 - a. AWS D1.4-79 Structural Welding Code-Reinforcing Steel.
 4. Standard Building Code
 5. American Institute of Steel Construction (AISC) publications:
 - a. Manual of Steel Construction
 6. American Institute of Timber Construction (AITC) publications:
 - a. Timber Construction Manual

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CONCRETE WORK

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1.03 SUBMITTALS

A. The Contractor shall submit to the Architect five (5) copies of the following information for review:

1. Curing compound manufacturer's data sheets.

B. Two copies will be returned to the Contractor marked as follows:

1. "No Exceptions Taken" - Indicates the information has been reviewed for conformance with contract documents and no exceptions have been taken. Proceed with the work.
2. "Exceptions Noted" - Indicates that the drawings have been reviewed for conformance with the contract documents and that exceptions have been taken. Contractor may proceed with the work provided he corrects work as noted. Resubmittal will not be required.
3. "Exceptions Noted - Resubmit" - Indicates that the drawings have been reviewed for conformance with the contract documents and that work may proceed on items to which no exceptions have been taken. After items to which exceptions have been taken are corrected, Contractor shall again submit copies for review.
4. "Resubmit" - Indicates that the drawings have been reviewed for conformance with the contract documents and are too incomplete or in an unacceptable condition for review. A notation will be made on the shop drawings as to the exceptions taken. Drawings shall be revised and resubmitted for review before proceeding with the work.

1.04 DESIGN OF FORMWORK

A. Responsibility

1. The design and engineering of the formwork as well as its construction shall be the responsibility of the Contractor.
2. Where concrete is cast against earth cut or an existing structure, such cut or structure shall be considered a form for which the Contractor shall be responsible.

B. Criteria

1. Except as specifically called for otherwise herein, all formwork shall meet the requirements of ACI 347, Chapter 4 and 6 of ACI 301 and Chapter 6 of ACI 318.
2. Specifically the formwork shall be designed as a minimum for the loads and lateral pressure outlined in paragraph 1.2 of ACI 347 and wind loads specified by the Standard Building

Code.

Design considerations and allowable stresses shall meet the above references and the applicable requirements of the AISC Manual of Steel Construction and the AITC Timber Construction Manual.

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1.05 MIX DESIGN

- A. Prior to concrete placement of any concrete, the concrete mix design the Contractor proposes to use for each type of concrete shall be submitted to the Architect for review.
- B. The Concrete mix shall be proportioned to give a 28-day strength of the properties outlined in the drawings (e.g. 3,000/5000 psi) and other properties as specified herein as determined by laboratory tests in accordance with requirements specified herein.
- C. The laboratory or laboratories which design and test the concrete mix shall be obtained by the Contractor, approved by the Architect and paid for by the Contractor.

1.06 TESTING OF CONCRETE

- A. A laboratory shall be obtained by the Contractor approved by the Architect and paid for by the Contractor for the purpose of sampling and testing of concrete.
- B. The following samples shall be taken at the job site. If any material has been added to the concrete, tests shall be made after material has been added to the concrete.
 - 1. For each 100 cubic yards, or fraction thereof, of concrete three test specimens shall be made and cured in accordance with ASTM C172 and C31. Each set of three cylinders shall have a numerical designation and each cylinder an alphabetical subdesignation. Thus, the first set of three cylinders shall be numbered 1A, 1B, and 1C. One cylinder shall be broken at 7 days and two at 28 days. The average of the two 28-day cylinder breaks shall be considered one test. Cylinders shall be broken in accordance with ASTM C39.
 - 2. For each 100 cubic yards, or fraction thereof, of concrete a slump test shall be made in accordance with ASTM C143 and the density and air content shall be determined in accordance with ASTM C172 and C31.

1.07 SHOP DRAWINGS

- A. The Contractor shall furnish drawings, schedules, and details for the fabrication of the reinforcing steel AND the phasing of excavation and new concrete placement. The drawings and details shall be so complete that when used with the contract drawings the reinforcing steel can be properly placed. In addition, shop drawings showing all footing details, CMU details and slab details. All shop related shop drawings to be submitted with a professional engineer's stamp in this discipline.
- B. In case the Contractor is in doubt regarding certain dimensions shown on the contract drawings, or if there is a discrepancy on the contract plans, the Contractor or his agent shall circle and question such dimensions on his shop drawings. In such cases the dimensions shall be especially checked or

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supplied by the Architect.

C. All drawings for review must be submitted in five copies. Two sets shall be returned to the Contractor marked as follows:

1. "No Exceptions Taken" - Indicates the material has been reviewed for conformance with contract documents and no exceptions have been taken. Proceed with the work.
2. "Exceptions Noted" - Indicates that the material has been reviewed for conformance with the contract documents and that exceptions have been taken. Contractor may proceed with the work provided he corrects the work as noted. Resubmittal will not be required.
3. "Exceptions Noted - Resubmit" - Indicates that the material has been reviewed for conformance with the contract documents and that work may proceed on items to which no exceptions have been taken. After items to which exceptions have been taken are corrected, Contractor shall again submit copies for review.
4. "Resubmit" - Indicates that the material has been reviewed for conformance with the contract documents and is too incomplete or in an unacceptable condition for review. A notation will be made as to the exceptions taken. Material shall be revised and resubmitted for review before proceeding with the work.

E. In case exceptions are noted on one sheet which affect details on other sheets, the exception is to be taken as applying to such other details.

F. Review of shop drawings by the Architect or Engineer shall not constitute an authorization or approval of a change to the contract. Changes from the contract documents must be made by written change order and issued by the Architect.

G. Work must not proceed on items to which exceptions have been taken.

H. The Contractor must check and be responsible for the conforming of all steel reinforcing details shown on shop drawings to those shown on the Contract drawings.

I. All bars shall be shown on shop drawings as to number, size, length, and spacing in a manner similar or complementary to the way they are shown on contract drawings.

1.08 **QUALITY CONTROL**

A. Should misalignment of forms or screeds or deflection of forms or displacement of reinforcement occur during concrete placing, corrective measures shall be immediately made to the extent that placing operations shall be stopped and concrete removed from within forms. The corrective measures shall be such as to ensure acceptable lines and surfaces to the prescribed dimensions and cross sections.

B. Any work not meeting the requirements of this section shall be deemed in non-compliance and shall be removed or corrected at no additional expense to the Owner.

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- C. The Contractor shall prepare for the Architect's review his proposed method of removal or correcting any work which is in non-compliance prior to commencing with the work.
- D. Any work which is in non-compliance and is allowed to remain in place by the Architect shall be made a part of this contract by issuing a change order as set forth in the General Conditions of this specification.
- E. Should displacement of reinforcing steel occur during concrete placement, corrective measures shall be immediately made to the extent that placing operations shall be stopped and concrete removed from within the forms.
- F. To comply with this specification, concrete shall obtain its design strength at the 28-day break. Any concrete not obtaining its design strength as determined by the 28-day break shall be considered as not complying to this specification.
- G. The results of the concrete tests shall be evaluated in accordance with paragraphs 17.2 of ACI Standard 301.
- H. If compressive tests fail to meet the specified strength, the following procedures shall be followed: The Architect shall determine if the concrete has been placed in a position of critical structural importance. If the concrete has been placed in a position of critical structural importance, the Contractor shall have core tests made by a testing laboratory approved by the Architect. Core tests shall be done in accordance with ASTM C42 and paragraph 17.3.2 of ACI Standard 301. These core tests shall be taken in each area in question. Such tests shall be paid for by the Contractor. If core tests fail to verify the design strength requirements, the Contractor will have two options:
1. Remove and reconstruct that portion of the structure found to be defective. Removal and replacement will not be undertaken until a plan and procedure has been proposed by the Contractor and approved by the Architect. All such work shall be done at the Contractor's expense.
 2. Have a testing laboratory approved by the Architect conduct a load test on the questionable portion of the structure in accordance with Chapter 20 of ACI Building Code 318. If the test demonstrates that the member or members are not acceptable under the provisions of Chapter 20, Option One becomes mandatory. All costs of the load test shall be paid for by the Contractor.
- I. If tests, either by the 28-day break or core tests, have demonstrated that concrete supplied has not met the strength requirements of the specifications, but the concrete has been permitted to remain in place in the structure by the Architect, a change order shall be issued as set forth in the General Conditions Section of these specifications.

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2.01 FORMS

- A. Forms for unexposed work or surfaces covered by a non-contact finish.
 - 1. Where work is to be covered by a non-contact finish or not exposed to view, forms of metal, metal and wood, wood, or a pre-engineer forming system will be accepted.
- B. Forms for exposed work or surfaces covered by a contact finish.
 - 1. Where work is to be left exposed, or concrete surface is covered by a contact finish, forms shall either be plywood, lined plank, or patented type panels. All plywood shall receive non-staining protective coating that affords positive release.
 - 2. Forms shall not be reused when the surface material delaminates, splits, or becomes marred.

2.02 APPURTENANCES

- A. Form Ties
 - 1. Except for exposed work or Architecturally exposed concrete, snap ties may be used for wall forms. Pull ties, which are to be completely removed, or cone type break back ties that will leave clean cut holes without fractures, spalls, shallows, depressions, or other disfigurations shall be used for all exposed work, and Architecturally exposed concrete.
- B. Expansion Joint Material
 - 1. Expansion joint material shall meet ASTM C1751.

2.03 REINFORCING

- A. Reinforcing steel shall meet ASTM A-615, ASTM 616, or ASTM 617, and develop 60,000 psi at yield.
- B. Wire mesh shall meet ASTM A-185.

2.04 ACCESSORIES

- A. Bar supports shall meet the requirements of CRSI, Manual of Standard Practice, unless specified otherwise herein.
- B. Legs of all accessories used over exposed concrete surfaces shall have that portion of the accessories in contact with the form coated with plastic, or the accessory shall be of stainless steel.

2.05 CEMENT

- A. All cement used on this construction for exposed concrete shall be one brand of Portland cement. All cement shall be Type 1 and meet the requirements of ASTM 150.

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2.06 AGGREGATES

- A. Samples of both coarse and fine aggregates shall be selected by the Contractor at the beginning of the work, and following approval of laboratory tests, shall be used throughout the work as standards to which the aggregate must conform.
1. Fine aggregates shall conform to ASTM C33.
 2. Coarse aggregates for regular weight concrete shall conform to ASTM C33 and shall be sized within the limits as established by Table 2, 1" to #4.

2.07 WATER

- A. Water shall be clean, free from oil, acid, vegetable matter, alkalies or salts.

2.08 ADMIXES

- A. Admixes shall conform to ASTM C-494 and not contain any chloride ions.

2.09 AIR ENTRAINMENT

- A. Air entraining agent shall conform to ASTM C260.

2.10 ABRASIVE AGGREGATES

- A. Abrasive aggregates shall be aluminum oxide or carborundum and have a hardness factor of 9 mohs.

2.11 CURING COMPOUND

- A. Curing compound for unformed surfaces without a surface applied cementitious bonding agent or fill.
1. Curing compound shall be formulated by the manufacturer not to interfere with the bond of or adhesion of resilient floor coverings, paints, sprayed on or applied finishes, water-proofing materials, other types of finish, or curing compounds.
 2. Curing compound shall be a combination sealer-hardener and dust-proofer.
 3. Curing compound shall be a membrane forming resin containing 18% minimum solids with a fugitive dye meeting the requirements of ASTM C309, Type 1-D, Class A.
 4. The following products are approved:

Spartan Cote	-	The Burke Company
Rez. Seal	-	Euclid
SealCo	-	Gifford Hill
Clearbond	-	Guardian
Dress & Seal #18	-	L&M Construction Chemicals

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Clear Seal 150	-	AC Horne
MB429	-	Master Builders
Kure-N-Seal, 0800	-	Sonneborn
C5309	-	WR Meadows

B. Curing compounds for formed concrete surfaces exposed to view.

1. Curing compound shall be formulated not to interfere with the bond or adhesion of any applied coating or covering.
2. Curing compound shall be a penetrating compound with a fugitive dye meeting the requirements of ASTM C309, Type 1D.
3. The following products are approved.

Cure Concentrate	-	The Burke Co
Eucosil	-	Euclid
L&M Cure	-	L&M Construction Chemicals
Horne One Kote	-	AC Horne
Master Seal	-	Master Builders

2.12 PROPORTIONS

A. All concrete shall provide the ultimate compressive strength at 28 days, as determined by laboratory cured cylinders, as shown on the drawings. All mix designs shall be proportioned in accordance with one of the following methods.

1. ACI 318, Section 4.3, Proportioning on the basis of field experience and/or trial mixtures.
2. ACI 318, Section 4.4, Proportioning by water cement ratio.

B. The mix shall be so proportioned so that the average of any three consecutive strength tests shall be equal to or greater than the strength specified on plans, and no test shall have a value less than the specified strength less 3000 psi.

C. Minimum cement content for regular concrete shall be as follows:

1. REGULAR WEIGHT CONCRETE:

3,000 psi concrete 498# (5.3 bags)

5,000 psi concrete 705# (7.5 bags)

For pump mixes add 47# (0.5 bags) to the above quantities.

D. The water-cement ration of the mix shall be established in the design and shall be based on the established relationship between the water-cement ration and the strength of concrete shall be such as to produce the specified strength of the concrete with the least amount of water consistent with the

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workability of the mix. Surface water contained in the aggregate shall be included as part of the mixing water in computing the water content. The design shall provide for a slump range of 3" minimum, 5" maximum.

E. To each sack of cement the following amount of admix shall be provided:

1. Air temperature above 80 degrees F

- 3 oz. - Master Builders - Pozzolith 300R
- 3 oz. - Protex PDA 25XL
- 2 oz. - Sika Chemical Co. - Plastement
- 2 oz. - Gifford Hill PSI - Normal
- 2 oz. - Castle Chemical Corp. - Chemstrong R
- 2 oz. - Construction Chemical Co - Trisene N
- 5 oz. - Grace - WRDA-79

2. Air Temperature between 50 and 80 degrees F.

- 3 oz. - Master Builders Pozzolith 300N
- 3 oz. - Protex PBA 25R
- 3 oz. - Sika Chemical Co. - Plastement NS
- 3 oz. - Gifford Hill PSI - Retarder
- 3 oz. - Castle Chemical Corporation - Chemstrong A
- 3 oz. - Construction Chemical Co - Trisene R
- 7.5 oz. - Grace - WRDA

3. Air temperature below 50 degrees F.

- 8 oz. - Master Builders - Pozzutec 20
- 8 oz. - Sika Chemical Co. - Plastocrete 161 PC
- 12 oz. - Grace - Darex

2.13 FABRICATION

A. All reinforcing shall be fabricated. Fabrication shall be in accordance with applicable sections, ACI 301, ACI 318, ACI-SP66, and CRSI Manual of Standard Practice. All bends shall be made cold around pins

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having a diameter of not less than that specified in the bend test of the applicable ASTM specifications. Heating bars for bending is prohibited without the written approval of the Architect.

- B. Reinforcement shall be correct in length and size and bent as prescribed by contract drawings or specifications.

PART 3 - EXECUTION

3.01 PREPARATION

A. Excavations

1. Where excavations exceeding a depth of five feet are to be made to install the foundations or any part of the structure of this building or any retaining walls on the site, the back slope of such excavation shall be at an incline not exceeding one vertical to two horizontal unless such backslope is sheeted and braced. If sheeting and bracing are to be provided, such sheeting and bracing shall be designed by an Engineer registered in the state where the project is located. Such sheeting and bracing shall be designed to resist the pressures given on pages 14-32 of the CRSI Design Handbook unless more specific pressures are determined by a Registered Soils Engineer. The cost of such design work and installation shall be paid for by the Contractor at no additional cost to the Owner.
2. No excavation shall be made below a line extending downward and away from any foundation grade slab or other building element on a slope one vertical or two horizontal, unless such foundation, grade slab, or other building element is under pinned. The underpinning shall be designed by an Engineer registered in the state where the project is located. The cost of such design work and installation shall be paid for by the Contractor at no additional cost to the Owner.

- B. Treat excavated soil for termites as required by industry standards.

C. Care of Materials

1. Shipping, storage and handling of reinforcing steel shall be in such a manner as to prevent damage.
2. Straightening of bars bent in shipping or handling will not be undertaken except when so directed by change order.

D. Cleaning

1. Reinforcing shall be cleaned of grease, dirt, concrete, or other foreign substances.

3.02 INSTALLATION

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A. Construction of Forms

1. All forms shall be built and secured in place to carry the dead weight of the concrete as a liquid without deflection or distortion exceeding the requirements of ACI 347. Formwork shall be built watertight, true to position and direction. Formwork shall be constructed so as to ensure the concrete surfaces will conform to the tolerances given in ACI 347.
2. All concrete surfaces that are to be left exposed on interior and exterior of the building shall have the forms so constructed that when removed they will produce a uniform smooth surface free from misalignment and imperfections.
3. Where new concrete is placed above a previous placement, the joint between new and old work, as well as the face of the concrete surface, must be aligned.
4. All wood forms shall be built of sound lumber. Clean and remove nails from form material before reusing or when using second-hand lumber.
5. Unless indicated otherwise on the drawings, all columns shall be centered on the foundations supporting them within a tolerance of 2".
6. Where earth is too unstable to serve as a form for foundations or walls, wood forms shall be provided.
7. Box out all slots, recesses, or openings for work of all trades.
8. Build bulkheads with keys in walls and footings at construction joints in concrete.
9. Bevel strips shall be placed at all outside corners of exposed work unless shown otherwise on architectural details.
10. All overhanging edges shall be provided with a 1/2" quarter round drip 2" from the edge.

B. Installing other material in forms

1. Expansion joint fillers shall be installed in the forms, where called for on plans, in advance of the pour. 8d nails of 2'-0" o.c. shall be placed through the filler so that when concrete is placed, the nails will be embedded so as to lock the filler in place.
2. Compact earth fill under slabs on grade in eight inch layers with mechanical equipment to obtain a compaction of 95% standard proctor, unless specified otherwise.
3. Provide 6 mil polyethylene film vapor barrier under all slabs on grade.
4. Fill for slabs on grade shall be #57 stone, 4" thick, where shown on drawings.

C. Placement of Reinforcement

1. Reinforcement shall be placed to conform with the recommendations of ACI 301, ACI 318, and CRSI Manual of Standard Practice.
2. Bars shall not be cut or bent in the field unless specifically called for on detail drawings.

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3. Bars with kinks or bends not shown on detail drawings shall not be used.
 4. Contract drawings shall take precedence over Contractor's working drawings unless otherwise authorized by written change order.
 5. Contract drawings shall be referred to by the steel setter for details governing placing.
 6. Vertical steel shall be lapped 30 diameters at splices unless specifically called for otherwise on plans.
 7. Steel dowels for successive work shall be wired in the prescribed position before placing concrete. The "sticking" of dowels after placing concrete will not be permitted.
 8. Hooks may be turned flat to facilitate placement.
 9. Concrete covering for reinforcing steel shall be as follows unless shown otherwise on drawings:
 - a. Concrete cast against and permanently exposed to earth: 3"
 - b. Concrete exposed to earth or weather:
#6 through #18 bars: 2"
#5 bar, W31 or D31 wire, and smaller: 1-1/2"
 - c. Concrete not exposed to weather or in contact with ground:
Slabs, walls
#14 and #18 bar: 1-1/2"
#11 bar and smaller: 3/4"
 10. No splicing of main reinforcing steel will be permitted unless shown otherwise on plans. Bars marked continuous shall be lapped 30 diameters at splices, and at corner conditions corner bars shall be provided.
 11. No reinforcing shall be cut in the field unless it is called for to be cut on the reviewed shop drawings.
 12. No reinforcing shall be bent in the field unless it is called for to be bent on the reviewed shop drawings.
- D. Placement of Wire Mesh
1. Welded wire fabric shall be lapped 6" at both side and end laps unless shown otherwise on drawings and wire together at 18" o.c. Mesh shall extend to within 2" of sides and end of slabs.

3.03 WELDING OF REINFORCEMENT

- A. All reinforcing bars which are to be welded shall be welded in accordance with AWS D1.4.

3.04 MIXING

- A. All materials shall be measured and mixed in a machine. Mixing and transporting shall meet ASTM

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- C94. The materials shall first be mixed dry and the water then added by measurement.
 - B. Mixing time shall begin when the water is added to the mix.
 - C. Water shall not be added to the mix at the job site except under the direction of the laboratory responsible for testing (paragraph 1.06). The laboratory shall instruct that a fixed amount of cement shall be added to maintain the water-cement ratio. The mixer shall be turned 50 revolutions after the addition of water.
 - D. A slump test shall be made of any concrete to which water has been added to ascertain that the slump does not exceed 5" for regular mixes and 6" for pump mixes.
 - E. A record shall be kept of any concrete to which water has been added, and the record shall show the results of the slump test.

3.05 PREPARATION

- A. Before the placing of any concrete the footing trenches shall be drained of water, any mud film removed and any loose dirt lifted out.
- B. Before placing concrete in forms the forms shall be cleaned and all debris removed. All reinforcing shall be checked to be sure that no reinforcing is touching the form or pan sides. A man shall be designated during the pour to keep the steel in the prescribed position.
- C. Before placing any concrete it shall be determined that all conduits, pipes, sleeves, inserts, hangers, steel equipment, grounds, anchors, and other work that is to be built into the concrete is located and installed. All such items shall be so placed as not to interfere with the reinforcing steel.
- D. No concrete shall be placed until the Architect has observed the reinforcement.
- E. Wood board forms shall be soaked with water first before the concrete is placed.
- F. Metal forms shall be oiled before reinforcement is placed.
- G. All reinforcement shall be supported and fastened in prescribed position and protected against displacement during pouring operations.
- H. A workman shall be designated to lift mesh reinforcing off the ground or the bottom of forms as concrete is placed.
- I. Concrete temperature at time of placement shall be as follows:

Temperature F Degrees	Concrete Temperature Maximum	F Degrees Minimum
Above 75	90	75
50 - 75	90	75

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40 - 50	90	65
30 - 40	90	55
0 - 30	90	65
Below 0	90	70

J. Cold Weather Concreting

1. Cold weather concreting procedures shall be used when temperature at job site is 40 degrees or below at time of concrete placement as follows:
 - a. Heat ingredients as necessary to produce a mix temperature at time of placement as specified herein.
 - b. Concrete shall be heated, insulated, and protected as necessary to maintain a concrete temperature of 40 degrees F minimum for 72 hours after placement.
 - c. Accelerating agents shall not be used unless approval from the Architect has been obtained.
2. ACI 306R should be used as a guide in determining proper procedures for cold weather concreting.

K. Hot Weather Concreting

1. Hot weather concreting procedures shall be used when temperature a job site is 75 degrees F or above at time of concrete placement or wind or humidity is such to result in shrinkage cracking as follows:
 - a. Cool materials necessary to produce a mix temperature at time of placement as specified herein.
 - b. Mix time shall not exceed one hour from time of initial mix.
 - c. Concrete once discharged from truck shall be placed in its final position within 30 minutes from time of discharge.
 - d. Placed concrete shall be cooled or protected as necessary to maintain a concrete temperature of 120 degrees maximum for 48 hours after placement.
 - e. Retarding agents shall not be used unless approval from the Architect has been obtained.

2.ACI 305R should be used as a guide in determining proper procedures for cold weather concreting.

3.06 TRANSPORTING CONCRETE

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- A. Concrete shall be handled from the mixer to the place of final deposit by means of carts, buggies, conveyor, or pump in accordance with ACI 304. If the concrete is to be transported more than fifty feet in carts or buggies they shall be equipped with pneumatic tires. Concrete delivered to the carts, buggies, or conveyors from spouts, troughs or mixer trucks shall not have a free fall of more than three (3) feet. Prevent separation or loss of ingredients while transporting the concrete.

3.07 CASTING

- A. It shall be the responsibility of the Contractor to consider the temperature and humidity in scheduling the time interval between mixing and placing. No partially hardened concrete shall be placed. Placement shall meet the requirements of ACI 304.
- B. Special care shall be observed to avoid concrete spilling over forms when placing.
- C. Placing of concrete shall be rapid and continuous between construction joints. Concrete shall not be placed when the sun, wind, heat, or humidity prevent placement and consolidation.
- D. Special care shall be taken in spading concrete around gangs of parallel conduit.
- E. Concrete shall not be placed within twenty-five feet of workmen placing or securing reinforcement.
- F. Internal type mechanical vibrators and hand spading shall be used to consolidate the concrete and produce a dense concrete free from voids and honeycombs. Care shall be taken that vibration is not applied long enough to separate the ingredients. Use and type of vibrators shall conform to ACI 309.
- G. Hand spreading shall be done with shovels not rakes.
- H. Before depositing the new concrete on or against concrete that has hardened, the forms shall be retightened, the surface of the hardened concrete roughened, cleaned of foreign matter than laitance and moistened with water. To ensure mortar at the juncture of the hardened and newly deposited concrete, the cleaned and moistened surface of the hardened concrete, including vertical and inclined surfaces, shall first be slushed with a coating of neat cement grout against which the new concrete shall be placed before the grout has attained its initial set. Before starting to place concrete in walls and columns a uniform layer of grout two inches thick shall be placed at the bottom of the forms or on top of the hardened concrete. The grout shall consist of one part cement and two parts sand with enough water to make a thick consistency.
- I. All horizontal surfaces shall be screeded to an even surface by the use of a straight edge and screeding strips set at the level called for on plans. Screeds shall be of such type and so arranged as not to interfere with the top slab steel. Finish is specified in a following section.

3.08 PROTECTION

- A. Workmen shall not walk on concrete during placing or finishing with any earth or foreign matter on

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footgear.

- B. All freshly placed concrete shall be protected from damage or injury due to water, falling objects, persons or anything that might mar, discolor, or injure the finish surface of the concrete. Any surfaces that are damaged due to lack of protective measures shall be removed and replaced with fresh concrete at the expense of the Contractor.

3.09 FLOOR FINISHING

- A. Floors, except those requiring a special finish, shall be finished as follows:
1. The surface of all concrete slabs, after screeding, shall be worked with a float in a manner which will compact the concrete and produce a surface free of depressions or inequalities of any kind. Test for grade (or level) and correct by removing excess or adding and compacting additional concrete.
 2. All floor slabs, except in areas dropped to receive finish, shall receive a steel trowel finish as follows:
 - a. After screeding and floating slab surface and when concrete has hardened to prevent excess fines from working to the surface and surface water has disappeared, steel trowel slab to a smooth surface free from defects.
 - b. After initial troweling and when surface produces a ringing sound as trowel is moved across surface, steel trowel the slab a second time. The drying of the surface moisture must proceed naturally and must not be hastened by sacking or dusting on of sand or cement.
 3. Areas which are dropped to receive a finish, after floating, shall be roughened with a very coarse broom.
 4. All concrete ramps, docks, and stair treads shall be dusted with abrasive aggregates at the rate of 25 pounds per 100 square feet. Abrasive aggregates shall be worked into concrete surface by trowelling.

3.10 CURING OF CONCRETE

- A. Unformed Horizontal Surfaces
1. As soon as sheen of surface water has disappeared and the surface can be walked upon without damage (one or two hours) concrete surfaces shall be cured as follows:
 - a. All interior slabs with resilient tile, carpet or left exposed shall be cured with the specified curing and sealing compound.
 - b. All other interior slabs shall be cured with the specified dissipating resin type curing

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compound.

- c. All vertical surfaces shall be cured with the specified curing and hardening compound when forms are removed prior to completion of the curing period.
 - d. The curing compounds must be applied immediately after final finishing.
 - e. Where required, the curing and hardening compounds shall be applied to vertical surfaces immediately after forms have been removed.
 - f. Sisalkraft paper, placed in a manner approved by the Engineer, may be used for any surface indicated above to be cured with the dissipating resin compound or the curing and hardening compound.
2. Surface traffic shall not be permitted on curing compound until curing compound is completely dry.

B. Formed Surfaces

1. Formed surfaces which are rubbed after forms are removed shall be covered with the curing and hardening compound at manufacturer's specified rate immediately after rubbing is completed.
2. Formed surfaces which are repaired or patched shall be covered with the curing and hardening compound at manufacturer's specified rate immediately after repairing and/or patching is complete.
3. No coating, sealer or other applied material shall be placed on concrete which received a curing compound until forty-five (45) days after curing compound has been in place.

3.11 TOLERANCES

- A. Tolerances for concrete floor slabs shall meet the requirements of ACI 117, Class BX Slabs.
- B. Where slabs abut at joints the differential elevation between abutting slabs shall be less than 1/16 inch.

3.12 EXPOSED CONCRETE SURFACES

- A. Exposed concrete surfaces shall be finished as follows:
 1. Surfaces shall be rubbed smooth with carborundum brick or other abrasive within 36 hours after forms are removed. Surfaces shall be wetted and rubbed until a uniform color and texture is produced. No cement grout or slush shall be used other than the cement paste drawn from the green concrete itself by the rubbing process.
 2. The first panel that is to be finished shall be done in the presence of the Architect. When it

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is approved by the Architect, it shall serve as a standard to which all additional architecturally finished concrete shall conform.

3. Edges of exposed beams and columns shall be pointed up to present a straight, square appearance.

3.13 REMOVAL OF FORMS

A. Removal

1. Care shall be taken in the removal of the forms not to damage the surface of the concrete. Immediately after the forms are removed, the Architect shall examine the concrete and determine the extent and magnitude of any damaged or imperfect work. The Architect shall determine what work shall be patched and what work shall be removed and rebuilt. Patching, where allowed, shall be done immediately. Patching shall be done as specified in these specifications.
2. The removal of shoring and stripping of forms shall be the responsibility of the Contractor. In no case shall forms for columns or walls be removed in less than two days.
3. All form ties shall be broken back at least 1/2" from the surface of concrete, and pull ties shall be removed.

3.14 PATCHING AND CORRECTION OF DEFECTIVE WORK

- A. Any concrete which is not within the allowable tolerances as set forth in ACI 347, Section 203.1 shall be considered as not conforming to these specifications. Any concrete which is not formed as shown on the plans or is out of alignment or level or shows a defective surface shall be considered as not conforming to these specifications.
- B. Any concrete as described above shall be removed from the job by the Contractor at his expense unless the Architect grants permission to patch or repair the defective area. Permission to patch or repair any such area shall not be considered a waiver of the Architect's right to require complete removal of the defective work if the patching does not, in his opinion, obtain the quality and appearance of the work as specified.
- C. Within 24 hours after removing form, all concrete surfaces shall be inspected by the Architect. With the Architect's approval any honeycombs, voids, stone pockets and tie holes shall at once be patched before the concrete is dry. Defective areas shall be chipped away to a depth of not less than one inch (1") with the edges perpendicular to the surface. The area to be patched and a space at least six inches (6") wide entirely surrounding it shall be dampened with water to prevent absorption of water from the patching mortar. The specified bonding compound shall be applied to the damp concrete.

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- D. The patching shall be made of the same material and of the same proportions as used for the concrete except that the coarse aggregate shall be omitted. The amount of water used in mixing the mortar shall be consistent with the requirements of handling and placing. The mortar shall be retempered without the addition of water by allowing to stand for a period of one hour during which hour it shall be mixed with a trowel to prevent setting.
 - E. After the bonding compound has dried, the mortar shall be compacted into place. Every hole and void shall be filled solid and the mortar screeded off to leave the patch slightly higher than the surrounding surface. It shall then be left undisturbed for a period of one to two hours to permit initial shrinkage before being finally finished. The patch shall be finished in such a manner to match the adjoining surface.
 - F. Where patching is not accomplished within 24 hours after removal of forms, the shotcrete method of applying concrete under pressure shall be used. Application of shotcrete shall meet ACI 506.
 - G. Where concrete or concrete work does not conform to the plans or to the specifications and is condemned by the Architect, procedures and plans covering removal and rebuilding or other corrective measures shall be submitted by the Contractor to the Architect before removal and rebuilding is begun. The cost of such plans, as well as the cost of corrective work or removal and rebuilding shall be at the Contractor's expense.

END OF SECTION

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Clay Masonry Units
- B. Reinforcement and Anchorage
- C. Expansion Joints
- D. Mortar
- E. Flashing
- F. Weeps

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 04 05 13.23 - Surface Bonding Masonry Mortaring
- C. Section 04 05 16.26 - Engineered Masonry Grouting.
- D. Section 04 05 19.19 - Masonry Cavity Drainage, Weepholes, and Vents*.
- E. Section 04 20 00 - Unit Masonry.
- F. Section 04 73 00 - Manufactured Stone Masonry.
- G. Section 05 40 00 - Cold-Formed Metal Framing.
- H. Section 05 50 00 - Metal Fabrications.
- I. Section 06 11 00 - Wood Framing.
- J. Section 07 16 00 - Cementitious and Reactive Waterproofing.
- K. Section 07 25 00 - WeatherBarriers.
- L. Section 07 27 26 - Fluid-Applied Membrane Air Barriers .
- M. Section 07 62 00 - Sheet Metal Flashing and Trim.
- N. Section 07 65 26 - Self-Adhering Sheet Flashing.
- O. Section 07 90 00 - Joint Protection.

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1.3 REFERENCES

- A. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- B. ASTM A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- C. ASTM A 615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- D. ASTM A 775 - Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
- E. ASTM A 996 - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.
- F. ASTM A 1008 - Standard Specification for Steel Sheet, Cold-Rolled Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
- G. ASTM C 67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile. 9.
- H. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.
- I. ASTM C 150 - Standard Specification for Portland Cement.
- J. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes.
- K. ASTM C 216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
- L. ASTM C 270 - Standard Specification for Mortar for Unit Masonry.
- M. ASTM C 652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale).
- N. ASTM D 1056 - Standard Specification for Flexible Cellular Materials, Sponge or Expanded Rubber.
- O. Brick Industry Association (BIA) - Technical Note 20, Cleaning Brickwork.
- P. TMS 402 - Building Code Requirements for Masonry Structures.
- Q. TMS 602 - Specification for Masonry Structures.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.

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- 2. Storage and handling requirements and recommendations.
 - C. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
 - 1. Product Data for Credit MR 5.1 and Credit MR 5.2: Submit data, including location and distance from Project of material manufacturer and point of extraction, harvest or recovery for main raw material.
 - a. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
 - D. Selection Samples: For each finish product specified, two complete sets of brick samples showing range of color and texture to be expected.
 - E. Verification Samples: For each finish product specified, two samples representing actual color and texture of the brick specified.
 - F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- 1.5 QUALITY ASSURANCE
- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten years experience.
 - B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five years demonstrated experience in installing products of the same type and scope as specified.
 - C. Brick Tests: Sample and test shall be in accordance with ASTM C 67.
 - D. Test Reports:
 - 1. Testing and reports shall be completed by an independent laboratory.
 - 2. Test reports for each type of building and facing brick shall be submitted to the Architect for review.
 - 3. Test reports shall indicate:
 - a. Compressive strength.
 - b. 24 hour cold water absorption.
 - c. 5-hour boil absorption.
 - d. Saturation coefficient.
 - e. Initial rate of absorption.
 - f. Efflorescence.
 - E. Mock-Up: Provide a mock-up panel for each type of brick specified for evaluation of color, texture and workmanship to be used.
 - 1. Locate in areas designated by Architect.
 - 2. Do not begin installation of brickwork until the Architect approves the mock-up(s).
 - 3. Build as many mock-ups as required to obtain the Architect's acceptance. Remove unacceptable mock-ups from the site.

1.6 DELIVERY, STORAGE, AND HANDLING

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- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store materials to prevent damage due to moisture, contamination, breakage, chipping or other causes.
- C. Store materials on pallets or stable aggregate bed to reduce contamination and soiling. Cover with a non-staining waterproof membrane allowing for airflow around brick while protecting it from airborne contaminants and wind-borne dirt.

1.7 ALLOWANCES

- A. Allowances: Include allowance stated under provisions of Section 01 20 00 - Price and Payment Procedures Price and Payment Procedures. Allowance includes furnishing face brick, and hollow brick units. Material allowance and Installation is included in this Section and is part of Contract Sum/Price.

1.8 PROJECT CONDITIONS

- A. Follow hot weather and cold weather requirements in the masonry code and specifications, TMS 402 and TMS 602.
- B. Cold Weather Procedures:
 - 1. Preparation:
 - a. If ice or snow has formed on the masonry bed, remove it by carefully applying heat not to exceed 120 degrees F until the surface is dry to the touch.
 - b. Remove any brick units or mortar that is frozen or damaged.
 - c. When the clay masonry unit suction exceeds 30 grams per minute per 30 square inches, sprinkle with heated water as follows:
 - 1) When units are 32 degrees F or above, heat water to 70 degrees F or above.
 - 2) When units are below 32 degrees F, heat water to 130 degrees F or above.
 - 2. Work in Progress:
 - a. Air temperature 40 degrees F to 32 degrees F:
 - 1) Heat sand or mixing water to produce mortar temperatures that match air temperature.
 - b. Air temperature 32 degrees F to 25 degrees F:
 - 1) Heat sand and mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F.
 - 2) Maintain temperature of mortar on boards above freezing.
 - 3) Installation in colder air temperatures will require heat sources on the wall and the use of windbreaks or tents to create a controlled environment suitable for proper bonding and curing.
 - 3. Completed Work and Work Not in Progress:
 - a. Mean daily air temperature of 40 degrees F to 32 degrees F: Protect masonry from rain and snow for 24 hours by covering with a weather-resistive membrane.
 - b. Mean daily air temperature of 32 degrees F to 25 degrees F: Cover masonry with a weather-resistive membrane for 24 hours.

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- c. Mean daily air temperature of 25 degrees F to 20 degrees F: Cover masonry with insulating blankets for 24 hours.
- C. Hot Weather Procedures:
 - 1. When ambient temperature exceeds 90 degrees F and wind exceeds 8 miles per hour:
 - a. Maintain temperature of mortar and grout between 70 degrees F and 120 degrees F.
 - b. Limit the spread of the mortar bed to 4 feet and place units within 1 minute of spreading mortar.
 - c. Control moisture evaporation in partially or newly completed walls by fog spraying with potable water, covering with opaque plastic or canvas or both.
 - 2. Protection of Work in Progress:
 - a. Covering:
 - 1) Cover tops of walls with a strong waterproof membrane at the end of each day or work shutdown. Extend the waterproof membrane cover a minimum of 24 inches down the side of each wall.
 - 2) Hold cover securely in place.
 - b. Load Application:
 - 1) Do not apply uniform floor or roof loading for at least 12 hours after completing columns and walls.
 - 2) Do not apply concentrated loads for at least 3 days after completing columns and walls.
 - c. Staining:
 - 1) Prevent grout and mortar from staining the face of masonry.
 - 2) Remove grout and mortar that comes in contact with masonry units immediately.
 - 3) Protect sills, ledges and projections from mortar droppings.
 - 4) Protect base of wall from rain-splashed mud and mortar splatter.
 - 5) Turn scaffold boards on edge when work is not in progress to lessen splattering.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Boral Bricks, General Shale, Cherokee or equal.
- B. Substitutions: Any equal.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 CLAY MASONRY UNITS

- A. Facing Brick: TO BE SELECTED- ALLOW FOR THREE COLORS.
- B. Hollow Brick: TO BE SELECTED

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- C. Provide brick similar in texture, color and physical properties to those available for inspection at the Architect's office and/or as supplied on the approved sample panel.
- D. Shapes: Special shapes are required to be used per architectural detail(s).
- E. All brick supplied shall be pre-blended by the manufacturer.

2.3 REINFORCEMENT AND ANCHORAGE

- A. Steel Reinforcement:
 - 1. Billet Steel Deformed Bars: ASTM A 615.
 - 2. Rail Steel Deformed Bars: ASTM A 996.
 - 3. Axle Steel Deformed Bars: ASTM A 996.
 - 4. Epoxy Coated Steel Bars: ASTM A 775.
- B. Fabricated Steel Lintels: Requirements for loose steel lintels are specified in Section 05 50 00 - Metal Fabrications.
- C. Brick Anchors and Ties: Provide to sizes and types indicated on the Drawings.
 - 1. Corrugated Ties: ASTM A 1008, 20 gauge, galvanized in accordance with ASTM A 153, Class B-2.
 - 2. Joint Reinforcement: ASTM A 82, galvanized in accordance with ASTM A 153, Class B-2.
 - 3. Wire Wall Ties, ASTM A 82:
 - a. Galvanized in accordance with ASTM A 153, Class B-2.
 - 4. Dovetail Anchors, ASTM A 1008:
 - a. Galvanized in accordance with ASTM A 153, Class B-2.
 - b. Galvanized in accordance with ASTM A 153, Class B-2.

2.4 ACCESSORIES

- A. Expansion Joints:
 - 1. Premolded Foam: ASTM D 1056, Type 2, Class A, Grade 1
 - 2. Neoprene: ASTM D 1056, Type 2, Class A, Grade 1.
 - 3. Sealant: Shall be in accordance with Section 07 90 00 - Joint Protection.
- B. Mortar: Mortar should be mixed by proportion according to ASTM C 270 for Type N mortar
 - 1. Portland Cement: ASTM C150, Type I.
 - 2. Hydrated Lime: ASTM C207, Type S.
 - 3. Sand: ASTM C144.
 - 4. Water: Potable.
- C. Flashing: Build in all flashings which enter the masonry as the work progresses Flashing are specified in Section 07 62 00 - Sheet Metal Flashing and Trim Sheet Metal Flashing and Trim and Section 07 65 26 - Self-Adhering Sheet Flashing Flexible Flashing..
- D. Weeps: Weeps are to be used in conjunction with flashing materials for proper functioning of the masonry wall drainage system. The specified weep material is:
 - 1. Cotton sash cord, 12 inches long with end laid in air cavity.

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2. Plastic tube, 1/4 inch minimum diameter.
3. Plastic vents or cells.
4. Aluminum vents or cells.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify items provided by other Sections of work are properly sized and located.
- C. Verify that built in items are in proper location, and ready for roughing into masonry work.
- D. If backup substrate and other preparation work is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Remove mud, loose rust, ice and contaminants that may interfere with mortar-to-unit bonding or mortar-to-footing/brick ledge bonding.
- B. Furnish temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent support.

3.3 INSTALLATION

- A. Coursing:
 1. Establish lines, levels, and coursing indicated. Protect from displacement.
 2. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
 3. Lay brick units in bond indicated on the Drawings.
- B. Laying Clay Masonry Units:
 1. Lay brick making sure head joints and bed joints are full of mortar.
 2. Lay brick units plumb and true to line.
 3. Where fresh mortar joins partially set mortar, remove loose brick and mortar and lightly wet the exposed surface of set masonry.
 4. When adjustment must be made after mortar begins to harden, remove hardened mortar and replace it with fresh mortar.
 5. Remove excess mortar as Work progresses.
- C. Masonry Reinforcing: Install as indicated and as specified in Section 04 05 19.29 - Stone Anchors.
- D. Tooling and Pointing:
 1. Tool mortar joints to shape(s) indicated on the Drawings.
 2. Tool exposed joints when they are thumbprint hard.
 3. Flush-cut all joints when they are not tooled.

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4. When re-pointing a section in a wall, rake the mortar joints to a depth of not less than 1/2 inch. Fill the joint completely with pointing mortar and tool to match the surrounding masonry.

E. Flashing:

1. Build in all flashings that enter the masonry, as the work progresses. Install as indicated and as specified in Section 07 62 00 - Sheet Metal Flashing and Trim Sheet Metal Flashing and Trim and Section 07 65 26 - Self-Adhering Sheet Flashing Flexible Flashing.
2. Remove any projections on the brick surface or mortar bed that might puncture the flashing material.
3. Place through-wall flashing on a bed of mortar so that the flashing projects 1/4 inch from wall face and forms a drip edge. Overlap flashing a minimum of 6 inches.
4. Cover flashing with mortar.

F. Weeps:

1. Install weeps in the head joints of the first brick course immediately above the through-wall flashing. Place weeps at not more than 24 inches on center horizontally.
2. Keep the air cavity free of mortar as much as possible. Expansion Joints:

G. Control And Expansion Joints:

1. Install control and expansion joints as indicated on Drawings.
2. Keep joints free of mortar and any debris that may hinder movement.
3. Install expansion joint material and finish the joint with a sealer.

3.4 CLEANING

- A. Cut out defective mortar joints and holes in exposed masonry and re-point with mortar.
- B. Clean a sample wall area. Do not proceed with cleaning without Architect's approval.
- C. Clean brick in accordance with BIA Technical Note Number 20 and the proprietary cleaning product manufacturer's recommendations.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged work before Substantial Completion.

END OF SECTION

SECTION 05 40 00
COLD-FORMED METAL FRAMING

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Types of cold-formed metal framing units include the following:
1. 22 gauge, or as specifically designated on drawings, channel studs for interior ceiling and miscellaneous framing (sizes as required) on interior walls. All studs to be spaced at 16" on center and have lateral support at midpoint.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 specification Sections.
1. Product data and installation instructions for each item of cold-formed metal framing and accessories.

1.4 QUALITY ASSURANCE

- A. Component Design: Calculate structural properties of studs and joists in accordance with American Iron and Steel Institute (AISI) "Specification for Design of Cold-Formed Steel Structural Members."
- B. Welding: Use qualified welders and comply with American Welding Society (AWS) D1.3, "Structural Welding Code - Sheet Steel."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products of one of the following:
1. Alabama Metal Industries Corp.
 2. Consolidated Systems, Inc.
 3. Dale Industries, Inc.
 4. Dietrich Industries, Inc.
 5. Marino Industries, Inc.
 6. Superior Steel Studs, Inc.
 7. USG Industries
 8. United States Steel
 9. Wheeling Corrugating Co.

2.2 METAL FRAMING

- A. System Components: Manufacturers' standard load-bearing steel studs and joists of type, size,

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shape, and gage as indicated. With each type of metal framing required, provide manufacturer's standard, steel runners (tracks), blocking, lintels, chip angles, shoes, reinforcements, fasteners, and accessories for applications indicated, as needed to provide a complete metal framing system.

B. Materials and Finishes:

1. For 18-gauge units, fabricate metal framing components of commercial quality steel sheet with a minimum yield point 40 ksi; ASTM A 446, A 570, or A 611.
2. Provide galvanized finish to metal framing components complying with ASTM A 525 for minimum G 60 coating.
 - a. Provide galvanized finish for components in exterior walls.
3. Fasteners: Provide nuts, bolts, washers, screws, and other fasteners with corrosion-resistant plated finish.
4. Electrodes for Welding: Comply with AWS Code and as recommended by stud manufacturer.
5. Galvanizing Repair: Where galvanized surfaces are damaged, prepare surfaces and repair in accordance with procedures specified in ASTM A 780.

2.3 **FABRICATION**

- A. General: Framing components may be prefabricated into assemblies before erection. Fabricate panels plumb, square, true to line, and braced against racking with joints welded. Perform lifting of prefabricated units to prevent damage or distortion.
- B. Fabricate units in jig templates to hold members in proper alignment and position and to ensure consistent component placement.
- C. Fastenings: Attach similar components by welding. Attach dissimilar components by welding, bolting, or screw fasteners, as standard with manufacturer.
- D. Wire tying of framing components is not permitted.
- E. Fabrication Tolerances: Fabricate units to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet.

PART 3 - EXECUTION

3.1 **INSTALLATION**

- A. General: Install metal framing systems in accordance with manufacturer's printed or written instructions and recommendations.
- B. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to layout at base and tops of studs. Secure tracks as recommended by stud manufacturer for type of construction involved, except do not exceed 24 inches o.c. spacing for nail or power-driven fasteners or 16 inches o.c. for other types of attachment. Provide fasteners at corners and ends of tracks.
- C. Installation of Wall Studs: Secure studs to top and bottom runner tracks by either welding or screw

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COLD-FORMED METAL FRAMING

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- fastening at both inside and outside flanges.
- D. Set studs plumb, except needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- E. Where stud system abuts structural columns or walls, including masonry walls, anchor ends of stiffeners to supporting structure.
- F. Frame wall openings larger than 2 feet square with double stud at each jamb of frame except where more than two are either shown or indicated in manufacturer's instructions. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of wall. Secure stud system wall opening frame in manner indicated.
- G. Frame both sides of expansion and control joints with separate studs; do not bridge the joint with components of stud system.
- H. Install horizontal stiffeners in stud system, spaced (vertical distance) at not more than 54 inches o.c. Weld at each intersection.
- I. Erection Tolerances: Bolt or weld wall panels (at both horizontal and vertical junctures) to produce flush, even, true-to-line joints.
1. Maximum variation in plane and true position between prefabricated assemblies should not exceed 1/16 inch.
- J. Field Painting: Touch-up damaged shop-applied protective coatings. Use compatible primer for prime-coated surfaces; use galvanizing repair system for galvanized surfaces.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Framing with engineered wood products.
3. Shear wall panels.
4. Rooftop equipment bases and support curbs.
5. Wood blocking, **cants**, and nailers.
6. Wood furring **and grounds**.
7. Wood sleepers.
8. Plywood backing panels.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product.

1.3 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, from ICC-ES:
1. Wood-preservative-treated wood.
 2. Fire-retardant-treated wood.
 3. Engineered wood products.
 4. Shear panels.
 5. Power-driven fasteners.
 6. Post-installed anchors.
 7. Metal framing anchors

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PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. For exposed lumber indicated to receive a stained or natural finish, **[mark grade stamp on end or back of each piece]**.
 3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: **[15 percent for 2-inch nominal (38-mm actual) thickness or less; 19 percent for more than 2-inch nominal (38-mm actual) thickness]** unless otherwise indicated.
- C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 **[for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground]**.
1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. **[Do not use inorganic boron (SBX) for sill plates.]**
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

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D. Application: Treat [**all rough carpentry unless otherwise indicated.**]

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, [**furring,**] [**stripping,**] and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than **18 inches (460 mm)** above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than **10.5 feet (3.2 m)** beyond the centerline of the burners at any time during the test.
1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.[**Kiln-dry plywood after treatment to maximum moisture content of 15 percent.**]
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. Application: Treat [**all rough carpentry unless otherwise indicated.**]
1. Framing for raised platforms.
 2. Framing for stages.

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3. Concealed blocking.
4. Framing for non-load-bearing partitions.
5. Framing for non-load-bearing exterior walls.
6. Roof construction.
7. Plywood backing panels.

2.4 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions: [**Construction or No. 2**] grade.

1. Application: [**Interior partitions not indicated as load bearing**].
2. Species:
 - a. Southern pine or mixed southern pine; SPIB.
 - b. Northern species; NLGA.
 - c. Eastern softwoods; NeLMA.
 - d. Western woods; WCLIB or WWPA.

B. Framing Other Than Non-Load-Bearing Partitions: [**Construction or No. 2**] grade.

1. Application: Framing other than [**interior partitions not indicated as load bearing**].
2. Species:
 - a. Hem-fir (north); NLGA.
 - b. Southern pine; SPIB.
 - c. Douglas fir-larch; WCLIB or WWPA.
 - d. Southern pine or mixed southern pine; SPIB.
 - e. Spruce-pine-fir; NLGA.
 - f. Douglas fir-south; WWPA.
 - g. Hem-fir; WCLIB or WWPA.
 - h. Douglas fir-larch (north); NLGA.
 - i. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. Framing Other Than Non-Load-Bearing Partitions: Any species and grade with a modulus of elasticity of at least [**1,500,000 psi (10 350 MPa)**] OR [**1,300,000 psi (8970 MPa)**] OR [**1,100,000 psi (7590 MPa)**] thickness and **12-inch nominal (286-mm actual)** width for single-member use.

1. Application: Framing other than [**interior partitions not indicated as load-bearing**].

D. Exposed Framing: Hand-select material for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.

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1. Species and Grade: As indicated above for load-bearing construction of same type.

2.5 ENGINEERED WOOD PRODUCTS

- A. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
 1. Extreme Fiber Stress in Bending, Edgewise: [**3100 psi (21.3 MPa)**]OR [**2900 psi (20.0 MPa)**] depth members.
 2. Modulus of Elasticity, Edgewise: [**2,000,000 psi (13 700 MPa)**] OR [**1,800,000 psi (12 400 MPa)**]
- B. Wood I-Joists: Prefabricated units, I-shaped in cross section, made with solid or structural composite lumber flanges and wood-based structural panel webs, let into and bonded to flanges. Comply with material requirements of and with structural capacities established and monitored according to ASTM D 5055.
 1. Web Material: [**Either OSB or plywood, complying with DOC PS 1 or DOC PS 2, Exposure 1**]
 2. Structural Properties: Depths and design values not less than those indicated.
 3. Comply with APA PRI-400. Factory mark I-joists with APA-EWS trademark indicating nominal joist depth, joist class, span ratings, mill identification, and compliance with APA-EWS standard.
- C. Rim Boards: Product designed to be used as a load-bearing member and to brace wood I-joists at bearing ends, complying with research or evaluation report for I-joists.
 1. Manufacturer: Provide products by same manufacturer as I-joists.
 2. Material: [**product made from any combination solid lumber, wood strands, and veneers**].
 3. Thickness: [**1 inch (25 mm)**].
 4. Comply with APA PRR-401, [**rim board**] grade. Factory mark rim boards with APA-EWS trademark indicating thickness, grade, and compliance with APA-EWS standard.

2.6 SHEAR WALL PANELS

- A. Wood-Framed Shear Wall Panels: Prefabricated assembly consisting of wood perimeter framing, tie downs, and Exposure I, Structural I plywood or OSB sheathing.
- B. Steel-Framed Shear Wall Panels: Prefabricated assembly consisting of cold-formed galvanized-steel panel, steel top and bottom plates, and wood studs.

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- C. Allowable design loads, as published by manufacturer, shall meet or exceed those of building codes and **[of products of manufacturers listed]**. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.7 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
1. Blocking.
 2. Nailers.
 3. Rooftop equipment bases and support curbs.
 4. Cants.
 5. Furring.
 6. Grounds.
- B. Dimension Lumber Items: **[Construction or No. 2]** grade lumber of any species.
- C. Concealed Boards: **[15]** percent maximum moisture content and **[any of]** the following species and grades:
1. Mixed southern pine or southern pine; No. **[2]** grade; SPIB.
 2. Eastern softwoods; No. **[2]** Common grade; NeLMA.
 3. Northern species; No. **[2]** Common grade; NLGA.
 4. Western woods; **[Construction or No. 2 Common]** grade; WCLIB or WWPA.

2.8 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, **[Exterior, A-C]** in thickness indicated or, if not indicated, not less than **[3/4-inch (19-mm)]** nominal thickness.

2.9 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners **of Type 304 stainless steel]**.

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- B. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
 - C. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on **ICC-ES AC01** as appropriate for the substrate.

2.10 METAL FRAMING ANCHORS

- A. Allowable design loads, as published by manufacturer, shall meet or exceed those **[of products of manufacturers listed]**. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, **G60 (Z180)** coating designation.
 - 1. Use for interior locations unless otherwise indicated.
- C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); **G185 (Z550)** coating designation; and not less than **0.036 inch (0.9 mm)** thick.
 - 1. Use for wood-preserved-treated lumber and where indicated.

2.11 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; **1-inch (25-mm)** nominal thickness, compressible to **1/32 inch (0.8 mm)**; selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Sill-Sealer Gaskets: Closed-cell neoprene foam, **1/4 inch (6.4 mm)** thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- C. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, **[butyl rubber]** compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than **0.025 inch (0.6 mm)**.
- D. Adhesives for Gluing **[Furring]** to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

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PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate [**furring,**]nailers, blocking, [**grounds,**]and similar supports to comply with requirements for attaching other construction.
- D. Install shear wall panels to comply with manufacturer's written instructions.
- E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- F. Do not splice structural members between supports unless otherwise indicated.
- G. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- H. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- I. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
 - 2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
 - 3. ICC-ES evaluation report for fastener.

3.2 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

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- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes [**wet enough that moisture content exceeds that specified**], apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 07 21 00
BUILDING INSULATION

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following insulation materials in **ALL NEW AND EXISTING WALLS/ROOFS**:
1. R-21 Vinyl-faced batt insulation
 2. Sound Insulation in **all interior walls.**
 3. Butler Thermaliner insulation system, or equal, for all roof insulation.
- B. Related Sections: The following sections contain requirements that relate to this section:
1. "Gypsum Drywall"

1.3 DEFINITIONS

- A. Thermal Resistivity: Where the thermal resistivity of insulation products are designated by "r-values," they represent the reciprocal of thermal conductivity (k-values). Thermal conductivity is the rate of heat flow through a homogenous material exactly 1 inch thick. Thermal resistivities are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of insulation product specified.
- C. Samples for verification purposes in full-size units of each type of exposed insulation indicated for each color specified.
- D. Product test reports from and based on tests performed by qualified independent testing laboratory evidencing compliance of insulation products with requirements including r-values (aged values for plastic foam insulations), fire performance characteristics, perm ratings, water absorption ratings, and other properties, based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

- A. Fire Performance Characteristics: Provide insulation materials identical to those whose indicated fire performance characteristics have been determined per the ASTM test method indicated below, by UL

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or other testing and inspecting organizations acceptable to authorities having jurisdiction.
Identify products with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristic: ASTM E 84
2. Fire Resistance Ratings: ASTM E 119
3. Combustion Characteristics: ASTM E 136

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's recommendations for handling, storage, and protection during installation.
- B. Protect plastic insulation as follows:
 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 2. Protect against ignition at all times. Do not deliver plastic insulating materials to project site ahead of installation time.
 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide insulation products of one of the following:
 1. Batt Insulation in all exterior walls – new and existing (R-21 in walls designed to provide moisture control) – CertainTeed Smartbatt or equal:
 - a. CertainTeed Corp.
 - b. Owens Corning
 - c. Dow Industrives
 - d. OR EQUAL
 2. Sounds Blankets in all interior walls: Knauf, or equal “EocBatt Insulation with Ecosse Technology” in all interior walls.
 3. Butler thermaliner insulation system in all roof areas. (new and existing)

PART 3 - EXECUTION

3.1 EXAMINATION

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- A. Examine substrates and conditions with Installer present, for compliance with requirements of the Sections in which substrates and related work are specified and to determine if other conditions affecting performance of insulation are satisfactory. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulations or vapor retarders, including removal of projections that might puncture vapor retarders.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's instructions applicable to products and application indicated. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with installation of insulation.
- B. Extend insulation full thickness as indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections that interfere with placement.
- C. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Set vapor retarder faced units with vapor retarder to warm side of construction, except as otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

3.5 PROTECTION

- A. General: Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

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BUILDING INSULATION

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END OF SECTION

SECTION 08 11 13
STANDARD STEEL DOORS AND FRAMES

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following products manufactured in accordance with SDI Recommended Standards:
1. Doors: Seamless, hollow or composite construction standard steel doors for interior and exterior locations.
 2. Frames: Pressed steel frames for doors, transoms, sidelights, mullions, interior glazed panels, and other interior and exterior openings of following type:
 - a. Welded unit type
 3. Assemblies: Provide standard steel door and frame assemblies as required for the following:
 - a. Labeled and fire rated.
 4. Provide factory primed doors and frames to be field painted.
 5. Refer to drawings for specialty doors at vaults, detention, etc.
- B. Painting and special coating of primed doors and frames is specified in Division 9.
- C. Wood doors are specified in another Division 8 Section.
- D. Door hardware is specified in another Division 8 Section.
- E. Glass and Glazing ARE TO BE TEMPERED IN ALL DOORS.
- F. Building in of anchors and grouting of frames in masonry construction is specified in Division 4.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.
- C. Shop drawings showing fabrication and installation of standard steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.
 2. Indicate coordinate of glazing frames and stops with glass and glazing requirements.
- D. Label Construction Certification: For door assemblies required to be fire-rated and exceeding limitations of labeled assemblies, submit manufacturer's certification that each door and frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

1.4 QUALITY ASSURANCE

- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications Standard Steel Doors and Frames" ANSI/SDI-100 and as herein specified.
- B. Fire-Rated Door Assemblies: Units that comply with NFPA 80, are identical to door and frame assemblies whose fire resistance characteristics have been determined per ASTM E 152 and which are labeled and listed by UL, Factory Mutual, Warnock Hersey, or other testing and inspecting organization acceptable to authorities having jurisdiction.

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1.5 **DELIVERY, STORAGE, AND HANDLING**

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage.
- B. Inspect doors and frames upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.
- C. Store doors and frames at building site under cover. Place units on minimum 4-inches high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4-inches space between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.1 **ACCEPTABLE MANUFACTURERS**

- A. Manufacturer: Subject to compliance with requirements, provide standard steel doors and frames by one of the following:

- 1. Standard Steel Doors and Frames:
 - a. Amweld Building Products, Inc.
 - b. Ceco Corp
 - c. Copco Door Co.
 - d. Curries Company
 - e. Deansteel Manufacturing Co.
 - f. Fenestra Corp
 - g. Kewanee Corp
 - h. Mesker Door Co.
 - i. Pioneer Industries
 - j. Premier Products, Inc. (Formerly Dittco)
 - k. Republic Builders Products
 - l. Steelcraft Manufacturing Co.
 - m. Willco Hollow Metal

2.2 **MATERIALS**

- A. Hot-Rolled Steel Sheets and Strips: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.
- C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, or drawing quality, ASTM A 642, hot dipped galvanized in accordance with ASTM A 525, with A60 or G60 coating designation, mill phosphatized.
- D. Supports and Anchors: Fabricate of not less than 18-gage sheet steel; galvanized where used in galvanized frames.
- E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize in compliance with ASTM A 153, Class C or D as applicable.

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STANDARD STEEL DOORS AND FRAMES

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- F. Shop Applied Paint: Apply after fabrication.
1. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints complying with ANSI A224.1, "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames."

2.3 DOORS

- A. Provide metal doors of types and styles or grades and models indicated on drawings or schedules.
- B. Provide metal doors of SDI grades and models specified below or as indicated on drawings or schedules:
 1. Interior Doors: ANSI/SDI-100, Grade II, heavy-duty, Model 3 or 4, minimum 18-gage cold-rolled sheet steel faces.
 2. Exterior Doors: ANSI/SDI-100, Grade III, extra heavy-duty, Model 4, minimum 16-gage galvanized steel faces.
- C. Door Louvers: Provide sightproof stationary louvers for interior doors where indicated, constructed of inverted V-shaped blades formed of 24-gage cold-rolled steel set into minimum 20-gage steel frame.

2.4 FRAMES

- A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16-gage cold-rolled steel.
 1. Fabricate frames with mitered, coped, or welded corners.
 2. Form exterior frames from 14-gage galvanized steel.
- B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.

2.5 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at project site. Comply with ANSI/SDI-100 requirements.
 1. Internal Construction: Manufacturer's standard honeycomb, polyurethane, polystyrene, unitized steel grid, vertical steel stiffeners, or rigid mineral fiber core with internal sound deadener on inside of face sheets where appropriate in accordance with SDI standards.
 2. Clearances: Not more than 1/8 inch at jambs and heads except between non-fire-rated pairs of doors not more than 1/4 inch. Not more than 3/4 inch at bottom.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel.
- C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel.
- E. Fabricate exterior doors, panels, and frames from galvanized sheet steel in accordance with SDI-112. Close top and bottom edges of exterior doors as integral part of door construction or by addition of minimum 16-gage inverted steel channels.
- F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- G. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal insulating door and frame assemblies and tested in accordance with ASTM C 236 OR ASTM C 976 on fully operable door assemblies.

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STANDARD STEEL DOORS AND FRAMES

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- 1. Unless otherwise indicated, provide thermal-rated assemblies with U factor of 0.41 Btu/(hr x sq ft x deg F.) or better.
 - H. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware in accordance with final Door Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 Series Specifications for door and frame preparation for hardware.
 - I. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at project site.
 - J. Locate hardware as indicated on final shop drawings or, if not indicated, in accordance with "Recommended Locations for Builder's Hardware on Standard Steel Doors and Frames," published by Door and Hardware Institute.
 - K. Shop Painting: Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
 - 1. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
 - 2. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.
 - L. Glazing Stops: Minimum 20 gage steel.
 - 1. Provide non-removable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
 - 2. Provide screw applied removable glazing beads on inside of glass, louvers, and other panels in doors.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install standard steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.
- B. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions For Steel Frames," unless otherwise indicated.
 - 1. Except for frames located at existing concrete, masonry or drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
 - 2. In masonry construction, locate 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry Tee anchors.
 - 3. At existing concrete or masonry construction, provide 3 completed opening anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb, set frames and secure to adjacent construction with bolts and masonry anchorage devices.
 - 4. Install fire-rated frames in accordance with NFPA Standard No. 80.
 - 5. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In closed steel stud partitions, attach wall anchors to studs with screws.
 - 6. In in-place drywall partitions install knock down slip-on drywall frames.
- C. Door Installation: Fit hollow metal doors accurately in frames, within clearances specified in ANSI/SDI-100.
 - 1. Install fire-rated doors with clearances as specified in NFPA Standard No. 30.

3.2 ADJUST AND CLEAN

- A. Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime

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- coat and apply touch-up of compatible air-drying primer.
- B. Final Adjustments: Check and readjust operating hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION



SECTION 08 36 00
SECTIONAL OVERHEAD DOORS
418 SERIES INSULATED STEEL DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Insulated Sectional Overhead Doors.
- B. Electric Operators and Controls.
- C. Operating Hardware, tracks, and support.

1.2 REFERENCES

- A. [ANSI/DASMA 102](#) - American National Standard Specifications for Sectional Overhead Type Doors.

1.3 DESIGN / PERFORMANCE REQUIREMENTS

- A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.
 - 1. Design pressure to be per IBC wind requirements.
- B. Wiring Connections: Requirements for electrical characteristics.
 - 1. 115 volts, single phase, 60 Hz.
 - 2. 230 volts, single phase, 60 Hz.
- C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- B. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- D. Operation and Maintenance Data.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in

this section with minimum five years documented experience.

- B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened labeled packaging until ready for installation.
- B. Protect materials from exposure to moisture until ready for installation.
- C. Store materials in a dry, ventilated weathertight location.

1.7 PROJECT CONDITIONS

- A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
 - 1. Overhead Door Corp
 - 2. Best Door.
 - 3. Equals

2.2 INSULATED SECTIONAL OVERHEAD DOORS

- A. Insulated Steel Sectional Overhead Doors: 418 Series Insulated Steel Doors by Overhead Door Corporation. Units shall have the following characteristics:
 - 1. Door Assembly: Insulated steel door assembly with rabbeted meeting rails to form weathertight joints and provide full-width interlocking structural rigidity.
 - a. Panel Thickness: 2 inches (51 mm).
 - b. Exterior Surface: Flush.
 - c. Exterior Steel: 16 gauge, hot-dip galvanized.
 - d. Back Cover:
 - 1) 26 gauge steel.
 - e. Center and End Stiles: 16 gauge steel.
 - f. Springs:
 - 1) 10,000 cycles.
 - g. Insulation: Polystyrene.
 - h. Thermal Values:
 - 1) Polystyrene - R-value of 7.35; U-Value of 0.136.
 - i. Full Glazed Aluminum Sash Panels: 2 rows minimum.
 - 1) Insulated double strength glass.
 - 2. Finish and Color: Two coat baked-on polyester with white exterior and white interior color.
 - a. Interior mounted slide lock.

3. Weatherstripping:
 - a. Flexible bulb-type strip at bottom section.
 - b. Flexible Jamb seals.
 - c. Flexible Header seal.
4. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
5. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.
 - a. Entrapment Protection: Required for momentary contact, includes radio control operation.
 - 1) Photoelectric sensors monitored to meet UL 325/2010.
 - b. Operator Controls:
 - 1) Push-button operated control stations with open, close, and stop buttons.
 - 2) Surface mounting.
 - 3) Both interior and exterior location.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until openings have been properly prepared.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- C. Verify electric power is available and of correct characteristics.
- D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.
- B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

- C. Anchor assembly to wall construction and building framing without distortion or stress.
- D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- E. Fit and align door assembly including hardware.
- F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.4 CLEANING AND ADJUSTING

- A. Adjust door assembly to smooth operation and in full contact with weatherstripping.
- B. Clean doors, frames and glass.
- C. Remove temporary labels and visible markings.

3.5 PROTECTION

- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.
- B. Protect installed products until completion of project.
- C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

END OF SECTION

SECTION 08 71 10
FINISH HARDWARE

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
BURKE COUNTY ANIMAL SHELTER
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PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work of this section.

PROVIDE PANIC HARDWARE ON ALL EXTERIOR DOORS.

HARDWARE IS TO BE PROVIDED ON ALL NEW AND EXISTING DOORS.

ALL HARDWARE TO BE US26 FINISH.

1.02 DESCRIPTION OF WORK

- A. Definition: "Builders Hardware" includes items known commercially as builders hardware which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frames.
- B. Extent of finish hardware required is to be scheduled by hardware supplier based on the location and operation of each door. The Architect and Owner will review and verify the function of each and every door in the facility.
- C. Types of finish hardware required include the following:
1. Hinges
 2. Pivots
 3. Lock cylinders and keys
 4. Lock and latch sets
 5. Bolts
 6. Exit devices
 7. Push/pull units
 8. Closers
 9. Overhead holders
 10. Miscellaneous door control devices
 11. Door trim units
 12. Protection plates
 13. Weatherstripping, door seals
 14. Thresholds
 15. Electronic Security Products
 16. Silencers

1.03 QUALITY ASSURANCE:

- A. Manufacturer: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from only one

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manufacturer, although several may be indicated as offering products complying with requirements.

- B. Supplier: A recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than 2 years, and who is, or who employs an experienced architectural consultant who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements, to Owner, Architect and Contractor.
- C. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM for types and sizes of doors required and complies with requirements of door and door frame labels.
 - 1. Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors' UL or FM labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL or FM label on exit devices indicating "Fire Exit Hardware."

1.04 SUBMITTALS

- A. Product Data: Submit manufacturers technical product data for each item of hardware in accordance with Division 1 section "Submittals". Include whatever information may be necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish.
- B. **Hardware Schedule: Submit a hardware schedule in manner indicated below PREPARED BY A CERTIFIED, LICENSES HARDWARE SPECIFIER. Coordinate hardware with fire ratings, applications, doors, frames, and related work to ensure proper size, thickness, hand, function and finish of hardware.**
- C. Final Hardware Schedule Content: Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
 - 1. Type, style, function, size and finish of each hardware item.
 - 2. Name and manufacturer of each item.
 - 3. Fastenings and other pertinent information.
 - 4. Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
 - 5. Explanation of all abbreviations, symbols, codes, etc. contained in schedule.
 - 6. Mounting locations for hardware.
 - 7. Door and frame sizes and materials.
- D. Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of

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FINISH HARDWARE**

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other work affected by finish hardware, and other information essential to the coordinated review of hardware schedule.

- E. Samples: Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample of each type of exposed hardware unit, finished as required, and tagged with full description for coordination with schedule.
 - 1. Samples will be returned to the supplier. Units which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.
- F. Templates: Finish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

1.05 PRODUCT HANDLING:

- A. Tag each item or package separately, with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of hardware, is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.
- C. Inventory hardware jointly with representatives of the hardware supplier and the hardware installer until each is satisfied that the count is correct.
- D. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.
- E. Provide secure lock-up for hardware delivered to the project, but not yet installed. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the work will not be delayed by hardware losses, both before and after installation.

PART 2 - PRODUCTS

2.01 SCHEDULED HARDWARE

HARDWARE IS TO MATCH BURKE COUNTY'S HARDWARE STANDARD - VERIFY WITH OWNER.

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is to be determined by the door use and location in conjunction with the Hardware Allowance contained in this Project Manual.
- B. Manufacturer's product designations: One or more manufacturers are listed for each hardware type required. An asterisk (*) after a manufacturer's name indicates whose product designation is used in

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the Hardware Schedule for purposes of establishing minimum requirements. Provide either the product designated, or, where more than one manufacturer is listed, the comparable product of one of the other manufacturers which comply with requirements including those specified elsewhere in this section.

2.02 MATERIALS AND FABRICATION:

- A. Hand of door: Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
- B. Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to Architect.
 - 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- C. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for the application hardware units by applicable ASNI A156 series standard for each type hardware item and with ASNI A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.
- D. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- E. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.
- F. Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of the type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on the opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use sex screw fasteners.
- G. Tools and Maintenance Instructions for Maintenance: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

2.03 HINGES, BUTTS, AND PIVOTS:

- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

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FINISH HARDWARE

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- B. Screws: Furnish Phillips flat-head or machine screws for installation of units, except furnish Phillips flat-head or wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.
 - C. Hinge Pins: Except as otherwise indicated, provide continuous hinges per door specification.
 - D. Tips: Flat button and matching plug, finished to match leaves, except where hospital tip (HT) indicated.
 - E. Number of hinges: Provide number of hinges indicated but not less than 3 hinges for door leaf for doors 90" or less in height and one additional hinge for each 30" of additional height.
 - F. Size of hinges: Unless otherwise scheduled, size hinges in accordance with the published recommendations of the specified manufacturer.

2.04 LOCK CYLINDERS AND KEYING:

- A. General: Supplier will meet with Owner to finalize keying requirements and obtain final instructions in writing.
- B. Review the keying system with the Owner and provide the type required (master, grandmaster or great-grandmaster), integrated with Owner's existing system.
- C. Equip locks with high security cylinders which comply with performance requirements for Grade 1 cylinders as listed in ANSI A156.5 and which have been tested for pick and drill resistance requirements of UL 437 and are UL listed.
- D. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
- E. Metals: Construct lock cylinder parts from brass/bronze, stainless steel or nickel silver.
- F. Comply with Owner's instructions for masterkeying and, except as otherwise indicated, provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.
- G. Key Material: Provide keys of nickel silver only.
- H. Key Quantity: Furnish 3 change keys for each lock; 5 master keys for each master system; and 5 grandmaster keys for each grandmaster system.
- I. Deliver keys to Owner's representative.

2.05 LOCKS, LATCHES, AND BOLTS:

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt.
 - 1. Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.
 - 2. Provide roller type strikes where recommended by manufacturer of the latch and lock units.
- B. Lock Throw: Provide 3/4" minimum throw of latch and 1" throw of deadbolt. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.

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FINISH HARDWARE

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- C. Flush Bolt Heads: Minimum of 1/2" diameter rods of brass, bronze, or stainless steel, with minimum 12" long rod for doors up to 7'0" in height. Provide longer rods as necessary for doors exceeding 7'0" in height.
 - D. Exit Device Dogging: Except on fire-rated doors, wherever closers are provided on doors equipped with exit devices, equip the units with keyed dogging device to hold the push bar down and the latch bolt in the open position.
 - E. Rabbeted Doors: Where rabbeted door stiles are indicated, provide special rabbeted front on lock and latch units and bolts.

2.06 PUSH/PULL UNITS:

- A. Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation; through-bolted for matched pairs, but not for single units.

2.07 CLOSERS AND DOOR CONTROL DEVICES:

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit, depending upon size of door, exposure to weather and anticipated frequency of use.
- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A 117.1 provisions for door opening force and delayed action closing.
- C. Combination Door Closers and Holders: Provide units designed to hold door in open position under normal usage and to release and automatically close door under fire conditions. Incorporate an integral electromagnetic holder mechanism designed for use with UL listed fire detectors, provided with normally closed switching contacts.
 - 1. Provide integral smoke detector device in combination door closers and holders complying with UL 228.

2.08 DOOR TRIM UNITS:

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units (kick plates, edge trim, viewers, knockers, mail drops and similar units); either machine screws or self-tapping screw.
- B. Fabricate edge trim of stainless steel, not more than 1/2" nor less than 1/16" smaller in length than door dimension.
- C. Fabricate protection plates (armor, kick or mop) not more than 1-1/2" less than door width on stop side and not more than 1/2" less than door width on pull side, plate heights shall be 36", 8", and 4" respectively. Armor plates on fire doors shall conform to NFPA 80.

**SECTION 08 71 10
FINISH HARDWARE**

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1. Metal Plates: Stainless steel, .050" (U.S. 18 ga).
- 2.09 WEATHERSTRIPPING:
- A. General: Except as otherwise indicated, provide continuous weatherstripping at each edge of every exterior door leaf. Provide type, sizes and profiles shown or scheduled. Provide non-corrosive fasteners as recommended by manufacturer for application indicated.
- 2.10 THRESHOLDS:
- A. General: Except as otherwise indicated provide standard metal threshold unit of type, size, and profile as shown or scheduled.
- 2.11 SILENCERS:
- A. Provide silencers except at doors equipped with weatherstrip, soundseals, lighseals, or other gasketing. Provide 3 silencers per single door and 4 silencers per pair of doors.
- 2.12 HARDWARE FINISHES:
- A. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening. In general, match items to the manufacturer's standard finish for the latch and lock set (or push-pull units if no latch-lock sets) for color and texture.
- B. Provide finishes which match those established by BHMA or, if none established, match the Architect's sample.
- C. 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 for the applicable units of hardware by referenced standards.
- D. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI A156.18 "Materials & Finishes Standard" by BHMA, including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Architect.
- B. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for

SECTION 08 71 10
FINISH HARDWARE

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Custom Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.

- C. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division 9 sections. Do not install surface-mounted items until finishes have been completed on the substrate.
- D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- E. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- F. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant.

3.02 ADJUST AND CLEAN:

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.

3.03 FINISHES

All finishes to be US 26D. Hinges on metal doors shall be primed for painting, ANSI 600.
Surface mounted door closers shall be painted to match adjacent hardware.

END OF SECTION

SECTION 08 80 00
GLASS AND GLAZING

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 SUMMARY

- A. Extent of glass and glazing work is indicated on drawings and schedules.
- B. Types of work in this section include glass and glazing for:
1. All exterior windows and doors. Entry doors to have tempered glass.
 2. All interior windows to be tempered.
 3. All other interior glass to be tempered.

1.3 SYSTEM DESCRIPTION

- A. Provide glass and glazing that has been produced, fabricated and installed to withstand normal thermal movement, wind loading and impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials and other defects in the work.
1. Normal thermal movement is defined as that resulting from an ambient temperature range of 120 deg F (67 deg C) and from a consequent temperature range within glass and glass framing members of 180 deg F (100 deg C).
 2. Deterioration of insulating glass is defined as failure of hermetic seal due to other causes than breakage which results in intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coating, if any, resulting from seal failure, and any other visual evidence of seal failure or performance.
 3. Deterioration of coated glass is defined as the development of manufacturing defects including peeling, cracking or other indications of deterioration in metallic coating due to normal conditions of use.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.
- B. Samples: Submit, for verification purposes, 12" square samples of each type of glass indicated except for clear single pane units, and 12" long samples of each color required (except black) for each type of sealant or gasket exposed to view. Install sealant or gasket sample between two strips of material representative of adjoining framing system in color.

SECTION 08 80 00
GLASS AND GLAZING

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

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- C. Certificate: Submit certificates from respective manufacturers attesting that glass and glazing materials furnished for project comply with requirements.
1. Separate certification will not be required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authorities having jurisdiction.

1.5 **QUALITY ASSURANCE**

- A. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.
- B. Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.
1. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.
- C. Insulating Glass Certification Program: Provide insulating glass units permanently marked either on spacers or at least one component pane of units with appropriate certification label of inspecting and testing organization indicated below:
1. Insulating Glass Certification Council (IGCC)
 2. Associated Laboratories, Inc. (ALI)
- D. Single Source Responsibility for Glass: To ensure consistent quality of appearance and performance, provide materials produced by a single manufacturer or fabricator for each kind and condition of glass indicated and composed of primary glass obtained from a single source for each type and class required.

1.6 **DELIVERY, STORAGE, AND HANDLING**

- A. Protect glass and glazing materials during delivery, storage, and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.
1. Where insulating glass units will be exposed to substantial altitude changes, avoid hermetic seal ruptures by complying with insulating glass fabricator's recommendations for venting and sealing.

1.7 **PROJECT CONDITIONS**

- A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature

**SECTION 08 800
GLASS AND GLAZING**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
NEW BALDWIN COUNTY ADMINISTRATION BUILDING
NOVEMBER 07, 2018

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conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes.

1. Install liquid sealants at ambient and substrate temperatures above 40 degrees F (4.4 deg C).

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

1. Manufacturers of Clear and Tinted Float Glass:

- a. AFG Industries, Inc.
- b. Ford Glass Division
- c. Guardian Industries Corp.
- d. LOF Glass, Inc.
- e. PPG Industries, Inc.
- f. Saint-Gobain/Euroglass.

2. Manufacturers of Heat-Treated and Tempered Glass:

- a. AFG Industries, Inc.
- b. Cardinal IG.
- c. Environmental Glass Products
- d. Falconer Glass Industries
- e. Ford Glass Division
- f. Guardian Industries Corp.
- g. Hordis Brothers, Inc.
- h. LOF Glass, Inc.
- i. PPG Industries, Inc.
- j. Saint-Gobain/Euroglass
- k. Spectrum Glass Prod. Div., H.H. Robertson Co.

3. Manufacturers of Coated Insulated Glass:

- a. Guardian Industries Corp.; NU-52 (2) on clear, High Light Transmitting.

4. Manufacturers of Polycarbonate Glazing and Cash/Deal Trays:

- a. Pacific Bulletproof Company. Provide Bullet Resistant polycarbonate level I, Makrolon Hygard BR750. 3/4".
- b. Deal Trays – Provide a top mount 18 gauge stainless steel deal tray at each of the two windows. Bulletproof glazing to be shaped to accommodate deal trays.

2.2 GLASS PRODUCTS, GENERAL:

- A. Primary Glass Standard: Provide primary glass which complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and, if applicable, form, finish, mesh and pattern.
- B. Heat-Treated Glass Standard: Provide heat-treated glass which complies with ASTM C 1048 requirements,

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including those indicated by reference to kind, condition, type, quality, class, and, if applicable, form, finish, and pattern.

- C. Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

2.3 PRIMARY GLASS PRODUCTS

- A. Clear Tempered Glass: Type I (transparent glass, flat), Quality q3 (glazing select), and as follows:

1. All interior doors and windows.
2. Store front door and side lites.

2.4 HEAT-TREATED GLASS PRODUCTS

- A. Manufacturing Process: Manufacture heat-treated glass as follows:

1. By vertical (tong-held) or horizontal (roller hearth) process, at manufacturer's option, except provide horizontal process where indicated as "tongless" or "free of tong marks".

- B. Uncoated Clear Heat-Treated Float Glass: Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), kind as indicated below:

1. Kind FT (fully tempered) where indicated.

- C. Coated Clear Heat-Treated Float Glass: Condition C (other coated glass), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), with coating type and performance characteristics complying with requirements specified under coated glass products; kind as indicated below:

1. Kind FT (fully tempered) where indicated.

2.5 SEALED INSULATING GLASS UNITS

- A. General: Window wall. Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E 774 for performance classification indicated as well as with other requirements specified for glass characteristics, air space, sealing system, sealant, spacer material, corner design and dessicant.

1. Exterior pane to be 1/4" green-tinted with low E coating on the # 2 surface. Interior to be 1/4" clear. Provide tempering at all locations required by code.
2. Provide heat-treated panes of kind and at locations indicated or, if not indicated, provide heat-strengthened panes where recommended by manufacturer for application indicated and tempered where indicated or where safety glass is designated or required.
3. Performance characteristics designated for coated insulating glass are nominal values based on manufacturer's published test data for units with 3/16" thick panes of glass and 1/4" thick air space.

- a. U-values indicated are expressed in the number of Btu's per hour per sq. ft. per

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degree F difference.

4. Performance Classification per ASTM E 774: Class A.
 - a. Thickness of Each Pane: 1/4 "
 - b. Air Space Thickness: 1/2"
 - c. Sealing System: Manufacturer's standard
 - d. Spacer Material: Manufacturer's standard metal
5. Dessicant: Manufacturer's standard; either molecular sieve or silica gel or blend of both.
6. Corner Construction: Manufacturer's standard corner construction.

2.7 ELASTOMERIC GLAZING SEALANTS AND PREFORMED GLAZING TAPES:

- A. General: Provide products of type indicated and complying with the following requirements:
 1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials with which they will come into contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
 2. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications indicated and conditions at time of installation.
 3. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and Uses.
 4. Colors: Provide color of exposed sealants as selected by Architect from manufacturer's standard colors.
- B. One-Part Non-Acid-Curing Silicone Glazing Sealant: Type S; Grade NS, Class 25; Uses NT, G, A, and, as applicable to uses indicated, O; and complying with the following requirements for modulus and additional joint movement capability.
 1. Low Modulus: Tensile strength of 45 psi or less at 100 percent elongation when tested per ASTM D 412 after 14 days at 77 deg F (20 deg C) and 50 percent relative humidity.
- C. Preformed Butyl-Polyisobutylene Glazing Tape: Provide manufacturer's standard solvent-free butyl-polyisobutylene formulation with a solids content of 100 percent; complying with AAMA A 804.1; in extruded tape form; non-staining and non-migrating in contact with nonporous surfaces; packaged on rolls with a release paper on one side; with or without continuous spacer rod as recommended by manufacturers of tape and glass for application indicated.
- D. Products: Subject to compliance with requirements, provide one of the following:
 1. One-Part Non-Acid Curing Low-Modulus Silicone Glazing Sealant:
 - a. "Chem-Calk 1000"; Bostik Construction Products Div.
 - b. "Dow Corning 790"; Dow Corning Corp.
 - c. "864"; Pecora Corp
 - d. "Omniseal"; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.

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- e. "Spectrum 1"; Tremco, Inc.
 - 2. Preformed Butyl-Polyisobutylene Glazing Tape Without Spacer Rod:
 - a. "Chem-Tape 40"; Bostik Construction Products Div.
 - b. "Extru-Seal"; Pecora Corp.
 - c. "PTI 303" Glazing Tape; Protective Treatments, Inc.
 - d. "Tremco 440 Tape"; Tremco, Inc.
 - 3. Preformed Butyl-Polyisobutylene Glazing Tape With Spacer Rod:
 - a. "Chem-Tape 60"; Bostik Construction Products Div.
 - b. "Shim-Seal"; Pecora Corp.
 - c. "PTI 303" Shim Tape; Protective Treatments, Inc.
 - d. "Pre-shimmed Tremco 440 Tape"; Tremco, Inc.

2.8 GLAZING GASKETS

A. Dense Elastomeric Compression Seal Gaskets: Molded or extruded gaskets of material indicated below complying with ASTM C 864, of profile and hardness required to maintain watertight seal:

- 1. Neoprene
- 2. EPDM
- 3. Thermoplastic polyolefin rubber
- 4. Any material indicated above

B. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

- 1. Manufacturers of Preformed Gaskets:
 - a. D. S. Brown Co.
 - b. Maloney Precision Products Co.
 - c. Tremco

2.8 MISCELLANEOUS GLAZING MATERIALS

A. Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

C. Setting Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.

D. Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.

E. Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.

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- F. Compressible Filler rods: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Pre-Installation Meeting: At Contractor's direction, Glazier, sealant and gasket manufacturers' technical representatives, glass framing erector and other trades whose work affects glass and glazing shall meet at project site to review procedures and time schedule proposed for glazing and coordination with other work.
- B. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.3 GLAZING, GENERAL

- A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.
- B. Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.
- C. Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

3.4 GLAZING

- A. Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 6" from corner, unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

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- B. Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
 - C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.
 - D. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.
 - E. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.
 - F. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.
 - G. Tool exposed surfaces of sealants to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.
 - H. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement.
 - I. Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.5 PROTECTION AND CLEANING

- A. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contamination substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.
- D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.
- E. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.

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END OF SECTION

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Extent of each type of gypsum drywall construction required is indicated on Drawings.
- B. This Section includes the following types of gypsum board construction:
1. Steel framing members to receive gypsum board
 2. Gypsum board (all to be Type X 5/8" Green Board screw-attached to steel framing and furring members

1.3 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA 505 for definitions of terms for gypsum board construction not otherwise defined in this section or other referenced standards.

1.4 SUBMITTALS

- A. Product data from manufacturers for each type of product specified.

1.5 QUALITY ASSURANCE

- A. Fire-Resistance Ratings: Where indicated, provide materials and construction which are identical to those of assemblies whose fire resistance rating has been determined per ASTM E 119 by a testing and inspecting organization acceptable to authorities having jurisdiction.
1. Provide fire-resistance-rated assemblies identical to design designations in UL "Fire Resistance Directory" or in listing of other testing and agencies acceptable to authorities having jurisdiction.
- B. Single Source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack

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gypsum boards flat to prevent sagging.

- C. Handle gypsum boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.
- B. Minimum Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously thereafter until drying is complete.
- C. Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

1. Steel Framing and Furring
 - a. Bostwick Steel Framing Co.
 - b. Dale Industries, Inc.e
 - c. Gold Bond Building Products Div., National Gypsum Co.
 - d. Incor, Inc.
 - e. Marino Industries Corp.
 - f. United States Gypsum Co.
2. Gypsum Boards and Related Products:
 - a. Centex American Gypsum Co.
 - b. Domtar Gypsum Co.
 - c. Georgia-Pacific Corp.
 - d. Gold Bond Building Products Div., National Gypsum Co.
 - e. United States Gypsum Co.

2.2 STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS

- A. General: provide components which comply with ASTM C 754 for materials and sizes, unless otherwise

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indicated.

- B. Concrete Inserts: Inserts designed for attachment to concrete forms and for embedment in concrete, fabricated from corrosion-resistant materials, with holes or loops for attachment of hanger wires and capability to sustain, without failure, a load equal to 3 times that imposed by ceiling construction, as determined from testing per ASTM E 488, conducted by an independent testing laboratory.
- C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
- D. Channels: Cold-rolled Steel, 0.0598 inch minimum thickness of base (uncoated) metal and 7/16 inch wide flanges, protected with rust-inhibitive paint, and as follows:
 - 1. Carrying Channels: 2 inches deep, 590 lbs per 1000 ft., unless otherwise indicated.
- E. Steel Studs for Furring Channels: ASTM C 645, with flange edges bent back 90 deg and doubled over to form 3/16 inch minimum lip return), minimum thickness of base (uncoated) metal and minimum depth as follows:
 - 1. Thickness: 0.0329 inch, unless otherwise indicated
 - 2. Depth: 3-5/8 inches, unless otherwise indicated
- F. Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth of 7/8 inch, a minimum thickness of base (uncoated) metal as follows:
 - 1. Thickness: 0.0179 inch, unless otherwise indicated

2.3 GYPSUM BOARD

- A. General: Provide gypsum board, all "green-board" (Georgia Pacific "Tough-Rock" or equal) in maximum lengths available to minimize end-to-end joints.
 - 1. Thickness: Provide gypsum board in thicknesses indicated to comply with ASTM C 840 for application system and support spacing indicated.
- B. Gypsum Wallboard: ASTM C 36, and as follows:
 - 1. Type: Green-board, water-resistant (Georgia Pacific "Tough-Rock" or equal, throughout the entire facility.
 - 2. Type: Type X for fire-resistance-rated assemblies
 - 3. Edges: Tapered
 - 4. Thickness: 5/8 inch
 - 5. Products: Subject to compliance with requirements, provide one of the following products where Type X gypsum wallboard is indicated:
 - a. "Gyprock Fireguard 'C' Gypsum Board"; Domtar Gypsum Co.
 - b. "Fire-Shield G"; Gold Bond Building Products, Div., National Gypsum Co.
 - c. "SHEETROCK Brand FIRECODE 'C' Gypsum Panels"; United States Gypsum Co.

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- C. Gypsum Backing Board for Multi-Layer Applications: ASTM C 442 or, where backing board is not available from manufacturer, gypsum wallboard, ASTM C 36, and as follows:
 - 1. Type: Regular, unless otherwise indicated
 - 2. Type: Type X for fire-resistance-rated assemblies
 - 3. Edges: Manufacturer's standard
 - 4. Thickness: 5/8 inch
- D. Water-Resistant Gypsum Backing Board: ASTM C 630, and as follows:
 - 1. Type: Regular, unless otherwise indicated
 - 2. Type: Type X for fire-resistance-rated assemblies
 - 3. Thickness: 5/8 inch

2.4 TRIM ACCESSORIES

- A. Cornerbead and Edge Trim for Interior Installation: Provide corner beads, edge trim and control joints which comply with ASTM C 1047 and requirements indicated below:
 - 1. Material: Formed metal, plastic or metal combined with paper, with metal complying with the following requirement:
 - a. Sheet Steel zinc-coated by hot-dip process
 - 2. Edge trim shapes indicated below by reference to designations of Fig. 1 in ASTM C 1047:
 - a. "LC" Bead, unless otherwise indicated
 - b. "LK" Bead with square nose for use with kerfed jambs
 - c. "L" Bead where indicated
 - d. "U" Bead where indicated
 - 3. Metal Cornerbead and Edge Trim for Exterior Ceilings: Comply with the following requirements:
 - 1. Edge trim complying with ASTM C 1047, formed from rolled zinc, shape "LC" Bead per Fig. 1, unless otherwise indicated.

2.5 GYPSUM BOARD JOINT TREATMENT MATERIALS

- A. General: Provide materials complying with ASTM C 475, ASTM C 840, and recommendations of manufacturer of both gypsum board and joint treatment materials for the application indicated.
- B. Joint Tape: Paper reinforcing tape, unless otherwise indicated.
- C. Setting-Type Joint Compounds: Factory-prepackaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
 - 1. Where setting-type joint compounds are indicated for use as taping and topping compounds, use formulation for each which develops greatest bond strength and crack resistance and

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is compatible with other joint compounds applied over it.

2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.
 3. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by gypsum board manufacturer for this purpose.
- D. Drying-Type Joint Compounds: Factory-prepackaged vinyl-based products complying with the following requirements for formulation and intended use.
1. Ready-Mix Formulation: Factory-premixed product
 2. Taping compound formulated for embedding tape and for first coat over fasteners and flanges of corner beads and edge trim.
 3. Topping compound formulated for fill (second) and finish (third) coats.
 4. All-purpose compound formulated for use as both taping and topping compound.

2.6 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum drywall construction which comply with referenced standards and the recommendations of the manufacturer of the gypsum board.
- B. Spot Grout: ASTM C 475, setting-type joint compound of type recommended for spot grouting hollow metal door frames.
- C. Gypsum Board Screws: ASTM C 1002
- D. Asphalt Felt: ASTM D 226, Type I (No. 15)
- E. Concealed Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable sealant complying with requirement specified in Division 7 section "Joint Sealers".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure that inserts and other structural anchorage provisions have been installed to

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receive ceiling anchors in a manner that will develop their full strength and at spacing required to support ceiling.

1. Furnish concrete inserts and other devices indicated, to other trades for installation well in advance of time needed for coordination with other construction.

3.3 INSTALLATION OF STEEL FRAMING, GENERAL

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar construction to comply with details indicated and with recommendations of gypsum board manufacturer, or if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.
- C. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement, at locations indicated below:
 1. Where edges of suspended ceilings abut building structure horizontally at ceiling perimeters or penetration of structural elements.
 2. Where partition and wall framing abuts overhead structure.
- D. Do not bridge building expansion and control joints with steel framing or furring members; independently frame both sides of joints with framing or furring members.

3.4 INSTALLATION OF STEEL FRAMING FOR SUSPENDED AND FURRED CEILINGS

- A. Secure hangers to structural support by connecting directly to structure where possible.
- B. Do not connect or suspend steel framing from ducts, pipes or conduit.
- C. Keep hangers and braces 2 inches clear of ducts, pipes and conduits.
- D. Sway-brace suspended steel framing with hangers used for support.
- E. Install suspended steel framing components in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.
 1. Wire Hangers: 0.1620 inch diameter (8 gage), 4 ft. on center
 2. Carrying Channels (Main Runners): 1-1/2 inch, 4 ft. on center
 3. Rigid Furring Channels (Furring Members): 16 inches on center
- F. Installation Tolerances: Install steel framing components for suspended ceiling so that cross furring members or grid suspension members are level to within 1/8 inch in 12 ft. as measured both lengthwise on each member and transversely between parallel members.
- G. Wire-tie or clip furring members to main runners and to other structural supports as indicated.

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3.5 APPLICATION AND FINISHING OF GYPSUM BOARD, GENERAL

- A. Gypsum Board Application and Finishing Standard: Install and finish gypsum board to comply with ASTM C 840.
- B. Install sound attenuation blankets where indicated, prior to gypsum board unless readily installed after board has been installed.
- C. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.
- D. Install ceiling boards across framing in the manner which minimizes the number of end-butt joints, which avoids end joints in the central area of each ceiling. Stagger end joints at least 24 inches.
- E. Install wall/partition boards in manner which minimizes the number of end-butt joints or avoids them entirely where possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.
- F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.
- G. Locate either edge or end joints over supports, except in horizontal applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- H. Attach gypsum board to steel studs so that leading edge or end of each board is attached to open (unsupported) edge of stud flange first.
- I. Attach gypsum board to supplementary framing and blocking provides for additional support at openings and cutouts.
- J. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors and doors over 32 inches wide. Apply spot grout at each jamb anchor clip just before inserting board into frame.
- K. Form control joints and expansion joints at locations indicated, with space between edges of boards, prepared to receive trim accessories.
- L. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are braced internally.
 - 1. Except where 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 area, and may be limited to not less than 75 percent of full coverage.
 - 2. Fit gypsum board around ducts, pipes, and conduits.

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3. Where partitions intersect open concrete coffers, cut gypsum board to fit profile of coffers and allow 1/4 to 1/2 inch wide joint for sealant.
- M. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch to 1/2 inch space and trim edge with "U" bead edge trim. Seal joints with acoustical sealant.
- N. Space fasteners in gypsum boards in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.6 METHODS OF GYPSUM BOARD APPLICATION

- A. Single-Layer Application: Install gypsum wallboard as follows:
 1. On ceilings apply gypsum board prior to wall/partition board application to the greatest extent possible.
 2. On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated, and provide sheet lengths which will minimize end joints.
- B. Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install gypsum backing board.
 1. In "dry" areas install gypsum backing board or wallboard with tapered edges taped and finished to produce a flat surface.
 2. At tubs, toilets, janitor closets, and similar "wet" areas, install water-resistant gypsum backing board to comply with ASTM C 840 and recommendations of gypsum board manufacturer.
 3. At showers, tubs and similar "wet areas" install glass mesh mortar units and treat joints to comply with manufacturer's recommendations for type of application indicated.
- C. Double-Layer Application: Install gypsum backing board for base layer and gypsum wallboard for face layer.
 1. On partitions/walls apply base layer and face layers vertically (parallel to framing) with joints of base layer over supports and face layer joints offset at least 10 inches with base layer joints.
- D. Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:
 1. Fasten with screws.
- E. Double-Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer as follows:
 1. Fasten both base layers and face layers separately to supports with screws.

3.7 INSTALLATION OF DRYWALL TRIM ACCESSORIES

- A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten

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gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.

- B. Install corner beads at external corners.
- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where "U" bead (semi-finishing type) is indicated.
 - 1. Install "LC" bead where drywall construction is tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
 - 2. Install "LK" bead where substrate is kerfed to receive long flange of trim.
 - 3. Install "L" bead where edge trim can only be installed after gypsum board is installed.
 - 4. Install U-Type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
- D. Install control joints at locations indicated, or if not indicated, at spacing and locations required by referenced gypsum board application and finish standard, and approved by the Architect for visual effect.

3.8 FINISH OF DRYWALL

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.
- B. Prefill open joints and rounded or beveled edges, if any, using setting-type joint compound.
- C. Apply joint tapes at joints between gypsum boards, except where trim accessories are indicated.
- D. Finish interior gypsum wallboard by applying the following joint compounds in 3 coats (not including prefill of openings in base), and sand between coats and after last coat:
 - 1. Embedding and First Coat: Ready-mix drying-type all-purpose or taping compound.
 - 2. Fill (Second) Coat: Ready-mix drying-type all-purpose or topping compound.
 - 3. Finish (Third) Coat: Ready-mix drying-type all -purpose or topping compound.
- E. Water-Resistant Backing Board Base for Ceramic Tile: Finish joints between water-resistant backing board with tape and setting-type joint compound to comply with gypsum board manufacturer's recommendations and installation standards referenced in Division 9 Section "Tile.
- F. Partial finishing: Omit third coat and sanding on concealed drywall construction which is indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.

3.9 PROTECTION

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-
- A. Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall construction being without damage or deterioration at time of Substantial Completion.

END OF SECTION

**SECTION 09 30 13
CERAMIC TILE**

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Glazed tile.
 - 2. Natural Floor Tile – floors.
 - 3. Waterproof membrane for **thin-set** tile installations.
 - 4. Crack-suppression membrane for thin-set tile installations.
 - 5. Cementitious backer units installed as part of tile installations.

1.3 DEFINITIONS

- A. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.
- B. Facial Dimension: Actual tile size (minor facial dimension as measured per ASTM C 499).
- C. Facial Dimension: Nominal tile size as defined in ANSI A137.1.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
- D. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required.
 - 2. Assembled samples with grouted joints for each type and composition of tile and for each color and finish required, at least **12 inches (300 mm)** square and mounted on rigid panel. Use grout of type and in color or colors approved for completed work.
 - 3. Full-size units of each type of trim and accessory[**for each color and finish required**].

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4. Stone thresholds in **6-inch (150-mm)** lengths.
5. Metal edge strips in **6-inch (150-mm)** lengths.

- E. Product Certificates: For each type of product, signed by product manufacturer.
- F. Qualification Data: For Installer.
- G. Material Test Reports: For each tile-setting and -grouting product[**and special-purpose tile**].

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store [**liquid latexes**] [**and**] [**emulsion adhesives**] in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Tile and Trim Units: **Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated**

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.

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2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
5. Basis-of-Design Product: The design for each tile type is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
 1. Provide tile complying with Standard grade requirements, unless otherwise indicated.
 2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.
- C. Colors, Textures, and Patterns: Architect to select from Manufacturer's full range of colors for any series specified. Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
 1. **BATHROOMS – Floor Tile** to be Dal-tile or equal. Floor Tile to be Daltile ARTICULO 6" x 18" Field tile. **All walls** to be to be Daltile "AVONDALE" GLAZED 2 x 4 ceramic mosaic. Color to be selected from manufacturer's full range of colors. Provide intergral cove and cove cap at transitions where needed. Provide all related trim pieces for complete installation. All tile Colors to be selected from full range or sizes/colors.
- D. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, 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.
- E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless otherwise indicated.

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1. Where tile is indicated for installation **in wet areas**, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

- F. 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 petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

A. Manufacturers:

1. American Marazzi Tile, Inc.
2. American Olean; Div. of Dal-Tile International Corp.
3. Buchtal Corporation USA.
4. Cerim-Floor Gres Ceramiche.
5. Crossville Ceramics Company, L.P.
6. Daltile; Div. of Dal-Tile International Inc.
7. Florida Tile Industries, Inc.
8. GranitiFiandre.
9. Interceramic.
10. KPT, Inc.
11. Laufen USA.
12. Lone Star Ceramics Company.
13. Metropolitan Ceramics.
14. Monarch Tile, Inc.
15. Porcelanite, Inc.
16. Quarry Tile Company.
17. Seneca Tiles, Inc.
18. Summitville Tiles, Inc.
19. United States Ceramic Tile Company.
20. Winburn Tile Manufacturing Company.

- B. Accessories for Glazed Wall Tile: Provide vitreous china accessories of type and size indicated, in color and finish to match adjoining wall tile, and intended for installing by same method as adjoining wall tile.

2.4 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to **1/2 inch (12.7 mm)** or less, and finish bevel to match face of threshold.

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- B. Marble Thresholds: ASTM C 503 with a minimum abrasion resistance of [10] [12] per ASTM C 1353 or ASTM C 241 and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2.5 SETTING AND GROUTING MATERIALS

- A. Manufacturers:

1. Atlas Minerals & Chemicals, Inc.
2. Boiardi Products Corporation.
3. Bonsal, W. R., Company.
4. Bostik.
5. C-Cure.
6. Custom Building Products.
7. DAP, Inc.
8. Jamo Inc.
9. LATICRETE International Inc.
10. MAPEI Corporation.
11. Southern Grouts & Mortars, Inc.
12. Summitville Tiles, Inc.
13. TEC Specialty Products Inc.

- B. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.

1. For wall applications, provide nonsagging mortar that complies with Paragraph C-4.6.1 in addition to the other requirements in ANSI A118.1.

- C. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:

1. Prepackaged dry-mortar mix containing dry, redispersible, ethylene vinyl acetate additive to which only water must be added at Project site.
2. Prepackaged dry-mortar mix combined with **[acrylic resin] [or] [styrene-butadiene-rubber]** liquid-latex additive.
 - a. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.

2.7 CEMENTITIOUS BACKER UNITS

- A. Provide cementitious backer units complying with ANSI A118.9 in maximum lengths available to minimize end-to-end butt joints.

2.8 MIXING MORTARS AND GROUT

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- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
 - 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.
- B. Provide concrete substrates for tile floors installed with **[adhesives]** **[or]** **[thin-set mortar]** that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
 - 1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
 - 2. Remove protrusions, bumps, and ridges by sanding or grinding.

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- C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

3.4 [WATERPROOFING] [AND] [CRACK-SUPPRESSION MEMBRANE] INSTALLATION

- A. Install waterproofing to comply with ANSI A108.13 and waterproofing manufacturer's written instructions to produce waterproof membrane of uniform thickness bonded securely to substrate.
- B. Install crack-suppression membrane to comply with manufacturer's written instructions to produce membrane of uniform thickness bonded securely to substrate.
- C. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 FLOOR TILE INSTALLATION

- A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.
 - 1. For installations indicated below, follow procedures in ANSI A108 Series tile installation standards for providing 95 percent mortar coverage.
 - a. Exterior tile floors.
 - b. Tile floors in wet areas.
 - c. Tile swimming pool decks.
 - d. Tile floors in laundries.
 - e. Tile floors composed of tiles **8 by 8 inches (200 by 200 mm)** or larger.
 - f. Tile floors composed of rib-backed tiles.

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- B. Joint Widths: Install tile on floors with the following joint widths:
 - 1. Ceramic Mosaic Tile: **1/16 inch (1.6 mm)**.
 - 2. Quarry Tile: [**1/4 inch (6.35 mm)**] [**3/8 inch (9.5 mm)**].
 - 3. Paver Tile: [**1/4 inch (6.35 mm)**] [**3/8 inch (9.5 mm)**].

- C. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile, unless otherwise indicated.
 - 1. Set thresholds in latex-portland cement mortar for locations where mortar bed would otherwise be exposed above adjacent nontile floor finish.

- D. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

- E. Grout Sealer: Apply grout sealer to [**cementitious**] grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer that has gotten on tile faces by wiping with soft cloth.

3.6 WALL TILE INSTALLATION

- A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

- B. Install metal lath and scratch coat for walls to comply with ANSI A108.1A, Section 4.1.

- C. Joint Widths: Install tile on walls with the following joint widths:
 - 1. Ceramic Mosaic Tile: **1/16 inch (1.6 mm)**.
 - 2. Glazed Wall Tile: **1/16 inch (1.6 mm)**.
 - 3. Quarry Tile: [**1/4 inch (6.35 mm)**] [**3/8 inch (9.5 mm)**].

3.7 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove [**epoxy**] [**and**] [**latex-portland cement**] grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners

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are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

- B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

- D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09310

THIS SECTION IS BASED ON ROCKFON® "FIBRAL MULTIFLEX™" CEILING PANEL.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: Provide suspended ceiling acoustical ceiling panels including but not limited to:
 - 1. acoustical ceiling panel.
- B. Related Sections:
 - 1. Section 09 21 16, Gypsum Board Ceilings.
 - 2. Section 09 52 23, Metal Acoustical Ceiling Suspension Assemblies.
 - 3. Section 09 54 00, Specialty Ceilings.
 - 4. Section 09 58 00, Integrated Ceiling Assemblies.
 - 5. Section 13 48 00, Sound, Vibration, and Seismic Control.
 - 6. Section 23 50 00, Central Heating Equipment.
 - 7. Section 26 50 00, Lighting.

1.3 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. CISCA: Ceilings & Interior Systems Construction Association; www.cisca.org.
- B. Reference Standards:
 - 1. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - 2. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
 - 3. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels
 - 4. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
 - 5. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
 - 6. ASTM E1111/E1111M - Standard Test Method for Measuring the Interzone Attenuation of Open Office Components
 - 7. ASTM E1414/E1414M - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meetings: Conduct meeting at Project site. Agenda includes Project conditions, coordination with work of other trades and layout of items which penetrate ceilings.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's Product data, including maintenance data.
- B. Samples: Submit 6" x 6" samples of specified ceiling panels.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Supply additional material (full-size ceiling panels) equal to 2% of ceiling area. Additional material should match Products installed and have the appropriate labels and identification.
- B. Supply extra materials that match Products installed and are packaged with protective covering for storage and identified with labels describing contents.

1.7 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect system components from excessive moisture in shipment, storage, and handling. Deliver in unopened bundles and store in a dry place with adequate air circulation.

1.9 WARRANTY

- A. Manufacturer Warranty: Submit a written warranty executed by manufacturer for a period of 30 years from date of Substantial Completion, agreeing to repair or replace suspension system components that fail or are compromised within the specified warranty period. Failed or compromised parts can include, but are not limited to:
 - 1. Rusting or defects directly made by the manufacturer.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. 1. Rockfon, 4849 South Austin Avenue, Chicago, IL 60638. 1-800-323-7164; www.rockfon.com.
2. All equals are acceptable.

2.2 MATERIALS

- A. Acoustical Lay-in Panels: Stone wool panels, "Rockfon® Fibril Multiflex™" by Rockfon® with following characteristics:
 - 1. Size: [24" x 48"].
 - 2. Edge: White Frame.
 - 3. Thickness: 2".

4. Fire Class: Class A.
5. Fire Performance:
 - a. UL 723 (ASTM E84) Flame Spread / Smoke Developed: 0/5.
6. Light Reflectance: 0.77.
7. Recycled Content: Up to 41%.
8. All panels are to hang with bottom edge at 10'-0" (verify)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine suspension assemblies, with installer present, for compliance with requirements specified in this and other Sections affecting ceiling panel installation and with requirements for installation tolerances and other conditions affecting performance of acoustic ceiling assemblies.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install ceiling panels to comply with ASTM C636/C636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

3.3 REPAIR

- A. Remove damaged or compromised components; replace with undamaged components.

3.4 CLEANING

- A. Clean exposed surfaces in accordance with manufacturer's written instructions.

END OF SECTION

SECTION 09 51 23
ACOUSTICAL PANEL CEILINGS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes acoustical panel ceilings installed with exposed suspension systems.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
1. Product data for each type of product specified.
 2. Coordination drawings for reflected ceiling plans drawn accurately to scale and coordinating penetrations and ceiling-mounted items. Show the following:
 - a. Ceiling suspension members
 - b. Method of attaching hangers to building structure
 - c. Ceiling-mounted items including light fixtures; air outlets and inlets; speakers; sprinkler heads; and special moldings at walls, column penetrations, and other junctures with adjoining construction.
 - d. Scale: 1/8 inch = 1'-0"
 3. Samples for verification purposes of each type of exposed finish required, prepared on samples of size indicated below and of same thickness and material indicated for final unit of Work. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected.
 - a. 6-inch-square samples of each acoustical panel type, pattern, and color.
 - b. Set of 12-inch-long samples of exposed suspension system members, including moldings, for each color and system type required.
 4. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has successfully completed acoustical

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ACOUSTICAL PANEL CEILINGS

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ceilings similar in material, design, and extent to those indicated for project.

- B. Fire-Performance Characteristics: Provide acoustical ceilings that are identical to those tested for the following fire-performance characteristics, per ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organizations.
 - 1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
 - a. Flame Spread: 25 or less
 - b. Smoke Developed: 50 or less
- C. Single-Source Responsibility for Ceiling Units: Obtain each type of acoustical ceiling unit from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- D. Single-Source Responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- E. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components (if any), and partition system (if any).

1.5 DELIVERY, 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, and 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.

1.6 PROJECT CONDITIONS

- A. Space Enclosure: Do not install interior acoustical ceilings until space is enclosed and weatherproof, 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.

1.7 EXTRA MATERIALS

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- A. Deliver extra materials to Owner. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with appropriate labels.
1. Acoustical Ceiling Units: Furnish quantity of full-size units equal to 2.0 percent of amount installed.
 2. Exposed Suspension System Components: Furnish quantity of each exposed component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL CEILING UNITS, GENERAL

- A. Standard for Acoustical Ceiling Units: Provide manufacturers' standard units of configuration indicated that comply with ASTM E 1264 classifications as designated by reference to types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
1. Mounting Method for Measuring NRC: Type E-400 (plenum mounting in which face of test specimen is 15-3/4 inches [400 mm] away from the test surface) per ASTM E 795.
- B. Colors and Patterns: Provide products to match appearance characteristics indicated under each product type.
1. For acoustical ceiling units whose appearance characteristics are indicated by reference to ASTM E 1264 designations for pattern and not by limiting to the naming of one or more products or manufacturers, provide Architect's selections from each named manufacturer's full range of standard products of type, color, pattern, and light reflectance indicated.

2.2 ACOUSTICAL PANELS

- A. ACT: USG 2' x 2' Eclipse Clima Plus Climaplus panels with SL edge with Centricitee DXT narrow Grid, Class A, Color White.

2.3 METAL SUSPENSION SYSTEMS, GENERAL

- A. USG Centricitee DX Grid
- B. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated.
- C. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
1. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistance materials, with clips or other accessory devices for attachment of hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E

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1190, conducted by a qualified testing laboratory.

- D. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
 - 1. Gage: Provide wire sized so that stress at 3 times hanger design load (ASTM C 635, Table 1, Direct-Hung), will be less than yield stress of wire, but provide not less than 0.106-inch diameter (12 gage).
 - E. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension system indicated.
 - 1. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
 - 2. For narrow faced suspension systems, provide suspension system manufacturer's standard edge moldings that match width and configuration of exposed runners.
- 2.4 MISCELLANEOUS MATERIALS
- A. Acoustical Sealant: Resilient, non-staining, non-shrinking, non-hardening, non-skinning, non-drying, non-sag sealant intended for interior sealing of concealed construction joints and at all wall intersections
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BA-98; Pecora Corp.
 - b. Tremco Acoustical Sealant; Tremco

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing to which ceiling system attaches or abuts, with Installer present, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.
- 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.

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3.3 INSTALLATION

- A. General: Install acoustical ceiling systems to comply with installation standard referenced below, per manufacturer's instructions and CISCA "Ceiling Systems Handbook".
 - 1. Standard for Installation of Ceiling Suspension Systems: Comply with ASTM E 580.
- B. Arrange acoustical units and orient directionally patterned units in a manner shown by reflected ceiling plans.
 - 1. Install tile with running pattern in one direction.
- C. Suspend ceiling hangers from building structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter splaying, or other equally effective means.
 - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with the location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension member and hangers to support ceiling loads within performance limits established by referenced standards.
 - 3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 4. Space hangers not more than 4'-0" o.c. along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.
- D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical units.
 - 1. screw-attach moldings to substrate at intervals not over 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12'-0". Miter corners accurately and connect securely.
- E. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members.

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Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Extent of resilient flooring and accessories is shown on drawings and in schedules. Products will include 6" Rubber base; Luxury Vinyl Tile, and any other accessories/products.

1.3 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. Fire Test Performance: Provide resilient flooring which complies with the following fire test performance criteria as determined by an independent testing laboratory acceptable to authorities having jurisdiction.
1. Critical Radiant Flux (CRF): Not less than the following rating per ASTM E 648.
 - a. 0.45 watts per sq cm
 2. Flame Spread: Not more than 25 per ASTM E 84
 3. Smoke Developed: Not more than 450 per ASTM E 84
 4. Smoke Density: Not more than 450 per ASTM E 662
- C. Installer's Qualifications: Engage Installer who is certified in writing by resilient flooring manufacturer as qualified for installation of sheet vinyl employing heat welded seams.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of resilient flooring and accessory.
- B. Samples for Initial Selection Purposes: Submit manufacturer's standard color charts in form of actual sections of resilient flooring, including accessories, showing full range of colors and patterns available, for each type of resilient flooring required.
- C. 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. 6" x 9" samples of sheet flooring
 3. 2-1/2" long samples of resilient flooring accessories
 4. Welding beads for sheet flooring
 5. Other materials as required
- D. Certification for Fire Test Performance: Submit certification from an independent testing laboratory acceptable to authorities having jurisdiction that resilient flooring complies with fire test performance requirements.
- E. Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

1.5 PROJECT CONDITIONS

- A. Maintain minimum temperature of 65 degrees F (18 deg C) in spaces to receive resilient flooring for at least 48 hours prior to 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.

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Subsequently, maintain minimum temperature of 55 deg F (13 deg 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.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of the following:

1. Manufacturers of Vinyl Luxury Tile:
 - a. Roppe Northern Timbers or equal vinyl wood plank flooring collections. Colors to be selected from full range of colors.
2. Manufacturers of 6" Rubber Wall Base (base to be Roppe 700 series 6" or equal) :
 - a. Burke Flooring Products Div., Burke Industries, Inc.
 - b. Flexco Div., Textile Rubber Co.
 - c. Roppe Rubber Corp.
 - d. Azrock.

2.2 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.

2.3 LUXURY VINYL FLOOR TILE

- A. Manufacturer: Roppe Corporation or equal

1. Description: Solid Vinyl Floor Tile meeting the requirements of ASTM F 1700.
2. Resistance to Chemicals per ASTM F 925: Pass (List of chemicals provided by manufacturer on request)
3. Light Stability per ASTM F 1515: Pass.(Delta E < 8.00)
4. Abrasion resistance per ASTM D 3389: Excellent (<0.15 weight loss after 1,000 cycles using H-18 wheels with 500 gram load applied)
5. Design and Color: As selected by Architect from manufacturer's standard designs and colors.
6. Does do not contain any of the hazardous chemicals listed in California Proposition 65
7. Collaborative for High Performance Schools 01350 Low-Emitting Material Criteria: Pass

- B. Roppe Solid Vinyl Floor Tile (or equal)

1. Northern Parallels Premium vinyl plank and type. Allow for FOUR SEPARATE FLOORING SELCTIONS selected from all available pattern options (stone, desert, chevron, mini wood travertine, or coastal) and from all available colors in each pattern group.
 - a. Classification: ASTM F 1700, Class III, Type A.
 - b. Thickness: 28 mil
 - c. Wear Layer Thickness: exceeds ASTM F 1700, Commercial Use.

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2.4 RUBBER STAIR TREADS, RISERS, AND LANDINGS –

1. Provide Roppe or equal Raised design rubber tread, riser and landings. Color and pattern to be selected from complete series of patterns and colors available in each series. Provide for accent strip or tread at the top of landings and at bottom treads.

2.5 **ACCESSORIES**

- A. Rubber Wall Base: Provide Roppe or equal Contours profiled base with matching end stops and preformed or molded corner units, and as follows:
 1. Height: 6"
 2. Finish: Matte
- B. Adhesives (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 Compounds: Latex type as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.1 **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 of curing compounds.
- C. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

3.2 **PREPARATION**

- 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.

3.3 **INSTALLATION, GENERAL**

- A. Where movable partitions are shown, install resilient flooring before partitions are erected.
- B. 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.
- C. Scribe, cut, and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.
- D. 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.
- E. Install resilient flooring on covers for telephone and electrical ducts, and other such items occurring within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed in these covers. Tightly cement edges to perimeter of floor around covers and to covers.
- F. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints,

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telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

3.4 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 are 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 tile are not acceptable.
 - 1. Lay tile with grain running in alternating directions.
- C. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

3.5 INSTALLATION OF SHEET FLOORING

- A. Lay sheet flooring to provide as few seams as possible with economical use of materials. Match edges for color shading and pattern at seams in compliance with manufacturer's recommendations.
- B. Adhere sheet flooring to substrates using method approved by flooring manufacturer for type of sheet flooring and substrates condition indicated:
 - 1. Use conventional full spread adhesive method for filled vinyl without backing.
- C. Prepare seams in vinyl sheet flooring with manufacturer's special routing tool and heat weld with vinyl thread in accordance with manufacturer's instructions.
- D. Provide integral flash cove base where shown on drawings, including cove support strip and metal top edge strip. Construct coved base in accordance with manufacturer's instructions.

3.6 INSTALLATION OF ACCESSORIES

- A. Apply wall base to walls, columns, pilasters, 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.
- C. Apply resilient accessories at stair as indicated and in strict accordance with manufacturer's installation instructions.

3.7 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 manufacturer.
- B. Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.
 - 1. Protect resilient flooring against damage from rolling loads for initial period following installation by covering with plywood or hardboard. Use dollies to move stationary

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- equipment or furnishings across floors.
 - 2. Cover resilient flooring with undyed, untreated building paper until inspection for substantial completion.
 - 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.
- 3.8 **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.
 - 1. Tile Flooring: Furnish not less than one box for each 50 boxes or fraction thereof, for each type, color, pattern, and size installed.
 - 2. Sheet Flooring: Furnish not less than 5 linear yards for each type, color and pattern installed.

END OF SECTION

SECTION 096723 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes one resinous flooring system, one with epoxy body.
 - 1. Application Method: Metal, power or hand troweled.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification: For each resinous flooring system required, 5 inches (150 mm) square, applied to a rigid backing.
- C. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- D. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. No request for substitution shall be considered that would change the generic type of floor system specified (i.e. epoxy mortar based system with decorative quartz topping). Equivalent materials of other manufactures may be substituted only on approval of Architect or Engineer. Request for substitution will only be considered only if submitted 10 days prior to bid date. Request will be subject to specification requirements described in this section.
- B. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.

1. Contractor shall have completed at least 10 projects of similar size and complexity.
 - C. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
 - D. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
 1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.
 - E. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Apply full-thickness mockups on 48-inch- (1200-mm-) square floor area selected by Architect.
 - a. Include 48-inch (1200-mm) length of integral cove base.
 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
 - F. Pre-installation Conference:
 1. General contractor shall arrange a meeting not less than thirty days prior to starting work.
 2. Attendance:
 - a. General Contractor
 - b. Architect/Owner's Representative.
 - c. Manufacturer/Installer's Representative.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
 - B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects. Store material per product data sheet.

- C. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.
- D. Concrete substrate shall be properly cure. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring

1.7 WARRANTY

- A. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (1) full years from date of installation, or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (1) full year from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

PART 2 - PRODUCTS

2.1 RESINOUS FLOORING

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include,
 - 1. Must comply with troweled mortar base with broadcast topping. Liquid rich, slurry type systems will not be accepted, and will result in a disqualification from bid.
- B. Acceptable Manufactures,
 - 1. Stonhard Basis of design.
 - 2. Equals
- C. System Characteristics:
 - 1. Color and Pattern: Choose from Mfg. Standards
 - 2. Wearing Surface: Standard or medium.

3. Integral Cove Base: TBD.
 4. Overall System Thickness: nominal 3/16"
- D. System Components: Manufacturer's standard components that are compatible with each other and as follows:
1. Primer:
 - a. Material Basis: Stonhard Standard Primer
 - b. Resin: Epoxy
 - c. Formulation Description: (2) two component, 100 percent solids.
 - d. Application Method: Squeegee and roller.
 - e. Number of Coats: (1) one.
 2. Mortar Base:
 - a. Material design basis: Stonshield HRI Base
 - b. Resin: Epoxy.
 - c. Application Method: Metal Trowel.
 - 1) Thickness of Coats: nominal 1/8" (inch).
 - 2) Number of Coats: One.
 - d. Aggregates: Pigmented Blended aggregate.
 3. Undercoat:
 - a. Material Basis: Stonshield undercoat.
 - b. Resin: Epoxy
 - c. Type: Clear.
 - d. Finish: Gloss.
 - e. Number of Coats: one.
 4. Broadcast Media:
 - a. Material Basis: Stonshield quartz aggregate
 - b. Type: pigmented.
 - c. Finish: standard.
 - d. Number of Coats: one.
 - e. Pattern: Tweed.
 5. Sealer:
 - a. Material Basis: Stonkote CE4.
 - b. Resin: Epoxy
 - c. Type: Clear.
 - d. Finish: Gloss.
 - e. Number of Coats: one.
 - f. Texture level: Standard or medium.

2.2 ACCESSORY MATERIALS

- A. Patching, Leveling and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
- B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated. Allowances should be included for Stonflex MP7 joint fill material.
- C. Metal caps: Provide stainless steel metal caps at integral cover base.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean and dry substrate for resinous flooring application.
- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
 - 1. Mechanically prepare substrates as follows:
 - 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
- C. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- D. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for Stonflex MP7 joint fill material, and CT5 concrete crack treatment.

3.2 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - 3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
 - a. Apply joint sealant to comply with manufacturer's written recommendations.

- B. Integral Cove Base: Stonshield cove mortar, apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, of cove base. Round internal and external corners.
 - 1. Integral Cove Base: <TBD> inches high.
- C. Apply primer where required by resinous system, over prepared substrate at manufacturer's recommended spreading rate.
- D. Apply metal trowel single mortar coat in thickness indicated for flooring system into wet primer. Hand or power trowel and grout to fill voids. When cured, sand to remove trowel marks and roughness.
- E. Undercoat: Remove any surface irregularities by lightly abrading and vacuuming the floor surface. Mix and apply undercoat with strict adherence to manufacturer's installation procedures and coverage rates.
- F. Broadcast: Immediately broadcast quartz silica aggregate into the undercoat using manufacturer's specially designed spray caster. Strict adherence to manufacturer's installation procedures and coverage rates is imperative.
- G. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.3 TERMINATIONS

- A. Chase edges to "lock" the flooring system into the concrete substrate along lines of termination.
- B. Penetration Treatment: Lap and seal resinous system onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
- C. Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
- D. Treat floor drains by chasing the flooring system to lock in place at point of termination.

3.4 JOINTS AND CRACKS

- A. Treat control joints to bridge potential cracks and to maintain monolithic protection.
- B. Treat cold joints and construction joints and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.
- C. Vertical and horizontal contraction and expansion joints are treated by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

3.5 FIELD QUALITY CONTROL

- A. Material Sampling: Owner may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.
 - 1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
 - 3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.6 CLEANING, PROTECTING, AND CURING

- A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.
- B. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection and cleaning of surfaces after final coats.
- C. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer. General contractor is responsible for cleaning prior to inspection.

END OF SECTION 096723

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PAINTING

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this section.
- B. **SPECIAL PROJECT NOTE:** All existing elements in the shelter are to be prepped and painted including, but not limited to doors, frames, walls, trim, hard ceiling steel building frames, exposed steel structural elements, exposed metal piping, miscellaneous interior elements, panels, etc. Likewise, all steel building frames, exposed steel structural elements exposed metal piping, and any other miscellaneous interior elements are to be painted.

1.2 SUMMARY

- A. This Section includes surface preparation, painting, and finishing of exposed interior and exterior items and surfaces.
 - 1. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified under other sections.
- B. Paint exposed surfaces whether or not colors are designated in "schedules," except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color of finish is not designated, the Architect will select from standard colors or finishes available.
- C. Painting is not required on pre-finished items, finished metal surfaces, concealed surfaces, operating parts, and labels.
 - 1. Labels: Do not paint over Underwriter's Laboratories, Factory Mutual or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.3 DEFINITIONS

- A. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's technical information, label analysis, and application instructions for each material proposed for use.
 - 1. List each material and cross-reference the specific coating and finish system and application. Identify each material by the manufacturer's catalog number and general classification.
- B. Samples for verification purposes: Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate. Define each

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separate coat, including block fillers and primers. Use representative colors when preparing samples for review. Resubmit until required sheen, color, and texture are achieved.

1. Provide a list of material and application for each coat of each sample. Label each sample as to location and application.
2. Submit samples on the following substrates for the Architect's review of color and texture only:
 - a. Interior Walls
 - b. Interior Ceilings.

1.5 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.
- B. Coordination of Work: Review other sections in which primers are provided to ensure compatibility of the total systems for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 1. Notify the Architect of problems anticipated using the materials specified.
- C. Material Quality: Provide the manufacturer's best quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 1. Product name or title of material
 2. Product description (generic classification or binder type)
 3. Federal Specification number, if applicable
 4. Manufacturer's stock number and date of manufacture
 5. Contents by volume, for pigment and vehicle constituents
 6. Thinning instructions
 7. Application instructions
 8. Color name and number
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from

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fire and health hazards resulting from handling, mixing, and application.

1.7 JOB CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 deg C).
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist, when the relative humidity exceeds 85 percent, at temperatures less than 5 deg F (3 deg C) above the dew point, or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by the manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of the following:
 - 1. Paints: Apply one coat primer and two coats finish to all wall surfaces.
 - Use the highest quality of one of the following:
 - a. Benjamin Moore Company used as basis of color
 - b. Sherwin Williams
 - c. Devoe
 - d. PPG Paints
 - e. Equals

2.2 PRIMERS

- A. Prime all interior (existing and new) as required for the specific material being painted..
- B. Exterior materials to receive two coats of latex primer then two coats of latex paint.

2.3 INTERIOR FINISH PAINT MATERIAL

Provide Sherwin Williams or Equal product -

ALL DOOR FRAMES, DOORS, HANDRAILS AND MISCELLANEOUS METALS TO RECEIVE:

Ferrous Metal — Doors, Frames, Handrails, and Miscellaneous Metals

Gloss — High Performance Finish

- 1 coat: [Pro Industrial™ Pro-Cryl® Universal Primer, B66-310 Series](#)
- 2 coats: [Pro Industrial™ Water Based Catalyzed Epoxy Gloss, B73-300 Series](#)

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GYPSUM BOARD –

Semi-Gloss Finish

- 1 coat: [ProMar® 200 Zero VOC Latex Primer, B28W2600](#)
- 2 coats: [Pro Industrial™ Pre-Catalyzed Water Based Epoxy Semi-Gloss, K46 Series](#)

Any FLOORS called to be painted (not Stonhard designated floors) - General Polymers Trafficote 105 Self Leveling Slurry (provide preparation, primer, binder, and finish coat per manufacturer's recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which painting will be performed for compliance with requirements for application of paint. Do not begin paint application until unsatisfactory conditions have been corrected.
 1. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

3.2 PREPARATION

- A. General Procedures: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items in place that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items if necessary for complete painting of the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.
 1. Clean surfaces before applying paint or surface treatments. Remove oil and grease prior to cleaning. Schedule cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- B. Surface Preparation: Clean and prepare surfaces to be painted in accordance with the manufacturer's instructions for each particular substrate condition and as specified.
 1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing of problems anticipated with using the specified finish-coat material with substrates primed by others.
 2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer before application of primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand

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smooth when dried.

- b. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
 - c. When transparent finish is required, backprime with spar varnish.
 - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.
3. Ferrous Metals: Clean nongalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council.
- a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.
- C. Materials Preparation: Carefully mix and prepare paint materials in accordance with manufacturer's directions.
1. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
 3. Use only thinners approved by the paint manufacturer, and only within recommended limits.

3.3 APPLICATIONS

- A. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
- B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 1. Paint colors, surface treatments, and finishes are indicated in "schedules".
 2. Provide finish coats that are compatible with primers used.
 3. The number of coats and film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce an even smooth surface in accordance with the manufacturer's directions.
 4. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to

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ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

5. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas as required to maintain the system integrity and provide desired protection.
 6. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.
 7. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, nonspecular black paint.
 8. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 9. Sand lightly between each succeeding enamel or varnish coat.
 10. Omit primer on metal surfaces that have been shop-primed and touch up painted.
- C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure and where application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
- D. Minimum Coating Thickness: Apply materials at not less than the manufacturer's recommended spreading rate. Provide a total dry film thickness of the entire system as recommended by the manufacturer.
- E. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by the manufacturer to material that is required to be painted or finished and has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.
- 3.4 **CLEANING**
- A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - B. Upon completion of painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping, using care not to scratch or damage adjacent finished surfaces.

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3.5 PROTECTION

- A. Protect work of other trades, whether to be painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
- B. Provide "wet paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION

SECTION 10 14 00

BUILDING SIGNAGE

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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10 14 00 -1

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Signage of the following types:
 - 1. Cast metal letters.

1.2 REFERENCES

- A. Underwriter's laboratory (UL) 746c - Standard for Safety of Polymeric Materials -- Use in Electrical Equipment Evaluations.
- B. Underwriter's laboratory (UL) 94 and 94v-0 - Standard for Safety of Flammability of Plastic Materials for Parts in Devices and Appliances.
- C. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
- D. NAVY G 88-0-4 (C90300) - Alloy Specification for Tin Bronze.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's illustrated product literature and specifications to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Submit detailed drawings of products and assemblies.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer to have a minimum of 20 year experience in manufacturing letters.
- B. Installer Qualifications: Minimum 2 year experience installing similar products.
- C. Sourcing: All signage shall be manufactured by one manufacturer.
- D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

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BUILDING SIGNAGE

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1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship is approved by Architect.
3. Rework mock-up area as required to produce acceptable work.

1.5 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to starting work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Handle materials to avoid damage.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's standard warranty against defects in materials and workmanship. Letters shall be guaranteed for the life of the business against defects.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Gemini Inc.,
- B. All equals will be accepted

2.2 CAST METAL LETTERS

- A. Cast Metal Letters: Signage shall be manufactured by Gemini Inc.
 1. Material: Aluminum.
- B. Design: As indicated on the drawings.
 1. Letter Style: Arial Bold .
 2. Size: 14" high ,
 3. Mounting: A mounting template designating stud locations shall be provided. Stud size and type shall be as required by manufacturer for application and design intent.

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BUILDING SIGNAGE

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- C. Aluminum Finish: Finish to be selected from options below.
 - 1. Natural Satin faces, bead-blasted returns, clear acrylic polyurethane powder-coated, baked.
 - 2. Baked Enamel, bead-blasted returns, baked.
 - 3. Clear Anodized, bead-blasted returns, #514 Alloy.
 - 4. Medium bronze anodized, sanded return, #514 Alloy.
 - 5. Dark bronze anodized, sanded return, #514 Alloy.
 - 6. Black anodized, sanded return, #514 Alloy.

- D. Mounting:
 - 1. Cast metal letters shall have threaded stud bosses or drilled and tapped for stud insertion.
 - 2. Aluminum letters under 18 inches (457 mm) shall use aluminum studs, type based on stroke and thickness.
 - 3. Other letter material and sizes shall use stainless steel studs.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and in proper relationship to adjacent construction.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 10 14 36

SIGNAGE

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Plastic interior panel signs.
 - 1. Room Identification.
Provide one sign at every interior door.
 - 2. Restroom.
Provide sign at each restroom

1.2 RELATED SECTIONS

- A. Section 06 20 00 - Finish Carpentry.
- B. Section 10 13 13 - Electronic Directories.
- C. Section 10 14 16 - Plaques.

1.3 REFERENCES

- A. ANSI 117.1 - For Buildings and Facilities.
- B. ASTM International (ASTM):
 - 1. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
 - 2. ASTM D 1929 - Standard Test Method for Determining Ignition Temperature of Plastics.
 - 3. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 4. ASTM E 2072-04 - Standard Specification for Photoluminescent (Phosphorescent) Safety Marketing.
 - 5. ASTM E2073-02 - Standard Test Method for Photopic Luminance of Photo Luminescent (Phosphorescent) Markings.
- C. Underwriters Laboratories (UL):
 - 1. UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
 - 2. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

SECTION 10 14 36

SIGNAGE

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1.4 PERFORMANCE REQUIREMENTS

- A. Provide photopolymer signage that conforms to the requirements of all regulatory agencies holding jurisdiction.
- B. Provide glow in the dark, photo luminescent material that complies with applicable provisions of ASTM E 2073-02 and DIN 67510. Photo luminescent material must have up to eight hours of luminance.
- C. Requirements:
 - 1. Comply with all applicable provisions of the 2010 ADA Standard for Accessible Design.
 - 2. Character Proportion: Letters and numbers on signs must have a width-to-height ratio between 3:5 and 1:1 and a stroke width-to-height ratio between 1:5 and 1:10.
 - 3. Color Contrast: Characters and symbols must contrast with their background - either light characters on a dark background or dark characters on a light background.
 - 4. Raised Characters or Symbols: Letters and numbers on signs must be raised 1/32 in (0.8 mm) minimum and be sans serif characters. Raised characters or symbols must be at least 5/8 in (16 mm) high but no higher than 2 in (50 mm). Symbols or pictograms on signs must be raised 1/32 in (0.8 mm) minimum.
 - 5. Symbols of Accessibility: Accessible facilities required to be identified must use the international symbol of accessibility.
 - 6. Braille: Grade II with accompanying text.
- D. Fire Performance Characteristics:
 - 1. Provide photopolymer signage with surface burning characteristics that consist of a flame spread of 75 and a smoke development of 120 when tested in accordance to UL 723 (ASTM E 84).
 - 2. Self-Extinguishing: Provide photopolymer signage with a CC1 classification for .060 in thick material when tested in accordance with the procedures in ASTM D 635, Standard Test Method for Rate of Burning and/or Extent and Time of Burning Plastics in a Horizontal Position.
 - 3. Vertical Burn: Provide photopolymer material that is classified as 94V-2 for material .118 in thick or greater and 94HB for material .118 in thick or less when tested in accordance with UL 94, Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
 - 4. Self-Ignition Temperature: Provide photopolymer material that has a self-ignition temperature of 800 degrees F (427 degrees C) when tested in accordance with ASTM D 1929.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:

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SIGNAGE

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1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Shop Drawings: Detail drawings showing sizes, lettering and graphics, construction details of each type of sign and mounting details with appropriate fasteners for specific project substrates.
- D. Manufacturer's Installation Instructions: Printed installation instructions for each signage system.
- E. Message List: Signage report indicating signage location, text and sign type.
- F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and available pictograms, characters, and Braille indications.
- G. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and typical pictograms, characters, and Braille indications.
- 1.6 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Minimum two years documented experience in work of this Section.
 - B. Installer Qualifications: Minimum two years documented experience in work of this Section.
 - C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 1. Furnish signs designated by Architect.
 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 3. Refinish mock-up area as required to produce acceptable work.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials in unopened factory packaging.
 - B. Inspect materials at delivery to verify there are no defects or damage.
 - C. Store products in manufacturer's original packaging until ready for installation in climate controlled location away from direct sunlight.
 - D. Store and dispose of solvent-based materials, and materials used with solvent-based materials in accordance with requirements of local authorities having jurisdiction.

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SIGNAGE

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1.8 PROJECT CONDITIONS

- A. Install products in an interior climate controlled environment.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Nova Polymers, Inc., which is located at: 8 Evans St. Suite 201; Fairfield, NJ 07004; Toll Free Tel: 888-484-NOVA (6682); Email:[request info \(info@novapolymers.com\)](mailto:request_info@novapolymers.com); Web:www.novapolymers.com
- B. All equals are acceptable.

2.2 SIGNAGE - GENERAL

- A. It is the intent of these specifications to establish a sign standard for the Owner including but not limited to, wall-mounted directional signs, primary room identification, restrooms, conference rooms and all code compliant Braille signage. All rooms, stairs, restrooms, etc. to have signage. Coordinate names and numbers with Architect.
- B. Comply with all applicable provisions of the 2010 ADA Standard for Accessible Design codes that apply to the State and Local jurisdiction of the project.
- C. If required text and graphics are not indicated in specification or on drawings, obtain Owner's instructions as to text and graphics prior to preparation of shop drawings.
- D. Typography: See Drawings. Copy shall be a clean and accurate reproduction of typeface(s) specified. Upper and lower case and all caps as indicated in Sign Type drawings and Signage Schedule. Letter spacing to be set by manufacturer.
- E. Arrows, symbols and pictograms will be provided in style, sizes, colors and spacing as indicated in drawings for each sign system.
- F. Braille:
 - 1. Grade 1 Braille.
- G. Design:
 - 1. Novacryl PT-119 (Sioux Center Community Hospital example on website). Provide Room name and braille, Room number and braille, interchangeable personnel title/name slot, wood accent and decorative accent vertical strip. Provide matching, coordinating signage, with room graphic for rooms such as restrooms, stairs, etc.

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SIGNAGE

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2.3 INTERIOR SIGNAGE

- A. Panel Material: Novacryl PT Series Photopolymer
1. Composition: 0.032 inch (0.8 mm) thick moisture resistant, non-glare interior nylon photopolymer on ultraviolet resistant clear PETG sign base, single piece construction. Laminated photopolymers, added-on characters, and engraved characters are not acceptable.
 2. Sustainable Certification: Minimum 40 percent pre-consumer recycled content.
 3. Base thickness: 0.060 inch (1.5 mm) Non-glare PETG. ** NOTE TO SPECIFIER ** Insert color. Delete color provision not required.
 4. Type and Color: To be selected from manufacturer's full color range by Architect.
 5. Size: _10" x 10" minimum____
 6. Surface burning characteristics: Flame spread/smoke developed rating less than 75/120, tested to ASTM E 84 and UL 723.
 7. Rate of burning: Tested to ASTM D 635 at nominal 0.060 inch (1.5 mm) thickness with resulting Classification CC1.

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SIGNAGE

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8. Vertical burning: Tested to UL 94, classified as 94V-2 in thickness of 0.118 inch (3.0 mm) or greater and 94HB in thicknesses less than 0.118 inch (3.0 mm).
9. Self-ignition temperature: 800 degrees F (427 degrees C), tested to ASTM D 1929.

2.4 ACCESSORIES

- A. Adhesive:
 1. Type recommended by sign manufacturer.
 2. Maximum volatile organic compound (VOC) content: 70 grams per liter.
- B. Tape: Double sided, waterproof, pressure sensitive.
- C. Fasteners: Chrome plated screws.
- D. Fasteners: Brass screws.
- E. Fasteners: Stainless steel screws.

2.5 FABRICATION

- A. Fabricate panel material in accordance with manufacturer's instructions and approved shop drawings.
- B. Fabricate signs by photo polymer process using film negatives to produce characters and graphics in contrasting color, raised. Refer to Signage Schedule.
- C. Characters:
 1. Height: Refer to Signage Schedule.
 2. Style: Refer to Signage Schedule.
 3. Width to height ratio: Refer to Signage Schedule.
 4. Stroke width to height ratio: Refer to Signage Schedule.
- D. Pictograms: Refer to Signage Schedule.
- E. Provide Braille Grade indications for each character.
- F. Frames:
 1. Miter corners; fit to hairline joint.
 2. Secure frame to sign with adhesive.
- G. Changeable Slide Inserts: Clear PETG sheet cover with slot behind for insertion of changeable slide strip, removed from side.

PART 3 EXECUTION

3.1 EXAMINATION

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SIGNAGE

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12 35 30
PLASTIC LAMINATE CASEWORK

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
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12 35 30-1

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes all cabinets.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For residential casework. Include plans, elevations, details, and attachments to other work.
- C. Samples: For casework and hardware finishes.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For casework.

PART 2 - PRODUCTS

2.1 CABINETS

- A. Quality Standard: Provide cabinets that comply with KCMA A161.1.
 - 1. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semiexposed location of each unit and showing compliance with KCMA A161.1.
- B. Door and Drawer Face Style: [**Flush overlay**].
 - 1. Door and Drawer Fronts: ~~1/2-inch-~~ (13-mm-) thick, plastic-laminate-faced particleboard[, **with continuous solid-wood pulls on one edge**][, **with PVC edgebanding**].
- C. Cabinet Style: [**Frameless**].
 - 1. Face Frames: ~~5/8-inch-~~ (16-mm-) thick particleboard with plastic laminate on exposed and semiexposed surfaces.
- D. Exposed Cabinet End Finish: [**Plastic laminate**].

SECTION 12 35 30
PLASTIC LAMINATE CASEWORK

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2.2 CABINET MATERIALS

- A. Hardwood Lumber: Kiln dried to 7 percent moisture content.
- B. Softwood Lumber: Kiln dried to 10 percent moisture content.
- C. Hardwood Plywood: HPVA HP-1.
- D. Particleboard: ANSI A208.1, Grade M-2.
- E. Particleboard: Straw-based particleboard complying with requirements in ANSI A208.1, Grade M-2, except for density.
- F. MDF: Medium-density fiberboard, ANSI A208.2, Grade MD.
- G. Hardboard: ANSI A135.4, Class 1 tempered.
- H. Exposed Materials:
 - 1. Plastic Laminate: Particleboard faced with high-pressure decorative laminate complying with NEMA LD 3, [**Grade HGL**] and edgebanded.
 - a. Colors, Textures, and Patterns [**As selected by Architect from cabinet manufacturer's full range**] .
 - b. Plastic-Laminate Edgebanding: Of same grade, pattern, color, and texture of plastic laminate as for faces.
 - c. PVC Edgebanding: Rigid PVC extrusions, through color with satin finish, [**3 mm thick at doors and drawer fronts, and 1 mm thick elsewhere**].
 - 1) Color: To be selected from Wilsonart Full Range of Plastic Laminate Colors.
- I. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility; particleboard; MDF; or hardboard.

2.3 CABINET HARDWARE

- A. General: Manufacturer's standard units complying with BHMA A156.9, of type, size, style, material, and finish [**as selected by Architect from manufacturer's full range**].
- B. Pulls: [**Back-mounted decorative pulls**] Brushed Chrome Signature Hardware company, or equal, 10" Chrome finish Grohl Hammered Brass Cabinet Pull on all doors and drawers.
- C. Hinges:[**Concealed European-style, self-closing hinges**] .

SECTION 12 35 30
PLASTIC LAMINATE CASEWORK

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- D. Drawer Guides: Epoxy-coated-metal, self-closing drawer guides; designed to prevent rebound when drawers are closed; with nylon-tired, ball-bearing rollers; and complying with BHMA A156.9, Type B05011 or Type B05091.
 - E. Door and Drawer Bumpers: Self-adhering, clear silicone rubber.
 - 1. Doors: Provide one bumper at top and bottom of closing edge of each swinging door.
 - 2. Drawers: Provide one bumper on back side of drawer front at each corner.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install casework with no variations in adjoining surfaces; use concealed shims. Where casework abuts other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match casework.
- B. Install casework without distortion so doors and drawers fit the openings, are aligned, and are uniformly spaced. Complete installation of hardware and accessories as indicated.
- C. Install casework level and plumb to a tolerance of **1/8 inch in 8 feet (3 mm in 2.4 m)**.
- D. Fasten casework to adjacent units and to backing.
 - 1. Fasten wall cabinets through back, near top and bottom, and at ends not more than **16 inches (400 mm)** o.c.
 - a. Fasteners: [**No. 10 wafer-head screws sized for not less than 1-1/2-inch (38-mm) penetration into wood framing, blocking, or hanging strips.**]
- E. Adjust hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- F. Clean casework on exposed and semiexposed surfaces. Touch up as required to restore damaged or soiled areas to match original factory finish, as approved by Architect.

END OF SECTION 123530

SECTION 12 36 61
SOLID SURFACE COUNTERTOPS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
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12 36 61-1

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes LG HI-MACS countertops.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Provide complete shop drawings..
- C. Samples: Provide samples in each type, color, pattern, and surface finish required.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: **Provide Quality Certification Program accredited participant.**

PART 2 - PRODUCTS

A. LG Hi-Macs Countertops

- 1. As indicated by manufacturer's designations.
- 2. As selected by Architect from manufacturer's full range.

B. Edge Treatment: To be selected by Owner

C. Backer Sheet: Provide backer sheets as recommended by Manufacturer.

D. Paper Backing: Provide paper backing on underside of countertop substrate.

2.2 ACCESSORIES

A. Wire-Management Grommets: Circular, molded-plastic grommets and matching plastic caps with slot for wire passage.

- 1. Outside Diameter: [2 inches (51 mm)] .
- 2. Color: [to be selected] ,

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SOLID SURFACE COUNTERTOPS

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- B. Paper Slots: [**12 inches (305 mm)**] long by wide by **1 inch (25 mm)** deep; molded-plastic, paper-slot liner with **1/4-inch (6.4-mm)** lip.
1. Color: [**to be selected**].

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Grade: Install countertops to comply with same grade as item to be installed.
- B. Assemble countertops and complete fabrication at Project site to the extent that it was not completed in the shop.
1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 2. Seal edges of cutouts by saturating with varnish.
- C. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.
1. Secure field joints in countertops with concealed clamping devices located within **6 inches (150 mm)** of front and back edges and at intervals not exceeding **24 inches (600 mm)**. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- D. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Countertop Installation: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
1. Install countertops level and true in line. Use concealed shims as required to maintain not more than a **1/8-inch-in-96-inches (3-mm-in-2400-mm)** variation from a straight, level plane.
 2. Secure backsplashes [**to walls with adhesive**].
 3. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

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SOLID SURFACE COUNTERTOPS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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- F. Protection: Provide Kraft paper or other suitable covering over countertop surfaces, taped to underside of countertop at a minimum of 48 inches (1220 mm) o.c. Remove protection at Substantial Completion.

END OF SECTION 12 36 61

SECTION 13 19 00

KENNELS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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PART 1 - GENERAL

1.1_ RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following kennel systems for the Animal Services Building:
 - 1. Stainless Steel kennels.

1.3 SUBMITTALS

- A. Submit complete Shop Drawings showing all dimensions, colors, quantities, drainage, construction, and mounting methods. All color selections to be made from manufacturer's full range of colors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Manufacturers: Specifications are based on Mason Company Kennels.

ITEMS A, B, AND, C – KENNELS (ROOM 110. 111. AMD 127),

Mason Company or equal - Sixty (6) kennels of sizes shown on drawings. 6 feet high T-Kennel (or equal) system on concrete. Provide guillotine doors to rear kennel (EXCEPT ITEM C). Refer to Floor Plan for layout. Size (custom) as described above with vertical transfer door between compartments. Finish to be stainless steel.

Kennels to have the following standard and optional items:

Front resting bench – sizes appropriately for each kennel size.

Sliding feed tray

Standard Gate/Gate Frame (two) each gate to have card holder

Latch and latch bar

Bone Counterweights (front and back)

Drain systems for all kennels leading to building drainage

Side Panels with 2 foot high stainless steel frame and slotted welded panel at

Top with Double sided PVC isolation panels to 4 feet high

Drain covers (T-shape)

Enclosed double-pulley operated transfer door operable from either end.

Each double kennel to have two (2) slots for slide in feed and two (2) slots for slide in water bowls. Adjustable side drop bar to slope with the slope of the floor.

End Kennels to have removable side walls to allow for 7' x 6' configuration (2total 7' x 6' units).

All kennels to have wire tops to prevent vertical escape.

SECTION 13 19 00
KENNELS

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ITEM M – CAT ISOLATION UNITS (ROOM 115)

Mason Company or equal Cat Isolation Units –provide THREE (3) double-deck 30 1/4” wide x 6’-9 ½” high. A total of SIX (6) isolation cages are to be provided (three wide by two high).

ITEM N – CAT ADOPTION UNITS (ROOM 114)

Mason Company or Equal –Provide SIXTEEN (16) Fiberglass kennels with wire grid front view, tempered glass back view, and 15” interior shelf. 28” x 28” x 28”. Color to be selected from full range of manufacturer’s colors.

ITEM O AND P– (ROOMS 114, AND 115)

Mason Company or equal Quiet Cottages Fiberglass Kennels –Provide TWO (2) Model 2, no drain, 84” wide x 69” high and SIX (6) Model 6, no drain, 56” wide by 69” high.
Units to have the following options:
Raised polyethylene grid floors with drains.

VETERINARY EQUIPMENT –

Veterinary Equipment is based on Suburban Surgical and Mason specifications.

1. ITEM “D” ON PLANS - GROOMING ROOM 125

Suburban Surgical Classic 15 bathing table with tubular stainless steel based, right side door with rotating walk-up ramp.

Provide splash shields on 3 sides and wall-mounted faucet at center rear of table. Provide coated removable bottom racks and coated removable raised working surface. Faucet to be wrist action handle, riser with bracket and faucet, straight sprayer. Model # 024637-F-P-32-S080-C.

2. ITEM “E” ON PLANS – GROOMING ROOM 125

Mason Big Dog Frame electric 24” x 48: table. Provide dual wheel locking casters (set of 4) and rotating table top.

3. ITEM “F” ON PLANS – KENNELS 120 AND 127

Coxreels 1120-ss motorized, Stainless Steel Model # 1125-4-200-A-SP. ceiling pendant-mounted hose reel. Provide mounting brackets. Mount at height indicated by shelter staff.

4. ITEM “G” ON PLANS – ROOMS 108, 109, 110, 111, 114, 115, 119, 125, AND 126 (VERIFY W/PLANS)
12” deep stainless steel sink with gooseneck faucet with wrist blades and angles sprayer. Suburban Surgical.

5. ITEM “H” ON PLANS – EXAMINATION ROOM 126

Suburban Surgical ExceLED exam light. Ceiling mounted with extended pole for 12-foot ceilings. Model # M1000000-061514. Ceiling Rod Model #MI00-1000976-63.

SECTION 13 19 00

KENNELS

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6. ITEM "J" ON PLANS – BREAK 116
Dishwasher – supplied by Owner. Complete coordination and installation by General Contractor. Provide cold water and drain.
7. ITEM "K" ON PLANS – BREAK 116
Refrigerator – supplied by Owner. Complete coordination and installation by General Contractor. Provide water line.
8. ITEM "L" ON PLANS – EXAM 126
Suburban Surgical – Regal Operating Table flat top with dual tilt mechanism. 58" wide by 22" deep stainless steel top.
9. ITEM "Q" ON PLANS - ROOMS 108 AND 109
Sub. Surgical Premier Laminated Exam table with stainless steel top. Provide four drawer and one door configuration.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with manufacturer's instructions applicable to products and application indicated. Coordinate all in-concrete slab items with concrete pour. Verify all dimensions, footing requirements, etc. prior to submitting shop drawings for concrete slab/foundation.
- B. All equipment to be assembled and in operating condition. Verify operation with owner.

END OF SECTION

**SECTION 13 34 19
PRE-ENGINEERED BUILDING SYSTEMS**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

13 34 19-1

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PART 1 GENERAL

SPECIAL PROJECT NOTE: ALL EXISTING METAL WALL PANELS, METAL ROOF PANELS, SKYLIGHTS, GUTTERS/DOWNSPOUTS AND INSULATION TO BE REPLACED AS PART OF THIS WORK PEMB SUPPLIER TO PRICE REMOVAL AND REPLACEMENT OF EXISTING MATERIALS.

1.1 SECTION INCLUDES

- A. Metal Building System:
 - 1. Metal roof system.
 - 2. Roof and wall insulation systems.

1.2 REFERENCE STANDARDS

- A. American Institute of Steel Construction (AISC):
 - 1. AISC 360 - Specification for Structural Steel Buildings.
 - 2. AISC 341 – Seismic Provisions for Structural Steel Buildings (when appropriate).
 - 3. AISC Design Guide 3 – Serviceability for Steel Buildings
- B. American Iron and Steel Institute (AISI):
 - 1. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.
- C. American Welding Society (AWS):
 - 1. AWS D1.1 / D1.1M – Structural Welding Code – Steel.
 - 2. AWS D1.3 / D1.3M – Structural Welding Code – Sheet Steel.
- D. Association for Iron & Steel Technology (AISE):
 - 1. AISE 13 – Specifications for Design and Construction of Mill Buildings.
- E. ASTM International (ASTM):
 - 1. ASTM A 325 – Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - 2. ASTM A 653 / A 653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 3. ASTM A 792 / A 792M – Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 4. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - 5. ASTM C 518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 6. ASTM C 1363 – Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.
 - 7. ASTM D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
 - 8. ASTM D 523 – Standard Test Method for Specular Gloss.
 - 9. ASTM D 968 – Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.

**SECTION 13 34 19
PRE-ENGINEERED BUILDING SYSTEMS**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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10. ASTM D 1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
11. ASTM D 2244 – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
12. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
13. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
14. ASTM D 3361 – Standard Practice for Unfiltered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
15. ASTM D 4214 – Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
16. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
17. ASTM E 96 / E 96M – Standard Test Methods for Water Vapor Transmission of Materials.
18. ASTM E 1592 – Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
19. ASTM G 87 – Standard Practice for Conducting Moist SO₂ Tests.

F. FM Global:

1. FMRC Standard 4471 – Approval Standard for Class 1 Roofs for Hail Damage Resistance, Combustibility, and Wind Uplift Resistance.

G. Metal Building Manufacturers Association (MBMA):

1. MBMA Metal Building Systems Manual.
2. Seismic Design Guide for Metal Building Systems.

H. North American Insulation Manufacturers Association (NAIMA):

1. NAIMA 202 – Standard For Flexible Fiber Glass Insulation to be Laminated for Use in Metal Buildings.

I. The Society for Protective Coatings (SSPC):

1. SSPC-Paint 15 - Primer for Use Over Hand Cleaned Steel performs to SSPC-Paint 15 standards.
2. SSPC-SP2 – Hand Tool Cleaning.

J. Underwriters Laboratories (UL):

1. UL 580 – Standard for Tests for Uplift Resistance of Roof Assemblies.
2. UL 723 – Standard for Test for Surface Burning Characteristics of Building Materials.

K. US Army Corps of Engineers (COE):

1. COE Unified Facilities Guide Specification Section 07 61 13.

1.3 PREINSTALLATION MEETINGS

- A. Convene preinstallation meeting 2 weeks before start of installation of metal Roofing system.**

**SECTION 13 34 19
PRE-ENGINEERED BUILDING SYSTEMS**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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- B. Require attendance of parties directly affecting work of this section, including Contractor, Architect, Engineer, installer, and metal building system manufacturer's representative.
- C. Review materials, installation, protection, and coordination with other work.

1.4 SUBMITTALS

- A. Comply with Submittals Specification Section. Submit complete show drawings showing ALL conditions, installation, materials, flashing, insulation, fasteners, and all other relevant elements. Shop drawings to be prepared by a Georgia Licenses Engineer and shall be reviewed and approved by the Architect AND by the Owner.
- B. Product Data: Submit metal building system manufacturer's product information, specifications, and installation instructions for building components and accessories.
- C. Erection Drawings: Submit metal building system manufacturer's erection drawings, including plans, elevations, sections, and details, indicating roof framing, transverse cross-sections, covering and trim details, and accessory installation details to clearly indicate proper assembly of building components.
- D. Certification: Submit written "Certificate of design and manufacturing conformance" prepared and signed by a Professional Engineer, registered to practice IN GEORGIA verifying that the Design Loads and metal building system design and metal roof system design (including panels, clips, and support system components) meet indicated loading requirements and codes of authorities having jurisdiction.
 - 1. Certification shall reference specific dead loads, live loads, snow loads, wind loads/speeds, tributary area load reductions (if applicable), concentrated loads, collateral loads, seismic loads, end-use categories, governing code bodies, including year, and load applications.
 - 2. Submit certification 1 week before bid date on the metal building system manufacturer's letterhead.
- E. Submit certification verifying that the metal standing seam roof system has been tested in accordance with ASTM E 1592 test protocols.
- F. Dealer Certification: Submit certification 1 week before bid date that the metal building system supplier or metal roof system supplier is a manufacturer's authorized and franchised dealer of the system to be furnished.
 - 1. Certification shall state date on which authorization was granted.
- G. Installer Certification: Submit certification 1 week before bid date that the metal building system or roof system installer has been regularly engaged in the installation of building systems of the same or equal construction to the system specified.
- H. Warranty Documentation: Submit manufacturer's standard warranty.

**SECTION 13 34 19
PRE-ENGINEERED BUILDING SYSTEMS**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Manufacturer regularly engaged, for past 10 years, in manufacture of metal building systems of similar type to that specified.
2. Accredited based on IAS Accreditation Criteria AC472 and requirements in International Building Code (IBC), Chapter 17.

B. Installer's Qualifications:

1. Installer regularly engaged, for past 5 years, in installation of metal building systems of similar type to that specified.
2. Employ persons trained for installation of metal building systems.

C. Certificate of design and manufacturing conformance:

1. Metal building system manufacturer shall submit written certification prepared and signed by a Professional Engineer, registered to practice in Georgia verifying that building system design and metal roof system design (including panels, clips, and support system components) meet indicated loading requirements and codes of authorities having jurisdiction.
2. Certification shall reference specific dead loads, live loads, snow loads, wind loads/speeds, tributary area load reductions (if applicable), concentrated loads, collateral loads, seismic loads, end-use categories, governing code bodies, including year, and load applications.
3. Certificate shall be on metal building system manufacturer's letterhead.
4. Refer to Submittals article of this specification section.

D. Material Testing:

1. In addition to material certifications of structural steel, metal building system manufacturer shall provide, upon request at time of order, evidence of compliance with specifications through testing.
2. This quality assurance testing shall include testing of structural bolts, nuts, screw fasteners, mastics, and metal coatings (primers, metallic coated products, and painted coil products).

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Do not store materials directly on ground.

**SECTION 13 34 19
PRE-ENGINEERED BUILDING SYSTEMS**

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4. Store materials on flat, level surface, raised above ground, with adequate support to prevent sagging.
5. Protect materials and finish during storage, handling, and installation to prevent damage.

1.7 WARRANTY

- A. Metal building system manufacturer shall provide a written weathertightness warranty for a maximum of 25 years against leaks in standing seam roof panels, arising out of or caused by ordinary wear and tear under normal weather and atmospheric conditions.
 1. Warranty shall be signed by both the metal roof system manufacturer and the metal roof system installer.
 2. Maximum liability of warranty shall be no less than \$0.70 per square foot of roof area.
- B. Metal building system manufacturer shall provide a written warranty for 25 years against perforation of metal roof panels due to corrosion under normal weather and atmospheric conditions.
 1. Warranty shall be signed by metal roof system manufacturer.
- C. Metal building system manufacturer shall provide a paint film written warranty for 25 years against cracking, peeling, chalking, and fading of exterior coating on painted roof and wall panels.
 1. Warranty shall be signed by metal building system or roof system manufacturer and state that the coating contains 70 percent "Kynar 500" or "Hylar 5000" resin.
 2. Metal building system manufacturer shall warrant that the coating shall not peel, crack, or chip for 25 years.
 3. For a period of 25 years, chalking shall not exceed ASTM D 4214, #8 rating and shall not fade more than 5 color difference units in accordance with ASTM D 2244.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Metal Building System Manufacturer: Butler Manufacturing or equal.

2.2 BUILDING DESCRIPTION

- A. Building Dimensions: Indicated on the Drawings.
 1. Horizontal Dimensions: Measure to inside face of wall sheets.
 2. Eave Height: Measure from top of finished floor to intersection of insides of roof and sidewall sheets.
 3. Clear Height Between Finished Floor and Bottom of Roof Beams: Indicated on the Drawings.
- B. Metal Roof System: Butler Manufacturing metal roof system, or equal, as specified in this specification section.

**SECTION 13 34 19
PRE-ENGINEERED BUILDING SYSTEMS**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.

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- C. Where metal panels are required to be painted, use coating system as specified in this specification section.

2.3 DESIGN REQUIREMENTS

A. Roof Live Load:

1. Roof live loads are loads produced during the life of the structure by moveable objects. Provide minimum of 20 psf and 30 where HVAC unit support is present.
2. Wind, snow, seismic, or dead loads are not live loads.
3. Roof live loads are applied based on the Tributary Area as stated in code.

B. Roof Snow Load:

1. Roof snow load used for designing the structure shall not be reduced and shall be the product of the following criteria:
 - a. Ground Snow Load (P_g): 5 psf _____.
2. Design snow load shall include the effects of minimum flat roof load limits, rain on snow, drifting snow, and unbalanced snow load as defined in the governing building code specified above.

C. Wind Load:

1. Wind load used for designing the structure shall be the product of the following criteria:
 - a. Wind Exposure Category: B _____.
 - b. Wind Velocity (V), miles per hour: 115 _____.
 - c. Wind Importance Factor (I_w): 1.0 _____.
2. Wind Pressure Coefficients and the design pressures shall be applied in accordance with the governing code.

D. Seismic Load:

1. Seismic load used for designing the structure shall be based on the following criteria:
 - a. Spectral response acceleration for short periods (S_s): 1.27 _____ % g.
 - b. Spectral response acceleration for 1-sec. period (S_1): 0.18 _____ % g.
 - c. Site Class: D _____.
 - d. Seismic Importance Factor (I): 1.0 _____.
2. Seismic loads shall be applied in accordance with the governing code.

- E. Dead Load: Dead load shall consist of the weight of building system construction, such as roof, framing, and covering members.

F. Collateral Load:

1. Collateral load in pounds per square foot shall be applied to the entire structure to account for the weight of additional permanent materials other than the building system, such as sprinklers, mechanical systems, electrical systems, hung partitions, and ceilings.
2. This allowance does not include the weight of hung equipment weighing 50 pounds or more.
3. Equipment loads of 50 pounds or more shall be indicated on the Drawings and the structure shall be strengthened as required.

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4. Architect will provide the metal building system manufacturer with the magnitude and approximate location of concentrated loads greater than 50 pounds before design of the building starts.

G. Auxiliary Loads: Auxiliary loads shall include dynamic loads, such as cranes and material handling systems, and will be defined in the Contract Documents.

H. Crane Loads:

1. Crane loads shall be a function of the Service Class as defined by the governing code and Crane Manufacturers Association of America (CMAA) and the rated tonnage (A- Standby or Infrequent service, B- Light service, C- Moderate service, D- Heavy Service, E- Severe Service, F- Continuous Severe Service).
2. Crane loads will be obtained from the crane manufacturer and supplied by the Architect to the metal building system manufacturer at the time of bid.
3. Building structure shall be designed for the crane loads in accordance with the governing code.
4. Multiple cranes in the same bay or aisle shall be designed in accordance with the governing code.
5. If the governing code does not address multiple crane design practices, MBMA Metal Building Systems Manual shall be used.

I. Load Combinations: Load combinations used to design primary and secondary structural members shall be in accordance with the governing code.

2.4 DEFLECTIONS – information to be provided by manufacturer’s engineer.

A. Welding:

1. Welding Procedures, Operator Qualifications, and Welding Quality Standards: AWS D1.1 - Structural Welding Code – Steel and AWS D1.3 - Structural Welding Code – Sheet Steel.
2. Welding inspection, other than visual inspection as defined by AWS D1.1, paragraph 6.9, shall be identified and negotiated before bidding.
3. Certification of Welder Qualification: Supply when requested.

2.5 METAL PANEL SYSTEM

A. Metal Roof and Wall System: Butler Manufacturing “VSRII®” equal. All existing metal wall and roof panels and skylights to be replaced as part of this contract.

B. Roof System Design:

1. Design roof panels and liner panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
2. Design roof paneling system to support design live, snow, and wind loads.
3. Endwall Trim and Roof Transition Flashings: Allow roof panels to move relative to wall panels and/or parapets as roof expands and contracts with temperature changes.

C. Roof System Performance Testing:

1. UL Wind Uplift Classification Rating, UL 580: Class 90.

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2. Structural Performance Under Uniform Static Air Pressure Difference: Test roof system in accordance with ASTM E 1592.
 3. Roof system has been tested in accordance with U.S. Army Corps of Engineers Unified Facilities Guide Specification Section 07 61 13.
 4. FM Global (Factory Mutual):
 - a. Roof system has been tested in accordance with FMRC Standard 4471 and approved as a Class 1 Panel Roof.
 - b. Metal Building System Manufacturer: Provide specific assemblies to meet required wind rating in accordance with FM Global.
 - c. Installation modifications or substitutions can invalidate FM Global approval.
- D. Roof and Wall Panels:
1. Factory roll-formed, 24 inches wide, with 2 major corrugations, 2 inches high (2-3/4 inches including seam), 24 inches on center.
 2. Flat of the Panel: Cross flutes 6 inches on center, perpendicular to major corrugations in entire length of panel to reduce wind noise.
 3. Variable Width Panels:
 - a. For roof lengths not evenly divisible by the 2'-0" panel width, factory-manufactured variable-width (9-inch, 12-inch, 15-inch, 18-inch, and 21-inch-wide) panels shall be used to ensure modular, weathertight roof installation.
 - b. Minimum Length: 15 feet.
 - c. Supply maximum possible panel lengths.
 4. Panel Material and Finish:
 - a. Paint with exterior colors of "Butler-Cote™" finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.
 5. Use panels of maximum possible lengths to minimize end laps.
 6. Extend eave panels beyond structural line of sidewalls.
 7. Factory punch panels at panel end to match factory-punched holes in eave structural member.
 8. Panel End Splices: Factory punched and factory notched.
 9. Panel End Laps: Locate directly over, but not fastened to, a supporting secondary roof structural member and be staggered, to avoid 4-panel lap-splice condition.
 10. End Laps: Floating. Allows roof panels to expand and contract with roof panel temperature changes.
 11. Self-Drilling Fasteners: Not permitted in weathering membrane of roof system.
 12. Ridge Assembly:
 - a. Design ridge assembly to allow roof panels to move lengthwise with expansion and contraction as roof panel temperature changes.
 - b. Factory punch parts for correct field assembly.
 - c. Install panel closures and interior reinforcing straps to seal panel ends at ridge.
 - d. Do not expose attachment fasteners on weather side.
 - e. Use lock seam plug to seal lock seam portion of panel.
 - f. High-Tensile Steel Ridge Cover: Span from panel closure to panel closure and flex as roof system expands and contracts.
- E. Vapor Retarder:

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1. WMP-50, 0.0015-inch minimum thickness, UV-stabilized, white polypropylene, laminated to 30-pound Kraft paper / metalized polyester and reinforced with glass fiber and polyester scrim.
2. Perm Rating: 0.02.

F. Provision for Expansion and Contraction:

1. Provision for Thermal Expansion Movement of Roof Panels: Clips with movable tab.
 - a. Stainless Steel Tabs: Factory centered on roof clip to ensure full movement in either direction.
 - b. Maximum Force of 8 Pounds: Required to initiate tab movement.
 - c. Each Clip: Accommodates a minimum of 1.25-inch movement in either direction.
2. Roof: Provide for thermal expansion and contraction without detrimental effects on roof panels, with plus or minus 100-degree F temperature difference between interior structural framework of building and of roof panels.

G. Fasteners:

1. Make connections of roof panels to structural members, except at eaves, with clips with movable stainless steel tabs, seamed into standing seam side lap.
2. Fasten insulation board, bearing plates, and panel clips to structural members with "Scrubolt™" fasteners in accordance with erection drawings furnished by metal building system manufacturer, using factory-punched or field-drilled holes in structural members.
 - a. Fasteners: Metal-backed rubber washer to serve as torque indicator.
3. Fasteners penetrating metal membrane at the following locations do not exceed the frequency listed:
 - a. Basic Panel System: 0 per square foot.
 - b. High Eave Trim, No Parapet: 2 per linear foot.
 - c. Exterior Eave Gutter: 2 per linear foot.
 - d. Panel Splices: 2 per linear foot.
 - e. Gable Trim: 0 per linear foot.
 - f. High Eave with Parapet: 0 per linear foot.
 - g. Ridge: 0 per linear foot.
 - h. Low Eave Structural: 1.5 per linear foot.

H. Accessories:

1. Metal Coating on Gutters, Downspouts, Gable Trim, and Eave Trim: "Butler-Cote™" finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.
2. Material used in flashing and transition parts and furnished as standard by metal building system manufacturer may or may not match roof panel material.
 - a. Parts: Compatible and not cause corrosive condition.
 - b. Copper and Lead Materials: Do not use with Galvalume or optional aluminum-coated panels.

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2.6 INSULATION

- A. Laminated Fiberglass: Owens-Corning Fiberglas, NAIMA 202, "Certified R" metal building insulation.
 - 1. TIMA Insignia and Insulation Thickness: Ink-jet printed on fiberglass.
- B. Back-Fill Insulation: Owens-Corning Fiberglas unfaced "Pink Metal Building Insulation Plus".
- C. Roof Insulation:
 - 1. Certified R-Value: 49 .
- D. Wall Insulation:
 - 1. Certified R-Value: 21 .

2.7 ROOF INSULATION SYSTEM

- A. Roof Insulation System: Butler Manufacturing™ "ThermaLiner™" roof insulation system.

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B. System Components:

1. Metal Roof System: Butler Manufacturing™ VSR II metal roof system.
2. Sub-Structural System:
 - a. 3-inch nominal zee-shaped members (nominal 0.060-inch-thick, acrylic-coated, galvanized steel), factory punched for specific roof system being installed.
 - b. Support Brackets:
 - 1) 3-inch, 5-inch, or 8-inch height support zee and provide space for various thicknesses of insulation.
 - 2) Install with self-drilling fasteners through interior liner panel and into building structure.
 - c. Attach zeeps to support brackets with self-drilling fasteners.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine area to receive metal roofing.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

3.2 INSTALLATION – METAL ROOF SYSTEM

- A. Metal Roof System Installation: Butler Manufacturing™ “VSR II®” roof system.
 1. Install roof system in accordance with metal building system manufacturer’s instructions at locations indicated on the Drawings.
 2. Install roof system weathertight.
 3. Position and align liner panels and insulation board by installing starting panels against endwall trim clips and sidewall eave structural.
 4. Place liner panels with edges up and corrugations perpendicular to secondary structural members and with end laps over secondary structural members.
 5. Attach liner panels to roof secondary structural members with self-drilling screws in accordance with erection drawings furnished by metal building system manufacturer.
 6. Install vapor retarder over liner panels with 6-inch minimum side laps and end laps.
 7. Position panel clips and bearing plates by matching hole in clip with factory-punched or field-drilled holes in secondary structural members.
 8. Position and properly align panels by matching factory-punched holes in panel end with factory-punched holes in eave structural member and by aligning panel with panel clip.
 9. Field seam panel side laps by self-propelled and portable electrical lock-seaming machine.
 - a. Machine field forms the final 180 degrees of a 360-degree Pittsburgh double-lock standing seam.
 - b. Factory apply side lap sealant.
 10. Panel End Laps: Minimum of 6 inches, sealed with “Butler Panlastic” sealant, and fastened together by clamping plates.

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- a. Sealants: Contain hard nylon beads, which prevent mastic from flowing out due to clamping actions.
- b. Join panel laps by 2-piece clamped connection consisting of a bottom reinforcing plate and a top panel strap.
- c. Locate panel end laps directly over, but not fastened to, supporting secondary roof structural member and stagger, to avoid 4-panel lap-splice condition.

3.3 PROTECTION

- A. Protect installed metal building system to ensure that, except for normal weathering, metal building system will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

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PART 1 - GENERAL

1.01 CONDITIONS OF THE CONTRACT

- A. Work included under this section of the specifications is subject to the provisions of the Contract Documents, General and Special Conditions.

1.02 SCOPE

- A. This section of the specifications describes materials and equipment to be incorporated into the plumbing, heating, ventilation, and air conditioning systems and requirements for performing related work. The contractor shall coordinate his work with other crafts to avoid conflicts.

1.03 WORK INCLUDED

- A. The work covered by this section includes providing all labor, equipment and materials as specified herein, shown on the drawings or required for a complete and satisfactory installation.

1.04 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Division 1: General Requirements.
- B. Cutting and repairing of walls, ceilings, roofs and structure, except as specified herein.
- C. Painting, except as specified herein.
- D. Providing electric wiring systems for power, interlock, remote starting, and control service except as specified herein.
- E. Installing motor starters and thermal overload switches.
- F. Installing remote push button stations and breakglass stations.
- G. Casework.

1.05 CODES AND STANDARDS

- A. Perform work in accordance with local, state, and federal regulations. Code requirements are minimum and shall be complied with at no additional cost to owner.
- B. In event of a discrepancy between contract documents and governing codes, comply with the codes. It will be assumed that such discrepancy was noted and cost of adjustment included in the bid price. Before starting work, submit to architect in writing a description of such adjustments or changes as may exist.
- C. Where requirements of the contract documents exceed code requirements, perform work in accordance with the contract documents.
- D. The following shall be adhered to as a minimum:

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1. Standard Building Code, 1994 Edition.
 2. NFPA Standard 90A, 1996 Edition.
 3. NFPA Standard 70 (Electrical Code), 1991 Edition.
 4. SMACNA HVAC Duct Construction Standards, Latest Edition.
 5. The Standard Plumbing Code, 1991 Edition.
 6. Standard Mechanical Code, 1996 Edition.
 7. Standard Gas Code, 1996 Edition.
 8. The heating and cooling equipment and installation shall conform to Standard No. 70 (Electrical Code) of the National Fire Protection Association 1991 Edition.

1.06 ABBREVIATIONS & ACRONYMS

A. These abbreviations and acronyms are used in this section:

ASHRAE - American Society of Heating, Refrigerating, and Air Conditioning Engineers, INC.

NFPA - National Fire Protection Association

SMACNA - Sheet Metal and Air-Conditioning Contractors National Association

UL - Underwriters= Laboratory

1.07 DEFINITIONS

A. To establish common meaning of terms in the mechanical work, use these definitions:

- | | | |
|--------------|---|--|
| Provide | - | Furnish and install subject item, complete with accessory items for safe operation within the design intent. |
| Furnish | - | deliver subject item to project at point of final installation or use, except where other point is specified. |
| Install | - | make a final installation of items furnished. |
| Complete | - | with all accessory items required for safe operation within the design intent. |
| Indicated | - | as shown on drawings. |
| Concealed | - | where used in connection with insulation and painting of piping, ducts and accessories to mean hidden from sight, as in chases, furred spaces, pipe shaft or suspended ceilings. |
| Exposed | - | not concealed. |
| Condensation | - | visible moisture on surfaces. |

1.08 PERMITS, INSPECTIONS AND STREET CONNECTIONS

A. Secure and pay for permits and inspections required for installation of the work. Deliver certification of inspections to architect.

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- B. Arrange for and pay costs incurred for connections of water, gas and sewer, including furnishing of water meter, excavating, trenching, backfilling, and repairing payment as required for installation of the work where indicated on the drawings or specifically noted on the drawings.

1.09 VERIFY EXISTING CONDITIONS

- A. Contractor, before commencing work, shall examine all conditions on which this work is in any way dependent for perfect workmanship according to the intent of drawings and specifications and shall report to the general contractor, in writing, and conditions which prevent this contractor from performing acceptable work.
- B. It shall be assumed that contractor, before submitting his bid, shall have made an on-site inspection of the premises to determine the conditions under which he will be expected to perform this contract. No increase in contract price shall be allowed due to failure of the contractor to perform this on-site inspection.

1.10 DESIGN CONDITIONS

- A. Outdoor design conditions are in accordance with the ASHRAE Handbook of Fundamentals.

1.11 DRAWINGS

- A. Refer to the architectural drawings for such details as finishes, dimensions, materials, etc., of the building. Check architectural features such as door openings, wall thicknesses, wall locations, etc./ against the architectural drawings prior to the installation of the work.
- B. Mechanical drawings are diagrammatic, showing general locations of fixtures, pipes, etc., and are not to be scaled. Check all dimensions, existing conditions, etc., at building site. Provide off-sets, bends, fittings, and swing joints not shown, but required for proper installation of mechanical work.
- C. Furnish material and labor necessary to make a complete operating system except in such cases that are specifically indicated by others.
- D. This division of the specifications and accompanying drawings shall be considered as supplemental one to the other; materials and equipment and labor called for by one and not the other shall be supplied and installed as though specifically called for by both.
- E. As Built Drawings:
Keep a blue-line set of the contract or shop drawings exclusively for the purpose of recording the exact installed locations of piping and equipment as the project progresses. Upon completion of the work the contractor shall modify reproducible transparencies to reflect the noted changes throughout the project. The changes indicated on the transparencies shall be drafted in a neat and legible manner.

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The as-built drawings shall include:

1. Mark all drawings AAS- BUILT CONSTRUCTION DOCUMENTS@.
2. Indicate the date drawings were prepared.
3. The Contractor=s name, address, and phone number.
4. Revise schedules per equipment submittal, including manufacturer and capacities.

1.12 CONTRACTOR=S CLOSE-OUT CHECKLIST

- A. The contractor shall, at the end of the projects, submit to the owner the PROJECT CLOSE-OUT CHECKLIST filled in, in its entirety. Final payment shall not be approved until checklist is approved. The checklist is found at the end of this section.

PART 2 - PRODUCTS

2.01 LAYOUT BASIS

- A. The system layout is based upon the use of particular items of equipment with such items identified by manufacturer=s make and model number. Physical dimensions, arrangement and service connections required for these particular items have been considered in making the layout. The equipment of another manufacturer listed as Acceptable@ on that item of equipment may be submitted provided that energy requirements are no greater than for layout basis, and that additional service connections will be made at no additional cost to the owner.
- B. Should shop drawings disclose that the above requirements cannot be met on the basis of the submitted equipment, contractor shall furnish equipment as specified for ALayout Basis@.
- C. If equipment other than layout basis is proposed, the cost of all such changes as may be required in service connections and in structural systems to accommodate the proposed substitution, including additional engineering services, become the responsibility of the contractor and impose no additional cost to owner

2.02 MATERIALS

- A. All materials used in the job shall conform to the standards cited.
- B. Where mention of trade names and brands are used in describing materials for this installation, they are to indicate type, quality and arrangement of material required. Equal materials by other manufacturers, if used, must be approved by architect, prior to installation.
- C. There shall be no asbestos in any material furnished under this contract.

2.03 DATA AND DRAWINGS TO BE SUBMITTED

- A. Within 30 days after contract is signed, nine (9) copies of ALL equipment and ALL materials data

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requiring review shall be submitted thru proper channels after having been reviewed and stamped by subcontractor and general contractor.

1. Data shall be bound in loose-leaf, three-ring, hard-back binders with pockets for diagrams
Sectionalize with numbered tabs and preface with reference index.
2. Cover sheet shall list project name, location, architect, engineer and general contractor.
3. All items of equipment shall be submitted at same time except items such as temperature controls and diagrams that are dependent upon Areviewed@ data. They may be submitted separately at a later date. Provide sections in binders tabbed for these items to be inserted at a later date.

B. All submittal data shall include project name, the model, style and size of item being submitted, local manufacturer=s representative and telephone number and all criteria shown on schedule on plans. Submitted items shall include but not be limited to the following:

1. Pipe Specialties
 - a. Include capacity curve with pump suction diffuser.
 - b. Valves
 - c. Valve Tags
2. Calibrated Balancing Valves
3. Inertia Bases
4. Pumps
 - a. Submit curves
5. Chemical Treatment System
6. Insulation
7. Sump Pumps
 - a. Submit pump curves
8. Fans
 - a. Submit fan curves on all fans including AHU=s and RTU=s.
9. Flexible Duct
10. Roof Curbs

C. After reviewed data has been returned, contractor shall proceed with shop drawings of duct work and equipment room piping shall be submitted.

1. Duct Work Shop Drawings shall not be smaller than 1/4" = 1' -0" scale and must include duct size;
equipment connections and pad layout; location, dimensioned from building structure; off-sets, bottom elevation above finished floor; liner where required, plenums and all accessories.

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- 2. Equipment Room Drawings shall include boilers, pumps, major piping (including control, check, isolation, balancing, and drain valves), pad layouts for all floor mounted equipment, air handlers and associated accessories. Scale to be not less than 1/4" = 1' -0".
 - 3. Duct Work and Equipment Room Shop Drawings shall be prepared on sheets the same size as contract documents. Enlarged copies of contract documents shall not be acceptable as shop drawings.
 - D. Separate binders may be submitted for major sub-contractors such as HVAC; Plumbing; Fire Protection.
 - E. Attention is directed to a paragraph entitled AOperation and Maintenance Instructions@, Section 15 905 requiring copies of reviewed data to be included in O&M manuals.

2.04 CERTIFICATES

- A. Upon acceptance by authorities having jurisdiction, certificates of occupancy required for this project including plumbing, HVAC, fire protection and Health Department certification of portable water shall be indicated by the responsible contractor(s).

2.05 EQUIPMENT FOUNDATIONS

- A. All floor mounted equipment, unless otherwise detailed, shall be mounted on 4" high concrete pads extending a minimum of 4" beyond longest dimension in each direction. Concrete shall be 3,000 psi.

2.06 FIRE STOPPING

- A. Piping penetrations in fire walls shall be sealed with UL listed fire stopping materials meeting requirements of ASTM E-814.
- B. Acceptable products are Dow Corning 3-6548 Silicone RTV Foam, Flamesafe T&B Firestop, 3M, Nelson Electric and GE Pensil.

PART 3 - EXECUTION

3.01 PROTECTION OF WORK DURING CONSTRUCTION

- A. Provide protective covers, skids, plugs, caps and coatings to protect equipment and materials from damage and deterioration during construction.
- B. Store equipment and material under cover and off the ground.
- C. When outdoor storage is necessary, provide protective covers of sheet plastic of gauge suitable for the area involved and reinforced to withstand wind and precipitation. Set equipment and materials on skids or platforms of height sufficient to avoid damage from splattering and ground water.
- D. Plug ends of pipes when work is stopped to prevent debris from entering the pipes.

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- E. Close open ends of ductwork with temporary closures of sheet plastic taped in place on horizontal ducts and sheet metal caps with drip overhangs for ducts opening upward.
 - F. Do not operate any air handling systems during the construction period without filters in place to filter air entering the fan. Protect the exhaust fans by temporary filters cut from roll media and fastened over the air inlets.

3.02 WORKMANSHIP

- A. The entire contract shall be executed in a neat, substantial and workmanlike manner, according to the true intent and meaning of the plans and specifications. Any work not installed in a neat, substantial and workmanlike manner shall, when directed in writing, be removed and replaced at the contractor's expense without additional cost to the owner.

3.03 TOOLS

- A. The Contractor for this work shall furnish all tools, machinery, hoists and other means for proper installation of the work.

3.04 TRENCHING, BACKFILLING AND PAVING

- A. Install water service piping and sewers below recorded frost penetration line in compliance with applicable codes.
- B. Excavate trenches to sufficient width, shore trenches, and remove water as necessary to permit proper installation of the work.
- C. Backfill trenches only after piping has been tested, inspected, and locations of pipes and appurtenances properly recorded.
- D. Maintain clearance from excavation to footings and outside bearing walls of 3 feet and an angle of not greater than 45-degrees to bottom of such footings or outside bearing wall.
- E. Provide shoring when soil conditions and depth of excavation warrant shoring.
- F. Where rock is encountered, remove rock to a depth of 6" below desired bottom of excavation and backfill with clean earth to desired level.
- G. When piping is laid in fill or loose sand, tamp bottom of trenches to obtain 95% of dry maximum density compaction as determined by Standard Proctor Compaction Test, ASTM D698-58, prior to installation of pipes.
- H. Use backfill free from rocks and debris, compacted in 6" layers as the excavation is filled. Take precaution to prevent damage to the piping.
- I. Hand tamp backfill around the lines to depth of 2 feet above top of the lines and compact to obtain 95% of dry maximum density compaction as determined by the Standard Compaction Test ASTM D698-58.

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- J. Provide bell holes and continuous firm bedding for piping.

3.05 CUTTING AND PATCHING

- A. All cutting and patching needed for installation of mechanical system shall be included under this Division.
- B. No cutting will be permitted without prior approval by the owner.
- C. Patching will be done by the trade whose work has been cut and shall be paid for under the mechanical division of the specifications.
- D. Contractor shall furnish to other trades information such as size, position and arrangement of materials and equipment, so that openings in floors, walls, roofs, beams, and ceilings can be provided as construction progresses. When openings are omitted because of his failure to furnish information to the contractor, this trade at his expense, shall direct and pay general contractor to do cutting and patching required.

3.06 EQUIPMENT FOUNDATIONS

- A. Concrete foundations and steel supports, etc., shall be provided in accordance with the Concrete and Structural Division of the specifications.
- B. Concrete foundations shall have 3/4" beveled edges and all surfaces rubbed smooth prior to mounting equipment.
- C. Prepare structural slabs to receive pad and curbs. Roughen contact surface before pouring concrete.
- D. For equipment provided with gout holes, fill voids with non-shrinking grout after alignment and before operation of equipment.

3.07 COORDINATION OF INSTALLATION

- A. Coordinate work under this division with work under other divisions.
- B. Install work to fit into the spaces provided. Avoid damage on account of ill-timed work.
- C. Arrange work to provide maximum headroom and clearance consistent with the requirements of the documents.
- D. Except where otherwise noted, arrange piping to run either parallel or normal to building lines, and true to grade.
- E. Provide supports and anchors for work to avoid damage from movement.
- F. Place equipment, valves and unions requiring service in accessible locations.
- G. Install materials and equipment completely with piping, controls and accessories.
- H. Coordination of equipment located in ceiling plenums (air conditioning equipment, ductwork, plumbing, lights, fire protection lines, structure, etc.) shall be done before installation is begun and continued during construction to assure proper space for maintenance of equipment and maneuver-

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ability of light fixtures in the grid.

3.08 COUNTER FLASHING

- A. All flashing methods and materials shall provide a complete watertight installation.
- B. Provide counter flashing for items placed on roof or piercing roof. General Contractor shall provide base flashing.
- C. Riser sleeves for piping and conduits in membrane waterproofed floors shall have flashing clamps attached to membrane. Large sleeves shall be shop fabricated. Sleeves shall extend 2 inches above finished floor.
- D. Drains and cleanouts in membrane water proofed floors shall have flashing clamps attached to the membrane.
- E. Ducts passing through roof shall be counterflashed with sheet metal, soldered to duct riser and extended down over roof curbs, which is properly flashed by the General Contractor. Apply heavy coating of roofing cement at junction of duct and counterflashing collar.

3.09 CLEANING AND ADJUSTING

- A. All equipment, pipe, valves and fittings shall be wiped clean, with all traces of oil, dust, dirt, and paint spots removed. Bearings shall be lubricated as recommended by the equipment manufacturer. All control equipment shall be adjusted to setting indicated.

3.10 PAINTING

- A. Clean surfaces of work under this Division and leave surfaces ready for painting. Colors shall be selected by Architect.
- B. Where surfaces of factory finished items are marred, refinish those surfaces to original condition with factory furnished touch up paint.
- C. The following, as a minimum, shall be painted:
 - 1. Steel equipment supports.
 - 2. Exposed ductwork where specified.
 - 3. Ferrous louvers and grilles where specified elsewhere.
 - 4. Exposed ferrous pipe hangers.

3.11 NOTIFICATION BEFORE INSPECTION

- A. Notify the architect/engineer in writing not less than five (5) working days before work is ready for inspection.

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3.12 COORDINATION OF ELECTRICAL WORK

- A. Provide electrically operated equipment designed and built for operation with electric characteristics provided by Division 16. Verify voltage, horsepower, wattage and phase from electrical drawings before ordering equipment.
- B. Provide motor controls, systems controls, starters, contractors, etc., required for the mechanical systems complete as a part of the motor or apparatus which it operates, unless specifically noted to be provided under another section.
- C. Provide under the work of this section all other devices, line and low voltage control and interlock wiring, and additional conduit necessary but not indicated on the electrical drawings, all in accordance with material and installation requirements.
- D. Provide wiring diagrams required for the proper installation of the equipment under the work of this section.
- E. All mechanical assemblies containing multi-motors or electric heating elements shall be factory equipped with integral over-current protection for each motor/heater in accordance with the requirements of the N.E.C.

3.13 GUARANTEE

- A. Contractor shall guarantee this work and make good without cost to the owner any defects in equipment, materials or workmanship which may develop within the period of one (1) year from date of acceptance or beneficial use by the owner.
- B. Refrigeration Compressors shall be provided with an additional 4 year warranty which shall include labor and refrigerant.

END OF SECTION

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MECHANICAL PROJECT CLOSE-OUT CHECKLIST

The following items as stipulated by Carter Watkins Associates and/or their Consultants are to be provided. The project will not be accepted as 100% complete until these items are provided to the appropriate parties.

<u>ITEM</u>	<u>ACCEPTED BY</u>	<u>REPRESENTING</u>	<u>DATE</u>
1. O & M Manuals	_____	_____	_____
2. Copy of shop drawings and submittals	_____	_____	_____
3. Extended warranties for HVAC equipment	_____	_____	_____
4. Certification of welders	_____	_____	_____
5. Controls under glass	_____	_____	_____

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6.	As-builts	_____	_____
7.	Test and balance report	_____	_____
8.	Change out construction filters in air moving equipment	_____	_____
9.	Fire protection documents reviewed by Insurance Underwriter	_____	_____
10.	Valve tags and charts	_____	_____

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PART 1 - GENERAL

1.01 WORK INCLUDED

A. The work covered by this section includes furnishing all labor, equipment, and materials as specified herein, shown on the drawings, or required for a complete and satisfactory installation.

1.02 REFERENCE STANDARDS

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. National Fire Protection Association (NFPA)
- D. Underwriters Laboratory

PART 2 - PRODUCTS

2.01 PIPING

- A. Domestic Water Systems:
 - 1. Pipe, 3" size and smaller: Copper water tube manufactured in accordance with ANSI H23-1.
 - a. Type AL@ hard copper above ground.
 - b. Type AK@ hard or soft copper underground or in pipe trench.
 - 2. Fittings: Wrought copper seat joint conforming to ANSI B16.22.
 - 3. Screwed or flanged to sweat pipe connections cast brass, ASA B16.18.
 - 4. Joints:
 - a. 2" and smaller: 95-5 (95% tin and 5% antimony) solder.
 - b. 2 - 2" and larger: 95-5 (95% tin and 5% antimony) solder.
 - c. All joints below slab on grade shall be alloy solder melting not less than 1000 degrees F.
 - 5. Unions:
 - a. Cast brass or bronze with soldered connections. Unions 2" and smaller, ground joint; 2 - 2" and larger, flanged.
 - 6. Pipe, 4" diameter and larger:
 - a. Underground: 4" size shall be Class 51, 6" and larger shall be Class 50 ductile iron, ANSI A21.51-1976 with push on or mechanical joints with the bituminous outer coating. Fittings shall be 250 psi ductile iron, mechanical joints with bituminous outer coating.
 - b. Above Ground: 4" size and larger shall be type L hard drawn copper with wrought copper or cast brass fittings.

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- B. Soil, Waste, and Vent piping within the building and where indicated on the drawings.
1. Pipe and Fittings:
 - a. Above slab-on grade and inside the building shall be PVC pipe and fittings properly marked to indicate the system complies with all Soil Pipe Standards 301-74.
 - b. Below slab-on grade and under floor shall be hub and spigot with oakum and lead caulked joints or at contractor=s option, neoprene one-piece elastometric compression gasket joints for pipe bearing on virgin soil.
 - c. Sanitary outside building may be PVC or at Contractor=s option, extra strength vitrified clay with PVC joints.
 2. Pipe and Fittings:
 - a. ABS or PVC piping above and below slab on grade except in return air plenums.
 - b. ABS plastic DWV piping and fittings shall conform to ASTM Standard D2661 and shall be so marked. ABS solvent cement shall conform to ASTM Standard D-2235.
 - c. PVC plastic DWV piping and fittings shall conform to ASTM Standard D2665 and shall be so marked. PVC solvent cement shall conform to ASTM Standard D-2564. PVC primer shall be applied to pipe and inside of socket fittings before applying PVC solvent cement.
 - d. Pipe cement that is recommended by the manufacturer for use on neither ABS of PVC pipe shall not be permitted on the project.
 - e. All plastic pipe and fittings shall be NSF approved and shall be so marked.
 - f. All ABS and PVC plastic pipe and fittings shall have solvent socket ends.
- C. Waste connections to service sink trap standards:
1. Pipe: Galvanized Schedule 40 steel pipe.
 2. Fittings: 125 lb. galvanized, screwed, recessed pattern, drainage fittings.
 3. Options: Type AL@ copper with adapters.
- D. Waste connections to lavatories, sinks, and drinking fountains:
1. Pipe: Type AL@ hard copper manufactured in accordance with ANSI H23.1.
 2. Fittings: Cast brass alloy or wrought copper drainage fittings manufactured in accordance with ANSI B16.23.
- E. Soil connections to urinals:
1. Pipe: Type AK@ copper with wrought copper pressure fitting or red brass nipples and cast brass fittings.

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- F. Waste connections to water closet:
1. Floor Mounted - Cast iron closet flange bolted to fixture with fixture setting seal gasket.
 2. Wall Hung - Chair carriers as specified with fixture.
- G. Condensate Drain Piping:
1. Type AM@ copper tubing.
 2. Fittings:
 - a. Copper pipe: Sweat type wrought copper or cast brass.
 - b. Provide cleanout for all changes of direction exceeding 45 degrees.
- H. Chilled Water and Hot Water Space Heating Piping:
1. Pipe: Schedule 40 black steel conforming to ASTM A120.
 2. Fittings: Wrought carbon steel butt welding fittings, conforming to ASTM A234, for pipe sizes 2-1/2" and larger. Malleable iron, 150 lb. class, screwed conforming to ASTM A47, for pipe sizes 2" and smaller.
 3. Alternate Fittings: Grooved piping and fittings.
 - a. Acceptable manufacturers are Victaulic and Grinnell Groove-loc.
 - b. Fittings shall be rigid type unless noted otherwise on plans.
 - c. Manufacturer shall submit piping shop drawings.
- I. Gas Piping:
1. Pipe: Schedule 40, black steel pipe conforming to ASTM A-120, factory coated and wrapped for underground, uncoated for above ground.
 2. Fittings: Carbon steel, butt weld for sizes 2-1/2" and larger and black malleable iron, screwed for 2" and smaller. Brushings are not permitted.
 3. Corrosion protection: Apply corrosion resistant coating, to all underground joints and damaged factory wrap.
 4. Gas pipes shall not be installed below floor slabs on grade, in partitions, walls or plenums except as directed and as approved by local codes.
 5. Provide gas cock for each piece of equipment.
- J. Compressed Air Piping: (125 psig)
1. Pipe: Type AL@ copper.
 2. Fittings: Wrought copper sweat joint conforming to ANSI B16.22. Construct joints with Silfos.
- OR
3. Pipe: Schedule 40, black steel conforming to ASTM A-120.
 4. Fittings: Carbon steel, 125 lb. butt weld for size 2-1/2" and larger; black malleable

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screwed for 2" and smaller.

K. Underground Piping Systems:

1. The layout basis of the following chilled water, hot water systems is Thermal Pipe Systems. Acceptable alternates are Ricwil, Permapipe, and Thermacore.
2. Space Heating Hot Water Piping:
 - a. HEAT-TITE shall be used for hot water supply and return using a rubber ring jointing method. Unless otherwise specified, all pipe, fittings, valves, and accessories shall conform to the requirements of ANSI B31.1, and shall be of the proper type for pressure and temperature of the heating or cooling water.
 - b. Steel Carrier Pipe: Carrier pipe shall be steel pipe.
 - c. HEAT-TITE COUPLING: The HEAT-TITE coupling shall be Reinforced Thermosetting Resin Plastic (RTRP). The RTRP coupling shall be glass filament wound epoxy ring, shall be machined into the coupling. The length of the coupling shall be such that when correctly assembled it will give the proper end separation.
 - d. Rubber Sealing Rings: Rubber sealing rings for HEAT-TITE piping shall be molded heat resistant Ethylene Proplene Diene Monomer (EPDM) using a properly vulcanized compound. The ring surfaces shall be smooth and free from all porosity and internal voids.
 - e. PVC Casing Pipe: The Polyvinyl Chloride (PVC) Casing Pipe shall be of virgin PVC resin meeting the classification requirements of ASTM D1784. The thickness shall be as shown on the following pages.
 - f. Rubber End Seals: Rubber end seals for insulated HEAT-TITE shall be a high temperature (HT) heat resistant Ethylene Proplene Diene Monomer (EPDM) molded rubber compound. All surfaces shall be smooth and free of voids.

g. Polyurethane Foam Insulation: Polyurethane foam insulation shall meet the following specifications:

Type:	Two component urethane
Compressive Strength:	25 psi parallel min at 5% comp
Shrinkage:	None at 70 F
Free Rise Density:	1.5 to 2.5 lbs / cu. ft.
Aged AK@	0.140 BTU per inch, per

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(70 F - 72 hrs):	hour, per degree Fahrenheit, per s.f.
Closed Cell Content:	90%
Insulation Concentricity:	Carrier Pipe shall be concentric to casing pipe. The allowable maximum deviation from center line of carrier pipe shall be plus or minus 1/4 inch at the casing center point and plus or minus 1/16 inch at the end seals.

h. Casing-Tite Coupling: The Casing-Tite coupling shall be of virgin PVC Resin meeting classification requirements of ASTM D1784. The coupling shall be SDR 51 or heavier. The rubber rings shall meet ASTM D1869. The Casing Tite coupling shall have a groove molded into each end and the sealing rings inserted into the groove at the factory.

l. Insulated Fittings: Fittings may be preinsulated by Thermal Pipe Systems, Inc. using the same insulation thickness and casing as the pipe. Where necessary laid-up fiberglass casing will be substituted in all or part of the fitting. A thrust plate of the proper size shall be provided. End seals on fittings shall be the same as used

on the

j. Wall Penetration Sleeves: Provide where piping passed masonry or concrete walls, floors, and roofs. Sleeves in outside walls below and above grade, in floor, or in roof slabs, shall be schedule 40 or standard weight coated black steel pipe. Space between piping or insulation casing, and the sleeve shall be sufficient to allow proper water tight sealing, but never less than 2". Sleeves shall be held securely in proper position and location during construction. Sleeves shall be of sufficient length to pass through entire thickness of walls or slabs. Sleeves in floor slabs shall extend 2 inches above the finished floor. In existing concrete manholes or building, wall penetrations may be made using the Acore drilling@ methods providing proper care is taken to drill the holes to the size needed and square to the line of the pipe.

k. Wall Penetration Seals: All wall penetrations shall be sealed to prevent water from entering the building or manhole. The sealing material shall be as specified by the engineer.

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- l. Insulation: Thickness of insulation for HEAT-TITE pipe and fittings shall be as shown below.
 - m. Temperature and Pressure: The HEAT-TITE piping system and all of its components to operate up to 150 psig at 250 degrees F, plus typical surges.
 - n. Dimensions and Weights of insulated HEAT-TITE piping and fittings are as shown below.

<u>SCHEDULE</u>	<u>PIPE SIZE</u>	<u>INSULATION THICKNESS</u>	<u>WT. (LBS/FT)</u>
80	2	.92	105.6
80	2	1.20	209.4
80	4	1.67	316.8
80	6	1.59	531.8
80	8	1.57	781.8
80	10	1.49	1028.2
80	12	1.38	1416.0

- 3. Chilled Water Piping:
 - a. KOOL-KORE shall be used for chilled water service, using a rubber ring jointing method.
 - b. PVC Carrier Pipe: Carrier pipe shall be Polyvinyl Chloride (PVC) 160 psi pipe - SDR 26 in accordance with ASTM D2241. Pipe shall be extruded from clean, virgin

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approved class 12454A PVC compound conforming to ASTM D1784.

- c. PVC Casing Pipe: The PVC casing pipe shall be of virgin PVC resin meeting the minimum classification requirements of ASTM D1784. The thickness shall be as shown on the following pages.
- d. Rubber Sealing Rings: Sealing rings for the PVC carrier pipe shall be a molded solid compression type rubber compound suitable for the service and pressure of the system.
- e. Rubber End Seals: End seals for insulated KOOL-KORE shall be molded rubber with a compression type seal.
- f. Polyurethane Foam Insulation: Polyurethane foam insulation shall meet the following specifications:

Type:	Two component urethane
Compressive Strength:	25 psi parallel min at 5% comp
Shrinkage:	None at 70 F
Free Rise Density:	1.5 to 2.5 lbs / cu. ft.
Aged AK@: (70 F - 72 hrs)	0.140 BTU per inch, per hour, per degree Fahrenheit, per s.f.
Closed Cell Content:	90%

Insulation Concentricity:

Carrier Pipe shall be concentric to casing pipe. The allowable maximum deviation from center line of carrier pipe shall be plus or minus 1/4 inch at the casing center point and plus or minus 1/16 inch at the end seals.

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- g. **Wall Penetration Sleeves:** Provide where piping passes through masonry or concrete walls, floors, and roofs. Sleeves in outside walls below and above grade, in floor, or in roof slabs, shall be schedule 40 or standard weight coated black steel pipe. Space between piping or insulation casing, and the sleeve shall be sufficient to allow proper water tight sealing, but never less than 2". Sleeves shall be held securely in proper position and location during construction. Sleeves shall be of sufficient length to pass through entire thickness of walls or slabs. Sleeves in floor slabs shall extend 2 inches above the finished floor. In existing concrete manholes or building, wall penetrations may be made using the Acore drilling@ methods providing proper care is taken to drill the holes to the size needed and square to the line of the pipe.
- h. **Wall Penetration Seals:** All wall penetrations shall be sealed to prevent water from entering the building or manhole. The sealing material shall be as specified by the engineer.
- i. **Insulation:** Thickness of insulation for KOOL-KORE pipe shall be as shown below.
- j. **Temperature and Pressure:** The KOOL-KORE piping system and all of its components are designed to operate at temperatures up to 70 F at 160 psig or at reduced pressures for elevated temperatures, as follows:

<u>TEMP. F</u>	<u>PRESSURE psig</u>
80	144
90	121
100	102
110	80
120	64
130	49

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- k. Dimensions and weights of insulated KOOL-KORE piping systems are as shown below.

<u>SCHEDULE</u>	<u>PIPE SIZE</u>	<u>INSULATION THICKNESS</u>	<u>WT. (LBS/FT)</u>
40	4"	1.67	143

2.02 PIPE SPECIALTIES

A. Escutcheon Plates:

1. Escutcheon plates: Chromium-plated, not less than 20 gauge steel, split pattern, set screws on ceiling plates, spring clips on others, sized to fit over insulation and to cover sleeves.
2. For exposed piping in flush sleeves in finished areas: Grinnell Fig. 10, F & S Fig. 602, Perfection Fig. 10.
3. For exposed piping where sleeves extend beyond penetrated surface, provide deep pattern type.

B. Pump Suction Diffuser:

1. Cast iron body, steel or cast iron outlet guide vanes, removable stainless steel strainer and fine mesh brass start-up strainer.

C. Triple Duty Valve:

1. Angle or straight type combination shut-off, balancing, non-slam check valve with cast iron body, bronze disc and seat, and stainless steel valve stem and spring.

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2. Install valve with ample clearance for valve stem and service.
- D. Air Purger:
1. Steel or cast iron body, flanged connections for horizontal, in-line installation, and tapings for vent and drain connections.
- E. Air Vents:
1. Automatic Air Vents shall be Armstrong Model AAE-750, or equal, installed in a vertical position with a gate valve to isolate vent for service or replacement.
 2. Manual Air Vents shall be Armstrong No. 72, or equal up to 75 psig operating pressure or lever handle brass cock rated for operating pressure. Provide brass goose neck termination.
- F. Automatic Fill Valve:
- Armstrong Model RD or HRD or equal as required for operating pressure of installation.
- G. Expansion Tank:
- Taco Model CAX or equal ASME precharged bladder expansion tank stamped 125 psig working pressure with replaceable bladder, rated for 240-degrees F. at the tank and air charging valve to facilitate precharge pressure to meet actual system conditions.
- H. Backflow Preventer: (Make-up Water System)
1. Watts Model 9D or equal, tested and certified under A.S.S.E. Standard 1012-1980 or CSA Standard B64.3.
- I. Water Pressure Reducing Valve (Make-up water system) - Armstrong RD-40, or equal bronze construction with built-in strainer.
- J. Strainers shall be Y-pattern type with cast iron body. Strainers shall have removable 316

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stainless steel or monel screens and shall have perforations to provide a net free area through the screen of at least 3 times that of the entering pipe. Perforations shall be 1/8" diameter for chilled, hot, and make-up water service. Strainers 2-1/2" and larger shall be provided with a plugged gate valve and nipple the full size of the strainer blowdown outlet. Blowdown outlets shall be located at the low point of the strainer. Strainers 2" and smaller shall be threaded. Strainers 2-1/2" and larger shall be flanged.

- K. Flexible Pipe Connections: Flexible pipe connections shall be stainless steel corrugated metal hose with high tensile stainless steel wire braid for ferrous pipe and bronze corrugated metal hose with high tensile bronze wire braid with copper pipe. Connections for pipe 2-1/2" and smaller shall be male pipe thread, and for pipe 3" and larger shall be 150 lb. flange ends. Minimum pressure rating shall be 150 psig wwp. Rubber hose connectors for closed loop heat pumps will be furnished with the heat pump units.

2.03 ACCESS PANELS - BUILDING

- A. Flush, hinged door, locking type steel access panel and frame. Access panels shall be UL fire rated same as structure in which installed.
- B. Panel size 24" x 24" unless indicated otherwise on drawings.
- C. Frame styles specifically designed for setting in bare masonry, plastered surfaces, dry wall, or in acoustical tile as required.

2.04 CORROSION RESISTANT COATINGS

- A. Acceptable manufacturers: Koppers Bitumastic Super Service Black, Royston Laboratories A-51, Johns-Manville ATranstex V20".

2.05 PIPE HANGERS AND SUPPORTS

- A. Products manufactured in accordance with MSS SP58 and conforming to Federal Specification WWH171e, MSS SP69, UL203, NFPA13, and NFPA24 are acceptable. The following Grinnell figure numbers are used as a guide.

1. Bare Copper Pipe - Fig. CT-99.

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2. Bare Steel Pipe - Fig. 260.
3. Insulated Pipe - Fig. 260 sized to fit over insulation and with properly sized Fig. No. 167 shield.
4. Vertical Pipe - Fig. CT-121 or Fig. 261.
 - a. Bare copper pipe must be isolated from contact with steel riser clamp by rapping with sheet lead or other acceptable material. Fig. CT-121 coated clamp may be used.
5. Several horizontal pipes in the same plane may be supported on trapeze hangers spaced as required for the smallest pipe.

2.06 SLEEVES

- A. Sleeves shall be standard weight steel pipe.
- B. Sleeves shall be of sufficient size for pipe and insulation to pass through.
- C. Exposed sleeves through floors shall project 2" min. above finished floor.
- D. Pro-Set or equal sleeve system may be used in lieu of above.

2.07 DIELECTRIC COUPLINGS

- A. Acceptable: Capitol Type CS, Epco FX, and Clearflow Dielectric Waterway.
- B. Description: Screwed ends, dielectric isolating section.

2.08 VALVES

- A. General:
 1. All gate and globe valves shall be designed for repacking under pressure when fully

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opened and shall be equipped with packing suitable for the intended service.

2. Valves used in copper pipe systems up to and including 3" size shall be similar and equal to those described herein for threaded valves up to 2" size.
3. Face to face and end to end dimensions of valves shall conform to ANSI B16.10.
4. Insofar as possible, all valves of the same type shall be of the same manufacturer.

B. Gate Valves:

1. Valves 2" and smaller shall be bronze body, solid wedge, rising stem, union bonnet, equal to Crane 428UB, Jenkins 4TU, Milwaukee 1152 or Stockham B-105.
2. Valves 2-1/2" and larger shall be flanged and iron body, bronze trim, OS&Y equal to Crane 465-1/2, Jenkins 651-C, Milwaukee F-2885 or Stockham G-623.

C. Globe Valves:

1. Valves 2" and smaller shall be bronze body, union bonnet, integral seat, renewable disc, equal to Crane 7, Jenkins 106A, Milwaukee 590, or Stockham B-22.
2. Valves 2-1/2" and larger shall be iron body, composition disc, flanged ends, bolted bonnet, bronze mounted, equal to Crane 351, Jenkins 613C, Milwaukee F-2981, or Stockham G-512.

D. Check Valves:

1. Valves 2" and smaller shall be bronze body, horizontal swing, Y pattern with removable discs equal to Crane 37, Jenkins 92A, Milwaukee 509, Stockham B-319.
2. Valves 2-1/2" and larger installed horizontally shall be iron body, bolted bonnet, horizontal swing with removable seat and disc equal to Crane 373, Jenkins 624-C, Milwaukee F-2974, Stockham G-931.
3. Valves 2-1/2" and larger installed in vertical position shall be iron body, globe type, silent design, bronze mounted with stainless steel spring and flanged end connections

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equal to Milwaukee 1800, Mueller 105-AP, APCO 600.

E. Ball Valves:

1. Ball valves shall be 2" and smaller for water and air service and shall have a 2-piece bronze body, teflon seat and brass ball equal to Crane 2180, Jenkins 902-T, Milwaukee BA-200, Stockham S-216-BR-RT. Provide extended handles on insulated piping and memory stop for manual balancing.

F. Butterfly Valves:

1. Butterfly valves for water piping 2-1/2" and larger shall be lug type with extended neck, cast iron body, bronze alloy disc, stainless steel stem equal to Crane 14, Jenkins 232E, Milwaukee ML-1233-E, Stockham LG711BS3E. Provide lever handles on valves 12" and smaller and gear operators on valves larger than 12".

G. Hose end drain valves shall be gate valves with 3/4" hose thread adapter screwed or soldered into valve.

H. Manual balancing valves, non-calibrated-semi-steel body, neoprene coated, eccentric plug, wrench operator, straightway, memory stop 175 #wog rating.

1. 2" and smaller, screwed ends - Homestead 1512; DeZurik 118S; OIC 811; Milwaukee BBFS100.
2. 2-1/2" and larger, flanged ends - Homestead 1522 and 3" and 4", 1232 larger; DeZurik 118F, Illinois Products Series 5000.

I. Calibrated Balancing Valves - calibrated for flow balancing, pressure tapping takeoffs, positive shut-off valve with memory stop. Valves shall be supplied with preformed Polyurethane insulation cover.

1. 2" and smaller, screwed ends - Armstrong CBVI; Illinois Series 6000.
2. 2-1/2" and larger, flanged ends - Armstrong CBVII; Illinois Series 6000. (Note: Illinois flow measuring device larger than 1-1/4" must be accompanied by balancing valve

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series 5000.

3. A compatible portable flow measurement meter shall be furnished to the owner at the end of the job.

J. Automatic Flow Control Valves:

1. Autoflow, Griswold, or equal, pressure compensating flow control valves in one piece configuration consisting of ground joint union and factory-set flow control unit.
2. Valves shall be brass or stainless steel.
3. Valves must be marked to show direction of flow.

2.09 VIBRATION ISOLATION DEVICES

- A. Acceptable: Amber / Booth, Consolidated Kinetics, Korfund, Mason, VECO, and Vibration Mountings and Controls, Inc.
- B. Supply all vibration isolation devices from a single manufacturer.
- C. Select vibration isolation equipment to give uniform loading and deflection, according to weight distribution of equipment.
- D. Spring isolation, generally: spring diameter not less than 0.8 of spring operating height. Provide springs with a minimum additional travel to solid equal to 50% of the rated deflection. Select spring with ratio of horizontal spring constant to vertical spring constant between 1 and 2.
- E. Un-housed Spring Type: Provide with leveling bolts for attaching to equipment, vertical resilient limitstops with a minimum clearance of 2" maintained around restraining bolts and between the housing and spring, limit stops out of contact during normal operation. Size for 1" static deflection.

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- F. Vibration Hanger: Provide with a steel spring and a double deflecting neoprene element in series. Elastomer element with a minimum static deflection of 1/4"; steel spring static deflection of 1", except for the two isolators nearest the vibrating equipment with a static deflection of 1-1/2 times, and equal to, the static deflection of the isolated equipment, respectively. Install with spring element concentric to rod. Isolate hanger rod from steel housing with neoprene bushing.

2.12 TEST PLUGS

- A. Universal National, 2" N.P.T. brass body, with neoprene test plug valve insert.
- B. Acceptable Manufacturers: No. 700 Pete=s Plug or equal.

2.13 PIPING IDENTIFICATION

- A. General: Install color coded identification and direction markers after completion of painting and thermal insulation work unless otherwise noted, all in accordance with ANSI Standard A13.1, 1975.
- B. Materials: Equal to W.H. Brady Co. cataloged systems. Black stencil.
- C. Locations:
 - 1. Mechanical Equipment Rooms:

Within 18" of each point of entry and exit from all rooms.

Withing 3 feet on each side of each 90-degree elbow, tee, and connection to equipment or vessel.

At not over 20 foot intervals, measured along centerline of pipe.
 - 2. Above Suspended Ceilings:

Within 18 inches of each valve or valve assembly.

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At tees, identify both main and branch within 3'-0" of tee.

Within 3 feet of each 90-degree elbow.

3. Piping Concealed in Chases or Shafts: Identify each pipe visible through access door or panel.

4. Piping exposed in rooms other than Mechanical Equipment Areas:

Omit identification on piping 2 inch size and smaller exposed at connections to equipment or plumbing fixtures.

With the above exception, identify at not less than one point each piping run visible in each room, with identification at not over 20 foot intervals measured along centerline of pipe.

2.14 VALVE IDENTIFICATION

- A. General: Valves shown on drawings except those isolating individual pieces of equipment shall be identified with brass tags and chart listing all valves by numbers. Each valve identification tag shall be 18-gauge polished brass, 1-1/2 inch diameter with service indicated by 1/4 inch, stamped, black-filled letters and valve number indicated by 7/16-inch stamped, black-filled numerals. Tags shall be fastened to valves with meter seals, brass >S= hooks or brass jack chain to permit easy reading.
- B. Identification: Each valve tag shall have an identifying letter designating the system, and an identifying number designating the valve. Identifying letters shall be those utilized in the Legend.
- C. A chart of all valves showing the valve identification number, location, purpose, and / or special information shall be mounted in an aluminum frame under 1/8" sheet plastic and secured to a wall as directed. Valve chart wording and numbering shall be approved prior to fabricating tags.
- D. Manufacturer: Tags shall be as manufactured by W.H. Brady Company, Seton Name Plate Corporation, or Markem Corporation.

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2.15 NAMEPLATES

A. General: Provide for all equipment, motor starters, remote push-button stations, insertion type thermostats, remote bulb thermometers, filter gauges, remote pressure gauges, fans, pumps, equipment, and panel mounted controls. Submit identification number and wording review by engineer. b

B. Designation: The name of each piece of equipment or usage shall be etched in 1/4" maximum, 1/8" minimum high letters and mounted on or adjacent to piece of equipment.

C. Type: White core black or red Bakelite secured with epoxy glue.

2.16 MOTORS

Provide motors for all equipment furnished under Mechanical Sections unless otherwise specified. Motors shall operate using electrical characteristics as shown on the electrical drawings and as specified. Motors shall be Louis-Allis, Gould, Westinghouse, General Electric, or Emerson, except where furnished as part of packaged equipment.

Standards: Except where otherwise specified, motors shall be manufactured according to NEMA Standards. They shall be NEMA Design B, Insulation Class B or F, 40-degrees C. ambient and 40-degrees C. rise. Hermetic motors shall be manufactured according to ARI Standards. Motors 2 HP and larger shall be high efficiency, similar to Gould E plus.

A. Sizes:

1. Motors with standard NEMA Electrical characteristics shall be selected for the design brake horsepower without overload current at rated voltage.

2. Motors with special electrical characteristics, such as hermetic refrigeration motors, shall be selected to produce the brake horsepower required for the specified load without overload current at rated voltage.

B. Enclosures: Motor enclosures shall be open drip-proof, except where otherwise specified. Motors for equipment installed where subject to weather shall be fan cooled, totally enclosed,

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weatherproof type.

- C. Nameplates: Motors shall have a nameplate showing the specified nominal system voltage as nameplate rated voltage. Each motor shall be guaranteed to operate satisfactorily at the specified nominal system voltage, plus or minus 10%.

2.17 STARTERS

- A. Furnish all starters (except where included in motor controls centers), contractors, motor switches, and start-stop stations. Where located inside the building, starter and motor enclosures shall be NEMA type 1 general purpose, and where located outside the building, shall be NEMA type 3R except where otherwise noted on the drawings. See Electrical Division for motor control centers.
- B. Three phase motors shall be provided with magnetic across-the-line starters with overload protection on each phase. Furnish starters with hand-off-automatic selector switch and reset button in cover.
- C. Single phase motors less than 2 HP shall be provided with relays or switches with overload protection.
- D. Equipment furnished with factory installed motor starter units shall also be equipped with individual motor branch circuit protective devices interconnected on their line sides to lugs sized to receive a feeder with minimum ampacity of 125% of total connected load.
- E. Starters shall be Allen Bradley, Cutler Hammer, Square-D, General Electric, Westinghouse, Jocelyn Clark, or equal.

2.18 STEEL EQUIPMENT BASES AND SUPPORTS:

- A. Fabricate from steel structural shapes by welding. Where members must be removable, assemble with bolted joints.
- B. Form corners in angle frames with joints mitered, welded, and ground smooth.
- C. Finish steel bases and supports in 2-part rust resistive oil paint system with primer and top

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coat to light gray color.

PART 3 - EXECUTION

3.01 SLEEVES

- A. Sleeves shall be spaced sufficient distance from adjacent walls and other sleeves so that insulation, floor, wall, and ceiling plates may be installed without cutting insulation or plates.
- B. Sleeves through slabs and outside walls below grade shall be caulked water-proof. Caulk other sleeves in floor slabs with non-shrink grout or concrete.
- C. Piping passing under column footings, or under or through wall footings, foundations or retaining walls shall be provided with a relieving arch, or an iron pipe sleeve two pipe sizes greater than the pipe passing through.
- D. Provide sleeves for piping passing through masonry walls, partitions, floors, and roofs except for cast iron piping which may be built into masonry walls and partitions.
- E. Cut wall sleeves full thickness of walls.
- F. Where pipes passing through sleeves are to be covered, size sleeves large enough to allow for full thickness covering.
- G. Omit pipe sleeves in concrete slabs on grade.
- H. Provide sleeve lay-out for slabs above grade, including roof, for approval by structural engineer and architect showing location and size before slabs are formed.
- I. Sleeve system such as Pro-Set or equal shall be installed in accordance with manufacturer=s recommendations.
- J. Annular space between sleeve and pipe shall be packed with approved fire stopping material. See AFire Stopping@ in Section 15010.

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- K. Provide sleeves on thermally expandable piping penetrations through fire or smoke rated gypsum board construction partitions. The sleeves shall extend a minimum of 3" on either side of the partition and the annular space shall be filled with a fire stopping material in such a way as to maintain a fire endurance rating equivalent to that of the adjacent wall.
 - L. Isolate non-ferrous piping from slab on grade with armafex or equal insulation .
 - M. Piping penetrations made AFTER installation of wall shall be cored with a coring machine. Block shall not be knocked out with a hammer.

3.02 SUPPORT OF PIPING

- A. Support steel piping 1" and smaller on centers not more than 8' apart. Support piping larger than 1" on centers not more than 10' apart.
- B. Support copper tubing 1-1/4" or larger size not more than 10' apart. Support copper tubing in sizes 1" and smaller not more than 6' apart.
- C. Support soil, waste, and vent stacks and inside downspouts at the base by means of heavy hangers or riser clamps close to the bottom of the stack.
- D. Support each horizontal length of cast iron pipe, not counting the fitting, not exceeding 10'-0" on centers.
- E. Support all piping within 1' of each change in direction and at each branch connection.
- F. Provide pipe hangers with rods and supports proportioned to the actual size of pipe supported with allowance for weight of insulation and contents.
- G. Support hot and cold water plumbing piping in spaces back of plumbing fixtures with heavy duty ABS brackets and u-bolts secured to cast iron stacks.
- H. Provide insulation protectors for insulated piping supported on gang or clevis hangers.
- I. Do not penetrate exterior walls of the building below grade with support bolts.

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- J. Do not run piping over or within 3'-6" of electrical switchgear or panelboards in mechanical spaces. No piping is permitted in space dedicated to electrical equipment rooms.
 - K. Condensate drain piping shall be pitched in the direction of flow not less than 1/4" per foot.
 - L. Provide strainer ahead of each pump suction, trap, and automatic valve.
 - M. Provide unions in piping at valves and equipment connections.
 - 1. Screwed Piping - Malleable iron, ground joint, brass seated, 2" pipe size and smaller.
 - 2. Welded Piping - Flanged with same gaskets as at pipe fittings, 2-1/2" pipe size and larger.
 - N. Bed body of piping underground on solid ground.
 - O. Install air piping with slope of 1" fall per 40' toward receiver of blow off point.
 - P. Provide vibration isolation device on first three pipe hangers from rotating mechanical equipment over one horsepower.
 - Q. Vertical piping shall be supported at each floor. Riser clamp must rest firmly on floor - not on sleeve.
 - R. Perforated strap hanger or similar material will not be permitted.

3.03 PROCEDURES FOR PIPE JOINTS

- A. Threaded Pipe Connections:
 - 1. Ends of pipe shall be cleaned and reamed.
 - 2. Joints shall be made with pipe thread lubricant suitable for service intended, applied to male threads only.

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- B. Soldering of Pipe:
1. Ends of pipe shall be cleaned with sand cloth or wire brush.
 2. Flux shall be evenly applied to both pipe end and fittings. Flux shall be of type recommended by its manufacturer for the type of solder used. Brazing flux shall be used for solder or 1000-degrees F. or higher melting point.
 3. Solder shall completely fill socket of joints. **Do not back up joints with solder dissimilar to that used in joints.**
- C. Mechanically Formed Tee Connections:
1. Mechanically extracted collars shall be formed in a continuous operation consisting of drilling a pilot hole and drawing out the tube surface to form a collar having a height of not less than three times the thickness of the tube wall. The collaring device shall be fully adjustable as to insure proper tolerance and complete uniformity of the joint.
 2. The joining branch tube shall be notched and dimpled in a single process so as to set the proper penetration of the branch tube into the fitting to assure a free flow joint.
 3. All joints shall be brazed in accordance with the Copper Development Association Copper Tube Handbook using B-cup series filler metal. Note: Soft soldered joints will not be permitted.
 4. All mechanically formed branch collars shall be as approved by local National Standard Plumbing Code, B.O.C.A., I.A.M.P.C., or S.B.C.C.
- D. Cast Iron Pipe - Hub and Spigot: Joint shall be firmly packed with white oakum and filled with molten lead not less than one inch (1") deep. Joints shall be well caulked. For gasketed joints, hub, spigot, and gasket manufacturer to prevent damage and facilitate joining.
- E. Cast Iron Pipe - No Hub: Couplings shall be used to join pipe in accordance with pipe manufacturer's recommendation and shall be installed using torque wrench made for this purpose. Vent piping shall be joined by standard no-hub couplings. Soil, waste, and

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rainwater piping shall be joined with heavy duty, Husky or Tyler, no-hub couplings.

3.04 UNDERGROUND PIPING

- A. Underground ferrous piping unless noted otherwise shall have factory applied corrosion resistant coating. Fittings and weld joints shall be coated with product specified here-in.

3.05 UNIONS

- A. Provide unions at connections to valves and equipment to allow dismantling of pipe connections without cutting pipe.
- B. Flanged connections are considered as unions.

3.06 REDUCERS

- A. Use eccentric reducers for all pipe size changes in horizontal straight thru piping 1 1/4" and larger.
- B. Eccentric Reducers
 - 1. Reducers shall be installed with flat on top in chilled water and hot water piping systems.
 - 2. Reducers shall be installed with flat on bottom in steam piping.
- C. Concentric reducers shall be used only in vertical piping.

3.07 INSTALLATION OF INSTRUMENTATION

- A. Provide water pressure gauges and gauge manifolds, gauge connection points, thermometers and wells, test wells, and instrument ports in locations specified or indicated on the drawings.
- B. Mount instruments in locations and positions to give accurate reading of the measured condition and to be readable from the floor. Locate pairs of instruments to allow reading of both from same point.

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- C. Mount instruments for reading pressure drops with taps at points for which published pressure drop data are available.
 - D. Locate test walls with bore more than 30-degrees above horizontal to permit retention of heat transfer material. Locate test wells at chillers to allow use of glass thermometers up to 24" long.
 - E. Select wells for thermometers in piping with 3-1/2" stems for 6" and smaller piping and 6" stems for 8" and larger piping, with extension necks of length to extend clear of insulation.
 - F. Instrument Locations:
 - 1. Where indicated on the drawings.
 - G. Calibrate and adjust instruments after installation. Set up air filter gauges for clean filter pressure drop.
 - H. Mount pressure and temperature measuring stations in side of tee or in coupling on large pipe.

3.08 TESTING

- A. All piping shall be tested to the pressure and for the period of time listed, and shall hold the specified pressures at the low point of the system for the specified length of time without perceptible loss of pressure or leakage.
 - 1. Space Heating, Chilled Water, Hot Water, Compressed Air, Cold Water, Domestic Hot Water, and Hot Water Circulation Piping: One hundred twenty-five pounds hydrostatic pressure for two hours (125 psig - 2 hours).
 - 2. Soil, Waste, and Vent Piping: A water test shall be applied to the system in sections. Each opening shall be tightly plugged except the highest opening of the sections, at least the upper ten feet of the preceding section shall be retested so that all but uppermost ten feet of the system shall have been submitted to a test of not

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less than 10' of water. The water level shall remain constant for not less than 15 minutes; the system shall be tight at all points.

3. Compressed Air Piping: 175 PSIG hydrostatic pressure for two hours.
4. Gas Piping - fifty pounds of air pressure for one hour. In addition each joint and connection shall receive a soap bubble test.
5. Correct or replace items shown by test to be defective and retest to assure tightness.

3.09 CLEANING

- A. All water piping shall be thoroughly flushed. All strainers and aerators shall be cleaned after flush.
- B. After cleaning, fill systems with water, vent air from piping and equipment, start pumps and verify flow.

3.10 DISINFECTIONS OF PIPING

- A. All domestic water supply lines shall be disinfected BEFORE THEY ARE PLACED IN OPERATION. The system shall be filled with a chlorinated water solution containing not less than fifty (50) parts per million of chlorine solution. Following a contact period of not less than twenty-four (24) hours, the chlorinated water shall be flushed from the system with clear water until the residual chlorine content is not greater than two-tenths (0.2) parts per million.
- B. Contractor shall submit to the Architect, in triplicate a letter of certification from an independent Testing Lab acceptable to the Georgia Department of Public Health stating that above disinfection procedure has been completed satisfactorily. **b**

3.11 DIELECTRIC CONNECTIONS

- A. Use dielectric couplings to join pipe of dissimilar metals.

3.12 INSTALLATION OF STEEL EQUIPMENT BASES AND SUPPORTS

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- A. Establish base location, coordinate for 4" housekeeping pad under each base, anchor base to pad.

 - B. Suspended Equipment
 - 1. Attach steel members to structure over suspension points on equipment.
 - 2. Install hanger rods and bolts at suspension points, attached to steel members.
 - 3. Mount equipment with rods and bolts to suspension points.
 - 4. Adjust hanger rods and bolts to make equipment level.
 - 5. Make screwed attachments secure by double-nutting.

 - C. Coordinate installation of bases and supports with vibration isolation requirements where required.

3.13 PUMP SUCTION DIFFUSERS AND STRAINERS

- A. Contractor to furnish and install pipe support leg positioned to relieve any stress on pumps.
- B. Brass start-up strainer shall be removed after flush and reasonable running period and before system balancing procedure.
- C. Allow ample space for removal and service.

3.14 VALVES

- A. All gate, globe, butterfly, and ball valves shall be installed with stems above the horizontal position.

3.15 AIR VENTS

- A. Automatic Air Vents shall be installed on Air Purger and as indicated on plans. Manual Air Vents shall be installed at all high points in piping, at all coils and as required for purging system whether shown or not.

- B. Automatic air vents shall be piped to drain.

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C. Install a 1/4" copper gooseneck on manual air vents.

3.16 Adjust pressure reducing valves serving compression tanks to maintain between 5 and 10 PSIG at highest point in the system. **b**

3.17 VENT PIPING

A. Provide vent piping from the relief opening of each gas pressure regulator and gas pressure switch in the boiler gas trains to a point outside the building at least 10' above finished grade, and at least 5' from any building opening. The vent connection to each regulator or switch shall be increased when 2 or more appliances have been connected so that the common vent will be equal or greater than the sum of the cross sectional areas of all individual vents involved. The common vent shall be a minimum of 3/4" size. Vents from regulators in high pressure gas piping, above 2@ psig, shall each be run independently to the exterior. Terminate vent lines with an OPW 113 flash arrestor.

END OF SECTION

**SECTION 23 06 30
HEATING, VENTILATION & AIR CONDITIONING**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER

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PART 1-GENERAL

1.01 Scope

- A. Division 1 of these Specifications is incorporated herein.
- B. The work covered by this division of the Specifications shall conform to all ordinances and regulations of the County, City, State and/or any Authority having jurisdiction. The work shall conform to the latest issue of Pamphlet No.54, 90A and 96 of the National Board of Fire Underwriters Building code, except where other codes exceed these requirements.

1.02 Obtain all necessary permits and inspections required for the installation of this work and shall pay for all charges incidental thereto. Deliver to the Architect all certificates of said inspection issued by the authorities having jurisdiction.

1.03 Equipment Installation and Workmanship:

- A. The Architect reserves the right to direct the removal of any item which in his opinion does not present an orderly neat and good workmanship appearance, provided such items can be installed in an orderly manner by the usual methods. Such removal and replacement shall be done when written instructions are received from Architect.
- B. In no case shall any equipment be installed contradictory to the manufacture=s recommendations.

1.04 Submit catalog data in six (6) copies for approval, as described in Section 15010, paragraph 1.06.

1.05 The Contractor shall be responsible for a trouble free system in every respect for twelve (12) months after final inspection.

1.06 Test, Adjust and Balance: (To be monitored by Architect/Engineer)

Contractor shall test system and submit balance report with three copies to Architect/Engineer for approval. Testing company shall be member of AABC or NEBB.

- A. Report all CFM air quantities.
- B. Report test on new roof top unit.
- C. Report calibration point on controls.
- D. Report outside Air CFM.

1.07 Guarantee:

- A. All work furnished under the HVAC trade shall be guaranteed for a period of one year form date of acceptance thereof to be free of defects in workmanship and materials.
- B. The Contractor shall agree to replace the refrigeration compressor assembly in which defects in material or workmanship become manifest under normal conditions of use and service of a period of 5 years, whereby it fails to operate and which by examination shall be disclosed to be faulty or defective.

PART 2-PRODUCTS

**SECTION 23 06 30
HEATING, VENTILATION & AIR CONDITIONING**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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2.01 Air Conditioning Unit:

- A. Unit shall have factory assembled, piped, internally wired and fully charged. All units shall be designed to operate at outdoor ambient temperatures as high as 100 degrees F. Units certified by ARI Standard 210 and 270. National Rating Standard of the Air Conditioning and Refrigeration Institute. heating/Cooling units design is certified by American Gas Association (A.G.A.) specifically for outdoor applications using propane or natural gas. All cooling units are Underwriter=s Laboratories listed. All units shall be designed for indoor installation. Units have welded shell, 3600 RPM compressors.
- B. Casing: All access panels are gasketed and provided with fasteners and handles. One inch, one pound density foil-faced glass fiber insulatin is on heat exchanger section. Same composition mat-faced insulatioon is in evaporator section.
- C. Refrigeration Controls: Refrigeration controls include condenser fan, evaporator fan and compressor contactors, and 24 volt transformer. Safety controls include winding thermostat and compressor overloads. Cycle guard prevents unit cycling on overloads and safety controls to be reset at thermostat inside the building. Each circuit of the unit has a separate set of refrigeration controls.
- D. Compressor: All units have welded shell hermetic compressors, 3600 RPM. Crankcase heaters shall be required on all compressors.
- E. Evaporator Coil: Units have a 2-row coil. All coils have seamless copper tubing of 3/8" OD, mechanically bonded to heavy duty aluminum fins. Factory pressure and lead tested at 300 PSIG. Expansion valves standard.
- F. Drain Pan: Evaporator pan internally sealed insulated. Threaded drain connection in evaporator section.
- G. Condenser Coil: 5-ton units have a 2-row coil. P:rimary surface 3/8" OD seamless copper tube. The secondary surface is mechanically bonded to heavy duty aluminum fins. Factory pressure and leak tested 425 PSIG.
- H. Indoor Air Fans: Belt driven, forward curved, centrifugal type fans equipped with adjustable motor sheave standard. The motor is thermally overload protected. Permanently lubricated fan motor bearings. Motor/fan assembly completely isolated from unit with rubber mounts.
- I. Condenser Fans: Direct drive, statically and dynamically balanced propeller fans. Weather-proof fan motors UL listed for outdoor use. Units have built in thermal overload protection. Permanently lubricated motor.
- J. Heat Exchanger: Use corrosion resistant embossed, formed and seamed 18 gauge aluminum steel. Factory tested for gas leaks. Stress relieved, free floating design. Located upstream of cooling coil.

2.02 Split-System Heat Pump Units: (Open)

2.03 Indoor Section: (Open)

2.04 REFRIGERATION PIPING

- A. Refrigeration piping shall be seamless copper tubing, dehydrated type AACR,@ with wrought

**SECTION 23 06 30
HEATING, VENTILATION & AIR CONDITIONING**

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copper long radius elbows, made up with sweat type silver solder joints. Vibration eliminator pipes where recommended by the compressor manufacturer or where required to prevent transmission of vibration shall be of the bellows type, with bradied bronze wier protection. Refrigerant pipe design and sizes shall be in strict conformance to the recommendations of the equipment manufacturer, and to the Equipment Standards of the Air Conditioning and Refrigeration Institute, Inc., except that Freon suction risers shall be for a gas velocity not less than 2,000 feet per minute.

- B. Oil lift traps shall be required at the base of all vertical riser pipes or as recommended by the manufacturer.
- C. Refrigeration pipe insulation: The suction piping shall be insulated with 3/4" thick Armstrong Armiflex, foam rubber pipe insulation.

2.05 REFRIGERANT AND OIL

- A. The entire refrigerant charge shall be of the correct amount of pounds, as recommended by the system manufacturer. The Contractor shall be required to perform all pressure test, vacuum test, halide torch test, and operation test. The Contractor shall guarantee the refrigeration piping system free from leaks for one year. Any refrigeration leaks which are detected within the warranty period shall be repaired by the Contractor at no additional charge to the owner. Any refrigerant which leaks out shall be replaced at the time of repair.
- B. Each refrigeration system shall be furnished with a complete charge of lubricating oil for the compressor crankcase. The oil shall be of the type recommended by the compressor manufacturer.

2.06 SUCTION LINE ARMAFLEX INSULATION:

- A. Rubber Pipe Insulation: Shall be Armstrong Armaflex or approved equal condensate drain pipe-1/2" thick.
Refrigeration Suction Pipe: 3/4" thick. As much of the insulation as possible shall be slipped on to the piping as the piping is being connected in order to keep from cutting the insulation. All butt ends and any necessary longitudinal joints shall be sealed with rubber based adhesive.

2.07 ABOVE GROUND DUCT WORK

- A. (A/C Ducts) All duct work supply, return and exhaust except flexible run-outs shall be galvanized steel (cross break on all sides). All duct work shall be new and securely suspended and hung as per SMACNA Manual. All duct work shall be concealed from view above ceiling. Follow good sheet metal practice as outlined Chapter 1 of 1972 ASHRAE System 1970 (Forced Air Systems).

END OF SECTION

SECTION 26 00 00
BASIC MATERIALS AND METHODS

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

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PART 1 - GENERAL

- 1.01 This section covers basic electrical materials and wiring, and all items of equipment not otherwise specified under other sections of the Specifications.
- 1.02 **APPLIANCE AND EQUIPMENT CONNECTIONS**
- A. Provide PVC insulated flexible cord sets for all cord and plug connected contract building appliances and equipment. Cords shall be sized in accordance with electrical circuits indicated on the drawings. Multiple conductor cords shall be type ASO@ cable with PVC jacket and green insulated ground conductor.
- 1.03 **MOTORS**
- A. Motors except where specified herein, shall be furnished under other sections of the Specifications. Confirm motor locations.
- B. Motors shall be of the voltage and phase characteristics as shown on the drawings.
- C. The horsepower ratings indicated are for guidance and do not limit the equipment size. When electrically driven equipment furnished under other sections of these Specifications differs from the contemplated design, the Contractor shall be responsible for the necessary adjustments to the wiring, disconnect devices, and branch circuit protection to accommodate the equipment installed.
- 1.04 **MOTOR WIRING**
- A. Furnish and install power wiring to motors and mechanical equipment. Wiring into motor or equipment terminals shall be complete with connections through associated disconnect switches, and motor starters, including branch circuit power line controlling devices.
- B. Receive, store, and install individually mounted starters and controllers for motors.
- C. Wiring shall be in conduit, with a final connection to rotating equipment made through a section of PVC jacketed flexible conduit.
- D. Multi-speed, reversible, and reduced voltage start motors shall be connected as recommended by equipment manufacturer.
- E. Motors shall be grounded as specified under AGrounding System@.
- 1.05 **CONTROL WIRING**
- A. Control wiring and empty conduits for control wiring to be furnished under this section shall be furnished only to the extent indicated on the electrical drawings.

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BASIC MATERIALS AND METHODS

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-
- B. Control wiring is defined as that wiring which provides connections between control circuit elements and does not provide the power circuit into motor or heating equipment terminals. Where a control device, such as push-button, thermostat, firestat, is to be installed in the branch circuit power lines, these devices shall be received, stored, and installed as indicated the drawings and called for under AMotor Wiring@ and AElectric Heaters@
 - C. Coordinate the installation of branch circuit power line control devices with requirements in other sections of the Specifications.

1.06 RATED PENETRATIONS

- A. All rated wall and floor penetrations shall be sealed with a UL listed sealant to maintain the rating.

PART 2 - PRODUCTS

2.01 PLYWOOD BACKBOARDS

- A. Provide flame retardant plywood backboards for distribution equipment surface mounted in equipment areas such as mechanical rooms, electrical closets, and equipment rooms.
- B. Backboards shall be minimum 3/4" thick and sized to accommodate equipment indicated on the drawings.
- C. Secure backboards to the building structure and paint with two coats of fire resistant flat black Duron paint.

2.02 DISCONNECT SWITCHES

- A. Disconnect switches shall be quick-make, quick-break Underwriters= labeled Heavy Duty safety switches. Switch ratings shall be for the applied voltage and current.
- B. Disconnect switch enclosures:
 - 1. For indoor - NEMA 1 general purpose.
 - 2. For outdoor - NEMA 3R raintight.
- C. Manufacturers: General electric, Westinghouse, ITE, Square D.
- D. Designate with permanent labels, the maximum allowable fusing capacity for fusible switches that are applied with conductors rated less than the switch rating.
- E. Disconnects for 120V motors 2 HP or less shall be horsepower rated toggle switches in steel outlet boxes.

2.02 FUSES

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- A. Install fuses in fusible protective devices.
 - B. Provide NEC, dual element time-delay, or current limiting, fuses for specific applications only where indicated on the drawings.
 - C. Fuse specification - See Section 16181.

2.03 LABELS

- A. Provide labels on the outside face of panelboards, switchboards, disconnect switches, motor starters, transfer switch, and contactors.
- B. Labels shall be a micarta nameplate with 2" high white letters. Nameplates shall be red on emergency equipment and black on normal equipment. Secure labels with screws or pop-rivets.

PART 3 - EXECUTION

3.01 UTILITY COMPANY COORDINATION

- A. Coordinate with the electrical Utility and verify location and orientation of service equipment and associated metering equipment.
- B. Provide and install all materials designated by the Electrical Utility to be furnished by ACustomer@. This may include but not be limited to, compression lugs for transformer secondary connection, concrete pad for serria transformer, grounding material, meter base and empty conduits for primary lines.

3.02 BRANCH CIRCUITS

- A. Provide dedicated neutral for any branch circuit serving dimmable lighting fixtures and copying machines.

END OF SECTION

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PART 1 - GENERAL

1.01 GENERAL

1.01 Where the word "conduit" is used in this specification, it shall mean thick wall rigid metal conduit, rigid non-metal conduit or electrical metallic tubing. Where the words "flexible conduit" are used, it shall mean jacketed liquid-tight or unjacketed flexible metal conduit.

1.02 Conduits shall bear the Underwriters Laboratories listing mark.

1.03 Conduits for branch circuit wiring shall be 2" or larger.

PART 2 -- PRODUCTS

2.01 TUBULAR CONDUIT

A. Non-metallic conduit shall be Schedule 40, 90-degrees C. Rated polyvinyl chloride, UL listed for underground burial.

B. Metallic conduit shall be galvanized steel.

C. Intermediate Metal Conduit (IMC) may be used in lieu of rigid metal conduit. IMC shall be hot-dipped galvanized steel manufactured in accordance with UL Standard #6 or # 1242.

D. Flexible Conduit:

1. Flexible conduit shall be a minimum length of 8" and at least six times the trade diameter for conduit 1/2" or larger.

2. Flexible conduit for connections to lighting fixtures shall be 3/8" diameter and minimum 48" and a maximum 72" in length, and shall be non-jacketed with a continuous strip cold rolled galvanized steel core.

3. Liquidtight flexible conduit shall be a minimum 2" diameter.

4. Liquidtight and non-jacketed flexible conduit shall be manufactured by Electric-Flex,

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Anaconda or Flexi-guard.

- E. Steel conduit shall be manufactured by Republic, Wheatland, Allied, Triangle, or Steel duct.
- F. PVC conduit shall be manufactured by Carlon, Sedco, Contex, or Certainteed.

2.02 FITTINGS

- A. Where electrical metallic tubing is used indoors, connectors and couplings shall be steel thread set screw. Make all joint connections tight for a continuous low impedance ground return.
- B. Where electrical metallic tubing is used outdoors, connectors and couplings shall be UL listed rain tight, steel compression type. Connectors shall be complete with insulated throats.
- C. Cast or split threadless couplings are not acceptable.
- D. Connectors and couplings for rigid steel or intermediate metal conduit shall be steel threaded type.
- E. Conduit passing through concrete or masonry walls underground shall be complete with watertight wall seal gland fittings, OZ type WSK. Ground bushings shall be OZ type BLG.
- F. Connectors and couplings shall be manufactured by Thomas and Betts, Efor, Raco, Appleton, Steel City, ETP, or Erickson.
- G. Flexible Conduit:
 - 1. Connectors for flexible conduits shall be UL listed with insulated throats.
 - 2. Connectors for liquidtight conduit shall be compression type, made of steel and provided with O-ring. Connectors metal ferrule shall provide positive ground circuit continuity.
 - 3. Connectors for non-jacketed flexible conduit shall be squeeze-type and made of malleable iron.

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4. Flexible conduit connectors manufacturers shall be Raco, Appleton, Efcor, Thomas and Betts, or Ideal.

H. Where a conduit run crosses a structural expansion joint, provide expansion fitting, OZ type DX. The expansions fitting shall be electrically continuous or the contractor shall install a bonding jumper across it.

PART 3 - EXECUTION

3.01 WORKMANSHIP

A. Conduit bends and offsets shall be made with conduit hickey or conduit bending machine. Crushed or deformed conduits shall not be installed.

B. Exposed conduits shall be run parallel or at right angles to adjacent walls.

C. Prevent lodgement of plaster, dirt or trash in conduits, boxes and fittings.

D. Store conduit in racks above ground.

3.02 INSTALLATION

A. Provide unjacketed flexible conduit connections to lighting fixtures in lift-out type ceiling to an outlet box located above the ceiling.

B. Provide liquidtight flexible conduit for short final connections (3' maximum) to rotating or vibrating machinery and equipment including transformers.

C. Provide non-metallic (PVC) conduits for outdoor lighting branch circuit wiring, secondary service conductors between power company transformer and main switchboard, and at other location where specifically indicated on drawings.

D. Concealed Conduit:

1. Conduits shall be concealed except as noted or shown otherwise.

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2. Concealed conduits shall be above ceiling, in building walls, or in floor construction.
3. Concealed conduits in building walls shall be installed vertically except when:
 - a. The wall is or framing stud and gypsum board construction, and
 - b. Adjacent outlet boxes are within 10' of each other; and
 - c. Outlets are in common wall (do not turn corners; and
 - d. Removing the horizontal conduit will not affect upstream or downstream devices (run shall be a dead end), and
 - e. The total horizontal run does not exceed 20',
 - f. A maximum of four horizontally connected outlet boxes are on each vertical conduit.
- E. Conduit risers in masonry-block walls shall be installed before walls are built and run vertically in walls. Where existing block walls are to have conduit, run in furring space before gypsum board is installed.
- F. Conduits shall be grounded as provided by the National Electrical Code and these specifications. Conduits installed below grade or with non-galvanized male threads shall have threads painted with ALPS Zinc Rich@.
- G. Conduits installed underground or in on-grade floor slabs shall be rigid metal conduit with threaded couplings, except where otherwise noted.
- H. Rigid metal conduit shall be used for all runs likely to be subject to physical injury.
- I. Feeder circuits (panelboards, motor control centers, etc.) shall be rigid metal conduit or intermediate metal conduit.
- J. Conduits run above ceilings shall be supported from the building structure, independent of ceiling system support. Install on bottom of bar joists or structures where practical, otherwise secure conduit above ceilings with threaded rods and hangers. Parallel groups of conduit may be supported from a trapeze channel with each conduit secured to the channel with a spring clip device. Supports shall occur on minimum 10 foot centers and within 3 feet of an outlet or junction box.

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- K. Feeders and branch circuit conduits installed exposed shall be supported from the bar joist or structure. Suspension below bar joist and structure or channel supports is acceptable up to 12"; greater suspension must be approved by the Architect.
- L. Conduits installed underground outside building foundations shall be a minimum of 24" below finished grade and shall be encased in 3000 psi concrete envelope with 4" coverage; except conduits for outdoor lighting branch circuit wiring, telephone service, and cable television service, which shall be run unencased direct buried at a minimum depth of 30" below finished grade.
- M. Conduit larger than 3/4" installed in ground floor concrete slab shall be covered top and bottom with a minimum of two (2) inches of concrete. Thicken slab by depressing waterproof barrier on gravel to provide minimum cover, or run conduit under the concrete slab and encased in concrete.
- N. Conduit installed in structural concrete slabs shall be in accordance with the requirement of the ACI 318-63 Building Code Requirement for Reinforced Concrete@ publications.
- O. Exposed conduits below 8' shall be rigid metal conduit. Support conduits on the ceiling or wall by means of the two screw galvanized clamps or trapeze hangers.
- P. Empty conduits shall have a Polyolefin line (200 lbs. Strength) pulled into conduit.
- Q. Seal unused conduit ends with plastic or metal caps.
- R. Elevated slab floor penetrations for conduit shall be provided with sleeves. Sleeves shall extend approximately one inch above finished floor slab and sealed tightly with fire safe insulation.
- S. PVC conduit shall not be installed indoors.

END OF SECTION

**SECTION 27 30 00
VOICE AND DATA COMMUNICATION CABLING**

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
JACKSON COUNTY ANIMAL SHELTER
MARCH 19, 2021

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section includes furnishing and installing all materials and providing all labor and supervision pertaining to Cat 6 Voice/Data Wiring support systems cabling, devices, devices, plates, equipment racks, active components and associated components.
- B. **QUALITY CRITERIA AND STANDARDS**
 - 1. Voice/Data support equipment shall comply with applicable UL, NEC, and NEMA standards and requirements and shall be UL-listed and labeled.

PART 2 – PRODUCTS

2.1 MATERIALS:

- A. Station jacks, faceplates, and associated components; furnished and installed by Contractor.
- B. Patch panels and type 110/66 punch-down blocks: furnished and installed by Contractor.
- C. Voice/data workstation cable: furnished and installed by Contractor.
- D. Associated materials and components:
 - 1. Backboard: Telephone and data backboards shall be ¾" thick B_D INT-DEPA plywood. Mount D finish toward wall. The backboard shall be divided so that each zone (voice/data) is clearly separated and marked from one another. The backboard shall be painted with 2 coats of fire-resistant white paint. Unless specifically indicated on the drawings, minimum backboard size shall be 4' x 8'.
 - 2. Cable support: Provide Cable Treys for all above-ceiling wiring throughout the entire building. Size as required – submit shop drawings for approval.

PART 3 – EXECUTION

3.1 INSTALLATION:

**SECTION 27 30 00
VOICE AND DATA COMMUNICATION CABLING**

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- A. Installation of Voice/Data workstation cable, station jacks, faceplates, and associated components, rack equipment, patch panels, and punchdown blocks is by the contractor.

END OF SECTION

SECTION 28 31 00
FIRE ALARM SYSTEM

CARTER WATKINS ASSOCIATES ARCHITECTS, INC.
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PART 1 - GENERAL

1.01 SCOPE

- A. Furnish and install a complete, new, proprietary fire alarm system as described herein and as shown on the plans IN THE EXISTING AND NEW PORTIONS OF THE SHELTER. The system shall be wired , connected, and left in first class operating condition.
- B. The products and installation shall conform to the requirements set forth in the following standards:
1. NFPA 70 (including article 760), current Edition
 2. NFPA 72, current Edition
 3. NFPA 101, current Edition
 4. The IBC International Building Code and IFC International Fire Code as amended and adopted by the local authority.
 5. State of Georgia Rules of Safety Fire Commissioner.

1.02 SYSTEM ARCHITECTURE

- A. The system shall consist of:
1. A complete microprocessor-based non-coded, closed circuit, completely supervised zone indicating fire alarm system to monitor hardwired inputs from normally open contact devices.
 2. Capacity:
 - a. Eight to thirty-two initiating device circuits with two spares.
 - b. Two to six indicating appliance circuits with two spares.
 - c. Five to fifteen amp power output.
- B. Circuit styles shall be NFPA 72 styles as follows:
1. Indicating device circuits: Style B.
 2. Indicating appliance circuits: Style Y.

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FIRE ALARM SYSTEM

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1.03 SYSTEM INITIATION

- A. System initiation shall occur when any initiating device is in alarm and when any fire suppression system is activated.
- B. Supervisory Condition: An alarm condition for any of the following items shall be considered a supervisory condition which is second priority to a fire alarm condition:
- C. Fire Alarm Condition: An alarm condition for any initiation device except those listed in the previous paragraph shall be considered a fire alarm condition.

1.04 AUTOMATIC EMERGENCY CONTROLS

- A. If a duct-mounted smoke detector is in the alarm condition, the air handling unit serving that duct shall be shutdown and all smoke dampers in that air handling unit system shall close. Provide control modules at locations coordinated with the Division 15 Control. The wiring distance from the control module to the AHU control or damper controls shall not exceed three feet.

1.05 OCCUPANT NOTIFICATION

- A. Upon system initiation, all evacuation signals shall activate. Provide Voice Annunciation, PA System and all requirements per NFPA and local authority.

1.06 FIRE DEPARTMENT NOTIFICATION

- A. Upon system initiation, a fire alarm condition shall cause activation of a supervised signal to notify the local fire department. Coordinate with the fire department and provide the proper city connection circuit whether reverse polarity, local energy, parallel telephone, shunt, or dry contact connection.

1.07 INTEGRITY MONITORING

- A. The system shall contain independently monitored initiation circuits. A fault in any one circuit shall not affect any other circuit. The alarm activation of any point shall not prevent the subsequent alarm operation of any other point.
- B. There shall be independently fused indicating appliance circuits for alarm notification devices.

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Disarrangement circuits of any circuit shall not affect the operation of other circuits.

- C. Ground fault detection on all circuits on either the plus or minus side.
- D. All alarm initiating wiring, signal circuit wiring, annunciator wiring and, control wiring to remote relays shall be monitored for integrity.
- E. The incoming power to the system shall be monitored for power failure. A green Apower on@ LED shall be displayed continuously while incoming power is present.
- F. The Control Panel Modules shall be electrically monitored for module placement and LED burnout.
- G. Any failure in wiring integrity or system disarrangement as described above shall be considered a trouble condition which is third priority.

1.08 CONTROL PANEL OPERATOR=S INTERFACE

- A. A control panel shall include an operator=s interface for annunciation and manual controls. The interface shall consist of a LED adjacent to each message.
- B. Under normal condition, the operator=s interface shall display a APOWER ON@ message.
- C. Should an abnormal condition be detected, the appropriate LED (zone number or trouble) shall flash. The panel audible signal shall pulse for fire alarm and sound steadily for trouble conditions.
- D. Alarm Silencing: Should the AAlarm Silence@ button be pressed, all audible fire alarm notification appliances shall be deactivated. An override of the automatic fire alarm notification shall be annunciated as a trouble condition.
- E. System Reset
 - 1. The ASystem Reset@ button shall be used to return the system to its normal state after all abnormal conditions have been remedied.
 - 2. Should an abnormal state continue to exist, then the associated notification and control functions shall not reset.

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F. Function Keys, Display of System Detail Information

1. System shall include panel mounted volt meters and ammeters for monitoring battery voltage and battery charge current.
2. The system shall have provisions for disabling and enabling all circuits individually for maintenance or testing purposes. Additionally, when disabled, ground isolation shall be implemented to aid in location and repair of any ground fault conditions.

G. System Trouble Reminder: Should a trouble condition be present within the system and the audible trouble signal silenced, the trouble signal shall resound at preprogrammed time intervals to act as a reminder that the fire alarm system is not 100% operational. Both the time interval and the trouble reminder signal shall be programmable to suit the owner=s application.

1.09 WALK TEST

- A. The system shall be capable of being tested by one person. The panel shall automatically reset itself after the alarm.
- B. The momentary disconnection of an initiating or notification appliance circuit shall be a trouble condition. The panel shall automatically reset itself.
- C. Any momentary opening of an initiating or notification appliances circuit wiring shall cause the alarm notification appliances to sound for 4 seconds to indicate the trouble condition.

1.10 QUALITY ASSURANCE

- A. Acceptable manufacturers shall be regularly engaged in the manufacture of fire alarm systems at least 5 years and have a fully equipped, factory trained and authorized service organization within 100 miles. Acceptable Manufacturers: Simplex, EST, Pyrotronics.
- B. The equipment supplier shall be regularly engaged in the manufacturer or shall be the manufacturer=s authorized representative and shall provide personnel factory trained and approved for installation, certification, final connections, programming, testing, training, warranty service, and maintenance.

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- C. Service availability: The supplier shall have on hand sufficient spare parts inventory, necessary test and diagnostic equipment, and have a fully equipped service organization capable of guaranteeing response time within 8 hours of emergency service calls, 24 hours a day, 7 days a week to service completed systems. Emergency shall be required for significant loss of coverage.
 - D. All materials, installation, and workmanship shall be guaranteed against defects for (1) one year from the start up and beneficial use of the system or installation certification, whichever is later.
 - E. The contractor shall guarantee all wiring and raceways to be free from mechanical or electrical defects for one (1) year from the startup and beneficial use of the system or installation certification, whichever is later.
 - F. Warranty service for the equipment shall be provided by the manufacturer's factory trained representative during normal working hours, Monday through Friday excluding holidays at no cost to the owner.

1.11 SUBMITTALS

- A. In compliance with Division 1 of these specifications, submit for Architect's review, six (6) copies of the following product data, shop drawings, and other submittals:
 - 1. Specification data sheets on each individual system component clearly indicating the equipment to be supplied and its type, size, rating, style, catalog number, and appearance.
 - 2. Complete one-line diagrams showing all equipment and the size, type, and number of all conductors. (Point to Point Diagrams)
 - 3. Installation manuals including roughing in drawings, details, and conductor terminations for each component.
 - 4. Calculations clearly showing the required amount of battery reserve needed and the proposed battery capacity.
 - 5. Copies of certificates from the manufacturer indicating supplier's status as an authorized representative and listing employees factory-trained for the services described in paragraph 1.13B.

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6. Voltage drop calculations on worst case notification and signaling line circuits and acceptable limits.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. All equipment shall be new and unused. All components and systems shall be designed for uninterrupted duty. All equipment, materials, devices, and other facilities shall be the best suited for the intended use and shall be the standard product of a single manufacturer.
- B. Provide electrical products which have been listed by Underwriters= Laboratories, INC., which comply with NEMA Standards, and which are approved by Factory Mutual Research. All control equipment is to be listed under U.L. Category UOJZ as a single control unit. A partial listing shall not be acceptable. The systems controls shall be U.L. listed for Power Limited Applications power NEC 760.

2.02 COMPONENTS

- A. All Control Panels shall have at least the following components/capacities:
 1. Twenty-four volt dc power sufficient to operate the control panel and its circuits during alarm and still maintain at least two amps of spare capacity. The control panel shall receive 120VAC power (as noted on the drawings) from two (2) dedicated circuits.
 2. The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal 120 VAC power in a normal supervisory mode for a period of twenty-four (24) hours with five (5) minutes of alarm operation at the end of this period. The system shall automatically transfer to the standby batteries upon power failure. All battery charging and recharging operations shall be automatic. Battery chargers shall be capable of recharging all batteries to one percent capacity in forty-eight hours. Battery, battery charger, ammeter and voltmeter shall be panel mounted.
 3. All circuits requiring system operating power shall be 24VDC, power limited in compliance with NFPA 70 Article 725, and shall be individually fused at the control panel.
 4. Signaling line circuit interface modules (cards).

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5. Indicating appliance circuits as required for the quantity of notification appliances to be served from the panel. The circuits shall be the reversing polarity type.

6. Operating interface panel.

2.03 MANUAL STATIONS

A. The station body shall be so constructed that chips and scratches will not expose metal. All stations shall be mastered keyed with the control equipment. When actuated, the condition shall be visually apparent.

2.04 DETECTORS

A. Sensor Bases: Sensor bases shall allow interchangeability of sensor heads: photoelectric, ionization, and heat-type sensors. Sensor bases shall supervise proper head installation. Heads shall be secured with an anti-tamper device. Sensor bases shall provide a remote LED output and have an integral LED for power-on, alarm, and trouble indication. Sensor bases shall have a magnetically-operated functional test feature.

B. Sensor Heads: The sensors shall be sealed against rear air-flow entry.

1. Area smoke sensors shall be photoelectric-type. Have insect screens. The photo chamber shall be field cleanable. Nominal detector sensitivity shall be 1.4% per foot obscuration with a range of 1% to 1.84%. Regardless of sensitivity settings, the detector's stability shall be unaffected by high velocity. No radioactive materials shall be used.

2. Duct-mounted smoke sensors shall have photoelectric-type smoke sensors, sampling tubes as required, and auxiliary alarm relay with two Aform C@ contacts. The duct-mounted smoke detectors shall be furnished under this section, installed under Division 15, and connected to the fire alarm circuit under this section. The photo chamber shall be field cleanable. Each duct-mounted smoke detector shall be perform properly with the air velocity present at its location.

3. Heat sensors shall be self restoring.

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FIRE ALARM SYSTEM

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- C. The heat detector in the elevator machine rooms and elevator shafts shall be non-restorable type and shall be the fixed temperature type set to activate at 135-degrees F. The detectors shall include two N.O. 120V contacts. Provide two (2) spare heat detector heads.
- D. Remote Device Alarm Indicator:
1. For each duct-type smoke detector located in concealed spaces, provide and install a remote light emitting diode (LED) indicator, complete with stainless steel faceplate and label, 24V DC operation.
 2. For above ceiling devices, remote LED=s shall be recessed in wall 12" below ceiling.
 3. Labels shall be engraved micarta with white 1" letters on red background, and shall identify the HVAC system associated with the detector, as well as the location.
 4. Where a concealed detector is located annunciated by a graphic annunciator, the remote device alarm indicator is not required.

2.05 EVACUATION SIGNALS

- A. Evacuation signals shall mount to a standard four inch square outlet box and shall be mounted in a semi-flush manner on the wall.
- B. Horns shall be nominally provide a minimum 87dB at 10 feet as measured per U.L standard 464.
- C. ADA visual evacuation units shall be Xenon strobe type, minimum 75 candela intensity, with 1-3Hz flash rate and 0.2 sec. flash duration.

2.06 EXTINGUISHING SYSTEM SWITCHES

- A. Sprinkler Flow, Pressure, and Tamper Switches: Flow, pressure and tamper switches are provided under another division. Provide monitor module for each switch and connect thereto.
- B. Tamper switches (N/C contacts) shall not be connected to initiating device circuits with N.O. initiating devices.

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2.07 FIRE SHUTTER CONTROLS

- A. Where shutters in rated in walls are normally held open, provide ceiling mounted smoke detector(s) and control module for shutter controls. Provide 120 volt power supply to each shutter, and connect to shutter release device through the Form-C contacts, per shutter manufacturer=s instructions.

2.08 REMOTE ANNUNCIATION

- A. Provide and install a flush or semi-flush wall-mounted remote annunciator to identify device and floor of alarm incident.

2.09 WIRING

- A. All wiring shall be marked in accordance with NEC 760-23, approved by local authorities having jurisdiction for the purpose, and shall be as recommended by the fire alarm system manufacturer.

2.10 CIRCUIT TRANSIENT PROTECTION

- A. Provide circuit transient protection on all wiring including shields which enters or leaves a building. The protector shall use MOV technology and comply with U.L. # 497B requirements. The protector shall fit on a standard 4" square, 2-1/8" deep electrical box.

2.11 MISCELLANEOUS

- A. All other equipment as necessary.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The system shall be installed by a licensed Electrical Contractor.
- B. Deliver each piece of equipment in durable shipping cartons. Maintain cartons through shipping, storage and handling as required to prevent damage and eliminate dirt and moisture. Store cartons inside and protected from weather. Where necessary to store outside, elevate well above grade and enclose with durable waterproof wrapping.

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- C. The entire system shall be installed in a workmanlike manner in accordance with the fire alarm system manufacturer=s manuals and wiring diagrams. The contractor shall provide all conduit, wiring, outlet boxes, junction boxes, cabinets and similar equipment necessary for the complete installation. Wiring shall be installed in dedicated conduit throughout.
- D. Connections to water flow, pressure and tamper switches shall be through liquid-tight conduit.
- E. All fire alarm system junction boxes above ceilings shall be painted red.
- F. All penetrations of floor slabs and fire walls, shall be fire stopped in accordance with all local fire codes.
- G. End of Line Resistors shall be provided as directed by the manufacturer.
- H. Conceal wiring except in mechanical rooms and areas where other conduit and piping are exposed. Fasten flexible conductors bridging cabinet doors and protect against abrasion. Tie and support conductors neatly.
- I. Number code or color code conductors, appropriately and permanently, for identification and servicing of the system.
- J. A circuit transient protector shall be installed as close as practical to the point at which wiring enters or leaves a building. Install a maximum 28', No. 12 AWG grounding conductor in 1/2" conduit in as straight a line as possible to an effectively grounded cold water pipe or effectively grounded building steel.
- K. The contractor shall comply with all requirements for permits and tests, shall provide all certificates and shall pay all costs for the same.
- L. The manufacturer=s local authorized representative shall provide supervision of system installation and provide final system panel connections.
- M. Programming and final adjustment shall be performed by the manufacturer=s authorized representative, who shall have full responsibility for debugging and proper calibration of each

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component in the entire system.

- N. Upon completion of the installation of the fire alarm system equipment, the electrical contractor shall provide to the owner, with a copy to the manufacturer=s representative, a signed written statement,
substantially as follows:

AThe undersigned, having engaged as the contractor on the (NAME OF PROJECT) confirms the fire alarm system equipment installed is in agreement with the wiring diagrams and written instructions and directions provided.@

3.02 ACCEPTANCE TESTING

- A. After the system installation is complete, notify the authority having jurisdiction of the acceptance testing to be performed as required in the following paragraphs. Coordinate the scheduling of the acceptance testing with the authority having jurisdiction and the owner. At their discretion, acceptance testing shall be performed in the presence of an owner=s representative and the authority jurisdiction. During all acceptance testing, make available the as-built drawings and manufacturer=s installation instructions. The manufacturer=s authorized shall perform the acceptance testing. Correct all deficiencies found
in testing and re-test the corrected wiring or component.
- B. Wiring Installation Testing: Provide testing of the installation wiring as required by NFPA 72H para. 2-2, Installation Testing.
- C. Wiring Installation Certification: After completion of the wiring installation testing, complete parts 1 and 3 through 9 of a certificate conforming to NFPA 72 figure 2-2.2. Submit a preliminary copy of the completed parts to the owner and the authority having jurisdiction.
- D. System Operation Testing: Provide testing of system operation as required by NFPA 72H para. 2-3, System Testing. Where application of heat would destroy any detector, it may be manually activated.
- E. Certification of System Operation: After completion of the system operation testing, complete part 2 of the certificate conforming to NFPA 72 figure 2-2.3.

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3.03 CLOSEOUT SUBMITTALS

A. Deliver the following to the Owner within thirty (30) days after Owner receives installation certificate.

1. Final specification data sheets, calculations, certificates, and installation programming, operation, and maintenance manuals in suitable binders for maintenance use.
2. As-built drawings including final floor plans and point-to-point diagrams showing all device and splice locations.
3. The application program listing for the system as installed at the time of acceptance.
4. Name, address and telephone number of the authorized factory representative.
5. Final copy of system certification conforming to NFPA 72 figure 2-2.2. Mount on the inside of the central station panel door.

3.04 TRAINING

A. After submitting the installation certificate, the manufacturer=s authorized representative shall provide the services of the manufacturer=s trained representative for a period of eight (8) hours, during normal business hours, to instruct the owner=s designated personnel on the operation and routine maintenance of the system.

3.05 TESTING AND MAINTENANCE CONTRACT PROPOSAL

A. Testing and Maintenance Contract Proposal: The supplier shall propose a contract, including costs, for the testing and maintenance service described below for each of the first two years following the installation (The first year is the warranty year). Acceptance of the testing and maintenance contract is optional to the owner.

1. The testing and maintenance contract shall include the following services for the entire building:
 - a. Quarterly tests as required by the Joint Commission. (Operational test for one device per initiating circuit per quarter.)

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- b. Inspection, testing, maintenance, cleaning, and record keeping as required by NFPA Standards 72, 72E, 72G, and 72H as applicable, including annual operating test for each smoke detector per NFPA 72E para. 8-3.41. Provide quarterly operational testing of 25% of all smoke detectors such that by year=s end all detectors have been tested.
 - c. Other services recommended by the manufacturer.
 - d. Replacement of all defective parts in the system.
 - e. Testing and maintenance shall be provided by the manufacturer=s factory-trained representative during normal working hours, Monday though Friday, excluding holidays.
2. Propose an indexed or fixed percentage increase to renew the testing and maintenance contract each year after the second year up to ten (10) years total. If an indexed percentage increase is chosen, indicate to what index the increase would be tied (For example: AAtlanta Service@ index).
3. Propose an additional labor cost for emergency service which is provided at times other than stipulated in paragraph 3.05.B.1.f above. Emergency service is required for the loss of coverage.

END OF SECTION

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SECTION 31 31 16 - TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following for termite control:
 - 1. Soil treatment.

1.3 DEFINITIONS

- A. EPA: Environmental Protection Agency.
- B. PCO: Pest control operator.

1.4 SUBMITTALS

- A. Product Data: Treatments and application instructions, including EPA-Registered Label.
- B. Product Certificates: Signed by manufacturers of termite control products certifying that treatments furnished comply with requirements.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following as applicable:
 - 1. Date and time of application.
 - 2. Moisture content of soil before application.
 - 3. Brand name and manufacturer of termiticide.
 - 4. Quantity of undiluted termiticide used.

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5. Dilutions, methods, volumes, and rates of application used.
 6. Areas of application.
 7. Water source for application.
- E. Bait Station System Application Report: Submit report for Owner's records information, including the following as applicable:
1. Location of areas and sites conducive to termite feeding and activity.
 2. Plan drawing showing number and locations of bait stations.
 3. Plan drawing showing number and locations of monitoring stations and bait stations.
 4. Dated report for each monitoring and inspection occurrence indicating level of termite activity, procedure, and treatment applied before time of Substantial Completion.
 5. Brand name and manufacturer of termiticide.
 6. Quantities of termite bait used.
- F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: A PCO who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is experienced and has completed termite control treatment similar to that indicated for this Project and whose work has a record of successful in-service performance.
- B. Applicator Qualifications: A PCO who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is an experienced installer who employs workers trained and approved by bait station system manufacturer to install manufacturer's products.
- C. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with EPA-Registered Label requirements and requirements of authorities having jurisdiction.

1.7 COORDINATION

- A. Coordinate soil treatment application with excavating, filling, and grading and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs, before construction.

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- B. Install bait station system after construction, including landscaping, is completed.

1.8 WARRANTY

- A. General Warranty: Special warranty 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. Special Warranty: Written warranty, signed by applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.
- C. Warranty Period: Three years from date of Substantial Completion.
- D. Warranty Period: Five years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

- A. Continuing Service: Provide a proposal for continuing service, including monitoring, inspection, and retreatment for occurrences of termite activity, from applicator to Owner, in the form of a standard yearly (or other period) continuing service agreement, starting on the date of Substantial Completion. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

- A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent, and formulated to prevent termite infestation. Use only soil treatment solutions that are not harmful to plants. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

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1. AgrEvo Environmental Health, Inc.; a Company of Hoechst and Schering, Berlin.
 2. American Cyanamid Co.; Agricultural Products Group; Specialty Products Department.
 3. Bayer Corp.; Garden & Professional Care.
 4. DowElanco.
 5. FMC Corp.; Pest Control Specialties.
 6. Zeneca Professional Products.

2.2 BAIT STATION SYSTEM

- A. General: Provide bait stations and, if applicable, monitoring stations, according to manufacturer's EPA-Registered Label for product, manufacturer's written instructions, and the following:
 1. Provide number of stations, based on the dimensions of building perimeter indicated on Drawings, according to manufacturer's written instructions.
 2. Comply with manufacturer's written instructions for termite management system. Provide not less than one cluster of stations per 20 linear feet (6 linear meters), based on the linear dimensions of building perimeter indicated on Drawings, consisting of not less than three stations per cluster.
- B. Available Product: Subject to compliance with requirements, a product that may be incorporated into the Work includes, but is not limited to, the following:
- C. Product: Subject to compliance with requirements, provide the following product:
 1. Hexaflumuron: Sentricon System, Recruit II; DowElanco.
 2. Hydramethylnon: Subterfuge; American Cyanamid Co., Agricultural Products Group, Specialty Products Department.
 3. Sulfluramid: Systematic Termite Control, FirstLine GT; FMC Corp., Pest Control Specialties.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of the soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparing substrate. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.
 - B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended by termiticide manufacturer.
 - C. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.3 APPLICATION, GENERAL

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.4 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute the treatment evenly.
 - 1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
 - 2. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.
 - 3. Crawlspace: Soil under and adjacent to foundations as previously indicated. Treat adjacent areas including around entrance platform, porches, and equipment bases. Apply overall treatment only where attached concrete platform and porches are on fill or ground.
 - 4. Masonry: Treat voids.
 - 5. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.

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- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
 - C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
 - D. Post warning signs in areas of application.
 - E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.5 INSTALLING BAIT STATION SYSTEMS

- A. Place bait stations and, if applicable, monitoring stations, according to the EPA-Registered Label for the product and manufacturer's written instructions, in areas that are conducive to termite feeding and activity, as follows:
 - 1. Conducive sites and locations indicated on Drawings.
 - 2. In and around infested trees and stumps.
 - 3. In mulch beds.
 - 4. Where wood directly contacts soil.
 - 5. Areas of high soil moisture.
 - 6. Near irrigation sprinkler heads.
 - 7. Each area where roof drainage system, including downspouts and scuppers, drains to soil.
 - 8. Along driplines of roof overhangs without gutters.
 - 9. Where condensate lines from mechanical equipment drip or drain to soil.
 - 10. At plumbing penetrations through ground-supported slabs.
 - 11. Other sites and locations as determined by the PCO.
- B. Inspect and service stations from time of their application until completion of the time period established by continuing service agreement, according to the EPA-Registered Label for the product and manufacturer's written instructions for termite management system and bait products.
 - 1. Service Frequency: Inspect monitoring stations not less than once every three months.
- C. Inspect and service stations from time of their application until completion of the time period established by continuing service agreement, according to the EPA-Registered Label for the product and manufacturer's written instructions for termite bait products.
 - 1. Service Frequency: For supplementary and preventive treatment, inspect not less than once every three months.

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