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SECTION 000010 – ADVERTISEMENT FOR BIDS

NEWSPAPER ADVERTISEMENT
DATE TO ADVERTISE:
SUNDAY, October 01, 2017 &
SUNDAY, October 08, 2017

Please run this advertisement in your classified “Legal Notices” section:

OWENSBORO PARKING STRUCTURE
BID #4054
The City of Owensboro is seeking bids for furnishing all labor, tools, materials, and equipment and performing all construction operations for the OWENSBORO PARKING STRUCTURE, 414 West 2nd Street, Owensboro, KY 42301 which generally includes construction of a building and associated site improvements.

A Pre-Bid Conference is scheduled for 2:00 p.m. prevailing local time, Tuesday, October 17, 2017 at City Hall, Commission Chambers, 101 E. 4th Street, Owensboro, KY 42303.

Plans, Specifications and Contract Documents open to public inspection at the office of Bryant Engineering, 1535 Frederica Street, Owensboro, KY 42301, phone 270-685-2811. A set of plans and specifications can be obtained through Bryant Engineering by a refundable deposit of $200.00 payable to THE CITY OF OWENSBORO. Refunds will ONLY be issued to bidders that have submitted bids in full conformance with this notice and if bid documents are returned in good condition within 30 days of bid opening. A CD of digital documents will be available for a non-refundable fee of $50.00 per copy. No partial sets will be issued. If printed documents are to be mailed, an additional non-refundable charge per set is required, for the amount of $50.00 per set. The successful bidder is responsible for all additional sets they may require.

No bidder may withdraw his bid within sixty (60) days after the actual date of the opening thereof.

Bids must be delivered to Pamela Canary, Purchasing Agent, City Hall, 101 E. 4th Street, Owensboro, KY 42303, on or before 2:00 P.M. prevailing local time on Thursday, November 09, 2017.

The City of Owensboro reserves the right to reject any and all bids and to waive any irregularities in said bids.

Pamela Canary, CPPB, CPPO
Purchasing Agent

END OF SECTION 000010
Instructions to Bidders

for the following PROJECT:
(Name and location or address)
Owensboro Parking Structure
414 West 2nd Street
Owensboro, KY 423010

THE OWNER:
(Name, legal status and address)
City of Owensboro
101 East 4th Street, City Hall
Owensboro, KY 42302-9003

THE ARCHITECT:
(Name, legal status and address)
integrity/Architecture, PLLC
2414 Palumbo Drive, Ste. 125
Lexington, KY 40509

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2  BIDDER’S REPRESENTATIONS

3  BIDDING DOCUMENTS

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7  PERFORMANCE BOND AND PAYMENT BOND

8  FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

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.
ARTICLE 1 DEFINITIONS
§ 1.1 Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement or Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services or a portion of the Work as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS
§ 2.1 The Bidder by making a Bid represents that:
§ 2.1.1 The Bidder has read and understands the Bidding Documents or Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.

§ 2.1.2 The Bid is made in compliance with the Bidding Documents.

§ 2.1.3 The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.

§ 2.1.4 The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.

ARTICLE 3 BIDDING DOCUMENTS
§ 3.1 COPIES
§ 3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within ten days after receipt of Bids. The cost of replacement of missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.
§ 3.1.2 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the Advertisement or Invitation to Bid, or in supplementary instructions to bidders.

§ 3.1.3 Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

§ 3.1.4 The Owner and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

§ 3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

§ 3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to the Architect errors, inconsistencies or ambiguities discovered.

§ 3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date for receipt of Bids.

§ 3.2.3 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.

§ 3.3 SUBSTITUTIONS

§ 3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

§ 3.3.2 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect’s decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.3 If the Architect approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

§ 3.3.4 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 ADDENDA

§ 3.4.1 Addenda will be transmitted to all who are known by the issuing office to have received a complete set of Bidding Documents.

§ 3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.
ARTICLE 4  BIDDING PROCEDURES
§ 4.1 PREPARATION OF BIDS
§ 4.1.1 Bids shall be submitted on the forms included with the Bidding Documents.
§ 4.1.2 All blanks on the bid form shall be legibly executed in a non-erasable medium.
§ 4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.
§ 4.1.4 Interlineations, alterations and erasures must be initialed by the signer of the Bid.
§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change."
§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall make no additional stipulations on the bid form nor qualify the Bid in any other manner.
§ 4.1.7 Each copy of the Bid shall state the legal name of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

§ 4.2 BID SECURITY
§ 4.2.1 Each Bid shall be accompanied by a bid security in the form and amount required if so stipulated in the Instructions to Bidders. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Section 6.2.
§ 4.2.2 If a surety bond is required, it shall be written on AIA Document A310, Bid Bond, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.
§ 4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

§ 4.3 SUBMISSION OF BIDS
§ 4.3.1 All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.
§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.
§ 4.3.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.
§ 4.3.4 Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

§ 4.4 MODIFICATION OR WITHDRAWAL OF BID
§ 4.4.1 A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.
§ 4.4.2 Prior to the time and date designated for receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date- and time-stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.

§ 4.4.3 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

§ 4.4.4 Bid security, if required, shall be in an amount sufficient for the Bid as resubmitted.

ARTICLE 5 CONSIDERATION OF BIDS
§ 5.1 OPENING OF BIDS
At the discretion of the Owner, if stipulated in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

§ 5.2 REJECTION OF BIDS
The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

§ 5.3 ACCEPTANCE OF BID (AWARD)
§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive irregularities and inconsistencies in a bid received and to accept the bid which, in the Owner’s judgment, is in the Owner’s own best interests.

§ 5.3.2 The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION
§ 6.1 CONTRACTOR'S QUALIFICATION STATEMENT
Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request, a properly executed AIA Document A305, Contractor’s Qualification Statement, unless such a Statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

§ 6.2 OWNER'S FINANCIAL CAPABILITY
The Owner shall, at the request of the Bidder to whom award of a Contract is under consideration and no later than seven days prior to the expiration of the time for withdrawal of Bids, furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner’s obligations under the Contract. Unless such reasonable evidence is furnished, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 SUBMITTALS
§ 6.3.1 The Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, after notification of selection for the award of a Contract, furnish to the Owner through the Architect in writing:
   .1 a designation of the Work to be performed with the Bidder’s own forces;
   .2 names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work; and
   .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.
§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder in writing if either the Owner or Architect, after due investigation, has reasonable objection to any person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder’s option, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND
§ 7.1 BOND REQUIREMENTS
§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Bonds may be secured through the Bidder’s usual sources.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 If the Owner requires that bonds be secured from other than the Bidder’s usual sources, changes in cost will be adjusted as provided in the Contract Documents.

§ 7.2 TIME OF DELIVERY AND FORM OF BONDS
§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to be commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond. Both bonds shall be written in the amount of the Contract Sum.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

ARTICLE 8 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR
Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment Is a Stipulated Sum.
Additions and Deletions Report for
AIA® Document A701™ – 1997

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 09:42:57 on 09/22/2017.

PAGE 1

Owensboro Parking Structure
414 West 2nd Street
Owensboro, KY 423010

...

City of Owensboro
101 East 4th Street, City Hall
Owensboro, KY 42302-9003

...

integrity/Architecture, PLLC
2414 Palumbo Drive, Ste. 125
Lexington, KY 40509
Certification of Document’s Authenticity
AIA® Document D401™ – 2003

I, Joey Nolasco, AIA, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 09:42:57 on 09/22/2017 under Order No. 6124066393 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A701™ – 1997, Instructions to Bidders, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

>Title

(Dated)
SECTION 002213- SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

SCOPE
The following Supplementary Instructions to Bidders modify or add to the AIA Document A701-1997 INSTRUCTIONS TO BIDDERS which are bound into the Project Manual. Where any Article of the Instructions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions shall remain in effect.

ARTICLE 3
BIDDING DOCUMENTS

3.1.1 Bidders are responsible for the cost of obtaining bid documents from Bryant Engineering. The Owner will utilize the traditional bidders deposit system for printing mass quantities of plans and specs.

3.2 INTERPRETATION OF BIDDING DOCUMENTS

Add the following subparagraphs:

3.2.1 The Owner takes seriously the bidder’s responsibility to report errors, omissions, discrepancies, contradictions, etc., found in the plans and specifications to the Architect prior to submitting a final bid.

3.2.4 WORK REASONABLE INFERRED, BUT NOT PARTICULARLY DELINEATED OR SPECIFIED:
The Contractor shall study all drawings and specifications and all conditions relating to the erection of the work, and if any materials or labor evidently necessary for the proper and complete execution of the work, which are not specifically mentioned and included in the drawings and specifications, although reasonably inferred therefrom, unless eliminated by special mention, or if any error or inconsistency appears therein, or in the event of a doubt arising as to the true intent and meaning of the drawings and specifications, he shall report it to the Architect at least seven (7) days in advance of the date for receiving the bid. The Architect will then issue an addendum containing the proper information to all Contractors, to assure fair competition.

In case the Contractor fails to make such report and the Architect is not otherwise advised of such doubtful matter, the Contractor is hereby made responsible for the furnishing of the necessary labor and material reasonable inferred or evidently necessary for the proper execution and completion of the work; for any additional work involved in the correction of apparent errors or inconsistencies and in executing the true extent and meaning of the drawings and specifications as interpreted by the Architect, and all such labor and materials shall be provided at the Contractor’s expense and under no condition will any such labor and material be allowed as an extra.

3.2.5 DISCREPANCIES: Anything called for in the specifications and not shown on the drawings or shown on the drawings and not called for in the specifications shall be included in both.

Where the details and general drawings do not agree, the Contractor shall notify the Architect at least seven (7) days before the date of the receipt of bids and the Architect will issue an Addendum five (5) days prior to bid date to all Contractors as to which of the two methods of construction shall be followed. Failure to make this determination shall make the Contractor subject to furnishing either method as may be later called for by the Architect. In case of discrepancies between the various parts of the plans and specifications, the Contractor shall furnish either method as may be determined by the Architect.

Add the following paragraph to the front end of 3.4.3:

3.4.3 Examine bidding documents carefully prior to date for receipt of bids, make written request to Architect for true meaning of any part of contract documents, for interpretation and correction of
any ambiguity, inconsistency or error therein. All interpretations and corrections will be included in an addendum issued by the Architect. Contractor’s written questions can be sent via email to Adam Gillett (integrity / Architecture, plc) at adam@integrityarch.com for interpretation. Only a written interpretation by addendum shall be binding. No Bidder shall reply upon interpretation or corrections given by any other method.

ARTICLE 4
BIDDING PROCEDURES

4.4 MODIFICATION OF WITHDRAWAL OF BID

Add the following Subparagraph:

4.4.1.1 No bid may be withdrawn for a period of 60 calendar days after the date is set for the opening of bids. Pricing for bid alternates shall remain effective and available for Owner acceptance by Change Order for a period of 120 calendar days.

ARTICLE 5
CONSIDERATION OF BIDS

5.2 Incomplete Forms of Proposal or those Forms without bid bond or other required attachments will be returned to the bidder’s representative at the bid opening. The Owner shall have the right to reject any or all bids.

5.3.2 Delete entire paragraph and replace it with the following:
The Owner shall have the right to accept Alternates in any order or combination. The low bidder shall be determined on the basis of the lowest base bid, plus any or all Alternates accepted, and as determined by the Owner to be in the Owner’s best interest to accept.

5.3.3 Add the following Subparagraph:

Time Limit for Execution of Contract Documents: In the events that a bidder’s proposal is accepted by the Owner and such bidder shall fail to execute the contract and to furnish satisfactory performance bond within ten (10) calendar days from the date of notification of the award of contract, the Owner may at its option, determine that the award has abandoned the contract. Thereupon the proposal shall become null and void and the guarantee, which accompanied it, shall be forfeited to and become the property of the Owner as liquidated damages from such failure. If the bidder shall execute the contract and furnish satisfactory bond, the bid guarantee will be returned to the bidder by the Owner.

ARTICLE 6
POST-BID INFORMATION

6.1 CONTRACTORS QUALIFICATION STATEMENT

Add the following Subparagraph 6.1.1:

The listing of more than one subcontractor in a work category shall invalidate bid.

ARTICLE 7
PERFORMANCE BOND AND PAYMENT BOND

7.2 TIME OF DELIVERY AND FORM OF BONDS – Revise the last sentence of 7.2.2 to read:
1. Unless otherwise provided, both bonds shall be written in the amount of sum of the contract amount plus the total amount of all purchase orders.

ARTICLE 8
POST BID REVIEW AND MATERIAL SUBMITTAL

12.1 REPRESENTATIVE AT BID OPENING

Add the following Subparagraphs:

12.1.4 Within the time allocated below from the Bid Date the apparent successful Contractor shall provide:

a. Within 48 hours to provide the monetary total for all Bid Breakout Items, and four (4) working days to submit the Bid Breakout Forms, Section 005000 for the Base Bid, and one or more of Section 005000 for each Alternate Bid. The successful Contractors’ contract will be the sum of the Base Bid plus accepted Alternates, less the Bid Breakout amounts for the Base Bid and accepted Alternates.

b. Within 12 days after bid opening: A breakout of major material items (excluding sales tax) the Bidder intends for the Owner to purchase through the issuance of Purchase Orders directly to the Material Suppliers.

1) Purchase Order amount shall include all costs of delivery to the job site.

2) Incidental expenses (shop drawing preparation, bond, etc.) for which Material Supplier intends to submit an invoice shall not be included in the “LUMP SUM QUOTED SALES PRICE”. These expenses shall be communicated to the General Contractor expenses as a line item on the Schedule of Values.

c. Within twelve (12) calendar days from the bid date: Material Suppliers Authorization Letters: Letters of Authorization executed by the Suppliers of the items listed on the Bid Breakout Item Form(s), stating the authorization given to the Contractor to quote the materials listed and that the Supplier will furnish the listed materials to the Owner under the Owners’ standard Purchase Order Agreement for the amount stated on the Contractors’ Bid Breakout Items Form(s). Failure of any Contractor to provide this written authorization may cause forfeiture of the bid security.

d. Material suppliers shall not require the Owner to complete any form of credit application. The General Contractor is responsible for guaranteeing the Owner’s credit-worthiness.

12.1.5 The Contractor will be provided prepared Purchase Orders. Upon receipt, the Contractor shall have fourteen (14) business days to have each Purchase Order executed by the respective material suppliers and returned to the Architect. Purchase Orders are not to be altered, amended, or changed in any way. Any Purchase Order not returned within the allotted time shall become null and void and the value of the Purchase Order will be added to the Contract sum with the Contractor assuming responsibility for all taxes. Upon execution of the Purchase Orders by the Owner, the Purchase Orders will be delivered to the Contractor for distribution to the respective suppliers.

12.1.5.1 In the event the quantities of materials supplied via Purchase Orders are insufficient to complete the Work, the Contractor shall, at no expense to the Owner, provide such materials as necessary to complete the Work.

12.1.5.2 In the event that at the completion of the Work the Contractor has not submitted invoices totaling the value of any individual Purchase Order, that Purchase Order shall be considered complete and closed. NO ADJUSTMENT WILL BE MADE TO THE CONTRACTORS’ CONTRACT.

12.1.6 The Owner will provide to the Contractor Kentucky Sales Tax Exemption Certificates for each Material Supplier.
SECTION 002214 - SPECIAL INSTRUCTIONS TO BIDDERS

If there is any conflict in the A101 Instructions to Bidders & Supplemental Instructions to Bidders with the Special Instructions to Bidders, the Special Instructions to Bidders shall govern.

GENERAL COMPLIANCE:

1. Please read these instructions carefully.

2. "NO BID:" Bidders unable or unwilling to submit a bid should immediately return the “Form of Proposal” only with “No Bid” marked clearly on the outside of the envelope. Any vendor not submitting a bid is encouraged to indicate the reason(s) for not participating.

3. ALTERNATE BIDS: It is not the intention of the specifications contained herewith to eliminate any bidder; however, quoted items must equal or exceed stated specifications. Alternate bids will be accepted only when such alternates have been requested.

4. INDICATION OF COMPLIANCE: Blank spaces shall be considered non-compliance. Any deviation from the specification or where submitted literature does not fully support meeting the specification(s), must be clearly cited on the attached page labeled “Exceptions to Bid Specifications.” No deviation below “minimum” specifications will be accepted.

5. BID SUBMISSION: All pages of the bid shall be signed in ink on designated signature lines. Typed quotation sheets are preferred; however, if hand written, the sheets must be legible and in ink. Any pricing information that is illegible may result in the rejection of the bid.

6. A conditional or qualified bid will not be accepted.

7. At the time of bid submission, each bidder will be presumed to have inspected the site(s) and to have read and to be thoroughly familiar with the plans and contract documents (including any and all addenda). The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect to his bid.

8. Bidders must satisfy themselves of the accuracy of the estimated quantities in the Bid form by examination of the site and review of the drawings and specifications (including Addenda). After bids have been submitted, the Bidder shall not assert that there was a misunderstanding concerning the quantities of work, or of the nature of the work to be done.

9. Quotations must be made on the form provided. An accompanying letter of explanation is acceptable if bidder deems it necessary, but only quotes made on the provided forms will be evaluated.

10. All Bids, any accompanying letters, forms, samples, pictures, catalogs, or any other pertinent material that accompanies the bid becomes the property of the City of Owensboro and will not be returned to the bidder unless an agreement in writing is secured before the bid is submitted to the City of Owensboro.

11. The signed completed original bid package and two (2) copies must be sealed in an envelope with the bid number, project name, bidder’s name and opening date clearly marked on the outside of the envelope. The first page of the original bid should be marked “Original” and the first page of the copies should be marked “Copy.” The bid shall be addressed and delivered to Pamela Canary, Purchasing Agent, City Hall, Room 119, 101 East Fourth Street, Owensboro, KY 42303 prior to bid opening scheduled for 2:00 p.m. local time on November 09, 2017.
12. **ANY BIDS OR PROPOSALS NOT RECEIVED PRIOR TO SCHEDULED OPENING TIME WILL BE REJECTED AND RETURNED UNOPENED.**

13. **METHOD OF PROCUREMENT:** Competitive Sealed Bidding (KRS 45A.365) will be the method of procurement for the purchase of the item(s) specified herein.

14. **KENTUCKY OPEN RECORDS LAW:** At the time a bid or proposal is submitted to the City, Vendor shall identify any information that is submitted as part of the bid that is proprietary or confidential in nature and not subject to release for public inspection. The City of Owensboro will protect any proprietary or confidential information to the extent allowable under the Kentucky Open Records Act.

15. **NEW GOODS, FRESH STOCK:** Unless otherwise specifically stated, all Contractors shall provide new commodities, fresh stock, latest model, design or package.

16. **METHOD OF AWARD:** This bid will be evaluated on the evaluation criteria established in the bid specifications.

17. The City of Owensboro reserves the right to reject any and all bids or to waive any irregularities in said bids. The right is also reserved to award bids based on the best interest and/or most advantageous to the City of Owensboro.

18. Award will be made to the lowest responsive and responsible bidder meeting specifications. The City of Owensboro reserves the right to consider as a part of the bid evaluation, the stated warranty, stated delivery schedule and payment terms.

19. **PRICING:** All prices shall be quoted exclusive of any taxes. The City of Owensboro is exempt from Federal excise, transportation and/or Kentucky sales tax. Any items supplied directly to the City from a supplier/manufacturer are exempt from sales tax. Any items purchased by a contractor that will be used in the fulfillment of a contract are not exempt from sales tax.

20. In case of a discrepancy in the extension of a unit price, the unit price shall govern the total price.

21. Bidders must provide manufacturer’s product literature if available and appropriate with the bid submission.

22. Prices quoted shall remain firm and open to acceptance by the City of Owensboro for a minimum period of sixty (60) days after bid opening.

23. **SHIPPING CHARGES:** All items quoted shall be “F.O.B. Destination.” No additional freight charges will be allowed.

24. **DELIVERY SCHEDULE:** Delivery date shall be specified on each item quoted. The vendor will be expected to fulfill the delivery as specified.

25. **PAYMENT:** The bid must clearly state the payment terms, including prompt payment discounts and payment due dates. Discounts should be figured into the unit price of the quoted item. The City of Owensboro reserves the right to select the most beneficial terms.

26. **FAILURE TO PERFORM:** Any vendor awarded a contract who fails to fulfill all obligations on this contract may be disqualified from bidding on any City Bid for a period of up to five (5) years.

27. Should the contractor fail to perform as indicated herein the City reserves the right to procure the required services or products elsewhere at its discretion, either temporarily or permanently, and to either suspend or cancel all or part of the contract. Should such action be taken the contractor shall be responsible for all excess costs incurred by the City.
OWNER’S RIGHTS:

1. RIGHT TO TERMINATE CONTRACT:

   a. In the event that any of the provisions of the contract are violated by the contractor, or by any of his subcontractors, the owner may serve written notice upon the contractor and the surety of its intention to terminate the contract, such notices to contain the reasons for such intention to terminate the contract, and unless within ten (10) Days after the serving of such notice upon the contract, such violation or delay shall cease and satisfactory arrangements of correction be made, the contract shall upon the expiration of said ten (10) day, cease and terminate. In the event of such termination, the owner shall immediately serve notice thereof upon the surety and the contractor and the surety shall have the right to take over and perform the contract; provided, however, that if the surety does not commence performance thereof within ten (10) days from the date of the mailing to such surety of notice of termination, the owner may take over the work and prosecute the same to completion by contract or by force account for the account and at the expense of the contractor and the subcontractor and his surety shall be liable to the owner for any excess cost occasioned by the owner thereby, and in such event the owner may take possession of and utilize in completing the work, such materials, appliances and plant as may be on the site of the work and necessary therefore.

   b. The owner may terminate this contract at any time by giving at least ten (10) days notice in writing to the contractor. If the contract is terminated by the owner as provided herein, the contractor will be paid for the time provided and expenses incurred up to the termination date. If this contract is terminated due to the fault of the contractor, the above paragraph relative to termination shall apply.

2. SAFETY: Vendor must perform work in a safe and timely fashion, maintain a clean and safe work environment, follow safety requirements established by OSHA and the City of Owensboro, and may be required to provide safety equipment. If, in the opinion of the City, safety precautions are not in existence, work will cease immediately until corrective action is taken. Work will begin again only when vendor demonstrates to the satisfaction of the City that conditions are without risk.

3. BID SECURITY: Each bid must be accompanied by cash, Cashier’s Check, or a Bid Bond duly executed by the bidder as principal and having as surely thereon a surety company approved by the City, in the amount of five percent (5%) of the bid. Such checks will be returned promptly after the City and the accepted bidder have executed the contract, or if no award has been made within thirty (30) days after the date of the opening of bids, upon demand of the bidder any time thereafter, as long as he has not been notified of the acceptance of his bid.

4. The successful bidder upon failure or refusal to execute and deliver the contract and bonds required within ten (10) days after receipt of notice of acceptance of bid, shall forfeit to the City the security deposited with his bid as damages for such failure or refusal.

5. Furthermore, any vendor awarded a contract who fails to fulfill all obligations on this contract may be disqualified from bidding on any City bids for a period of up to five (5) years.

6. PERFORMANCE BONDS: The contractor will be required to furnish a 100% Performance Bond. Bond shall be furnished within ten (10) working days after receipt of award notification.

7. Should the contractor fail to perform as indicated herein the City reserves the right to procure the required services elsewhere at its discretion, either temporarily or permanently, and to either suspend or cancel all or part of the contract. Should such action be taken the contractor shall be
responsible for all excess costs incurred by the City. In addition, should the contractor fail to perform as indicated herein the Performance Bond may be forfeited in part or its entirety.

8. **PAYMENT BOND:** The contractor will be required to furnish a Payment Bond in an amount equal to 100% of the contract amount to assure payment as required by any or all persons supplying labor and material in the execution of the work provided herein.

9. Attorneys-in-fact who sign Bid Bonds, Payment Bonds or Performance Bonds must file with each bond a certified and effective dated copy of their power of attorney.

10. **INSURANCE REQUIREMENTS:** The successful bidder covenants and agrees to maintain and keep in force during the term of the contract worker’s compensation, property, casualty, and general liability in the following minimum amounts:

<table>
<thead>
<tr>
<th>Type of Insurance</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Worker’s Compensation</td>
<td>Statutory</td>
</tr>
<tr>
<td>b. Commercial General Liability</td>
<td>$1,000,000/$1,000,000 CSL</td>
</tr>
<tr>
<td>c. Commercial Automobile Liability</td>
<td>$1,000,000</td>
</tr>
</tbody>
</table>

11. On all general and automobile liability policies of insurance contractor shall have the City named as an additional insured and shall further require that their liability carrier(s) notify the City at least thirty (30) days prior to the effective date of any change(s) in or cancellations of said insurance policies. A current copy of bidder’s insurance certificate providing proof of insurance as stated above must be on file in the Purchasing Department prior to bid award. Submission of insurance certificate copy may be included with the bid package.

12. **HOLD HARMLESS AGREEMENT:** The contractor/subcontractor covenants to save, defend, keep harmless, and indemnify the City of Owensboro and all of its officers, departments, agencies, agents, and employees from and against all claims, loss, damage, injury, fine, penalties, and costs including court costs and attorney’s fees, charges, liability, and exposure however caused resulting from, arising out of, or in any way connected with the contractor’s/subcontractor’s negligent performance or non-performance of the terms of the contract.

13. **BIDDER’S QUALIFICATIONS:** Vendor must demonstrate to the satisfaction of the City of Owensboro that he has adequate equipment, personnel, experience and understanding of the specifications to perform service under the contract.

14. No contract will be awarded to any bidder who, in the opinion of the City, is not qualified to perform satisfactorily due to a previously unfavorable performance, reputation or lack of experience, capital, organization, equipment, and/or personnel to conduct and complete the services in accordance with the terms and conditions of the contract.

15. The Owner may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the agreement and to complete the work contemplated therein.

16. Successful bidder must comply with the City of Owensboro ordinances relating to Occupational License Fees, Business Licenses, payroll and net profits and any other ordinances that may apply to any particular bid package.
17. **EQUAL OPPORTUNITY STATUTES:** The City of Owensboro is an equal opportunity employer and does not discriminate on the basis of race, color, religion, sex, national origin, age, marital status, physical or mental disability, or any other characteristic protected by law. The City is also committed to employing only United States citizens and aliens who are authorized to work in the United States. The City complies with the Immigration Reform and Control Act of 1986. Therefore, the successful bidder must demonstrate to the satisfaction of the City that he also conforms to all Federal, state, and local equal opportunity statutes. Further, the contractor will reimburse the City of Owensboro for any damages incurred due to any violation of the above mentioned statutes by the contractor while under contract to the City.

18. **SUBCONTRACTORS:** Any subcontractors who may be employed by the prime contractor to fulfill the terms of the contract must be listed on the page entitled “Subcontractors Registry Page” within this bid package. Subcontractors must adhere to the same requirements as the prime contractors. Copies of subcontractors insurance policies including general liability and worker’s compensation must be submitted with the bid package.

19. **"OR EQUAL" CLAUSE:** Whenever a material, article or piece of equipment is identified on the plans or in the specifications by reference to manufacturer’s or vendor’s names, trade names, catalog numbers, etc., it is intended merely to establish a standard; and, any materials, article or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article or equipment so proposed, is, in the opinion of the Owner of equal substance and function.

20. **ADDENDA AND INTERPRETATIONS:** No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

   a. Every request for such interpretation should be in writing addressed to Pamela Canary, CPPB, at City Hall (P. O. Box 10003) and to be given consideration must be received by the Friday at noon prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purposes). Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the contract documents.

**CONFLICTS OF INTEREST:**

All bidders are responsible for complying with the following KRS 45A.455: Conflicts of Interest - Gratuities and Kickbacks - Use of Confidential Information

*It shall be a breach of ethical standards for any employee with procurement authority to participate directly in any proceeding or application; request for ruling or other determination; claim or controversy; or other particular matter pertaining to any contract or subcontract, and any solicitation or proposal therefore, in which to his knowledge:*

*He, or any member of his immediate family has a financial interest therein; or a business or organization in which he or any member of his immediate family has a financial interest as an officer, director, trustee, partner, or employee, is a party; or any other person, business, or organization with whom he or any member of his immediate family is negotiating or has an arrangement concerning prospective employment is a party. Direct or indirect participation shall include but not be limited to involvement through decision, approval, disapproval, recommendations, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing, or in any other advisory capacity.*

*It shall be a breach of ethical standards for any person to offer, give, or agree to give any employee or former employee, or for any employee or former employee to solicit, demand, accept, or agree to accept...*
from another person, a gratuity or an offer of employment, in concoction with any decision, approval, disapproval, recommendation, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling or other determination, claim or controversy, or other particular matter, pertaining to any contract or subcontract any solicitation or proposal therefore.

It is a breach of ethical standards for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

The prohibition against conflicts and gratuities and kickbacks shall be conspicuously set forth in every local public agency written contract and solicitation therefore.

It shall be a breach of ethical standards for any public employee or former employee knowingly to use confidential information for his actual or anticipated personal gain, or the actual or anticipated personal gain of another person.

For further information on the conflict of interest statutes, see the “Recovery of Value of Anything Transferred or Received in Breach of Ethical Standards” at KRS 45A.460, and “Definitions for Terms Used in KRS 45A.445 to 45A.460” at KRS 45A.445.

ADDITIONAL INFORMATION: Requests for additional information or clarification of bid specifications should be directed to Pamela Canary CPPO, Purchasing Agent, by mail, email canaryps@owensboro.org or fax to (270) 687-8579. All inquiries shall be made no later than the Friday at noon prior to the bid opening date.

KENTUCKY PREFERENCE LAWS:

The scoring of bids/proposals is subject to Reciprocal preference for Kentucky resident bidders and Preferences for a Qualified Bidder or the Department of Corrections, Division of Prison Industries.

Reciprocal preference for Kentucky resident bidders
KRS 45A.490 Definitions for KRS 45A.490 to 45A.494.
As used in KRS 45A.490 to 45A.494:
(1) "Contract" means any agreement of a public agency, including grants and orders, for the purchase or disposal of supplies, services, construction, or any other item; and
(2) "Public agency" has the same meaning as in KRS 61.805.
KRS 45A.492 Legislative declarations.
The General Assembly declares:
(1) A public purpose of the Commonwealth is served by providing preference to Kentucky residents in contracts by public agencies; and
(2) Providing preference to Kentucky residents equalizes the competition with other states that provide preference to their residents.
KRS 45A.494 Reciprocal preference to be given by public agencies to resident bidders -- List of states -- Administrative regulations.
(1) Prior to a contract being awarded to the lowest responsible and responsive bidder on a contract by a public agency, a resident bidder of the Commonwealth shall be given a preference against a nonresident bidder registered in any state that gives or requires a preference to bidders from that state. The preference shall be equal to the preference given or required by the state of the nonresident bidder.
(2) A resident bidder is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:
(a) Is authorized to transact business in the Commonwealth; and
(b) Has for one (1) year prior to and through the date of the advertisement, filed Kentucky corporate income taxes, made payments to the Kentucky unemployment insurance fund established in KRS 341.490, and maintained a Kentucky workers' compensation policy in effect.
(3) A nonresident bidder is an individual, partnership, association, corporation, or other business entity that does not meet the requirements of subsection (2) of this section.

(4) If a procurement determination results in a tie between a resident bidder and a nonresident bidder, preference shall be given to the resident bidder.

(5) This section shall apply to all contracts funded or controlled in whole or in part by a public agency.

(6) The Finance and Administration Cabinet shall maintain a list of states that give or require a preference for their own resident bidders, including details of the preference given to such bidders, to be used by public agencies in determining resident bidder preferences. The cabinet shall also promulgate administrative regulations in accordance with KRS Chapter 13A establishing the procedure by which the preferences required by this section shall be given.

(7) The preference for resident bidders shall not be given if the preference conflicts with federal law.

(8) Any public agency soliciting or advertising for bids for contracts shall make KRS 45A.490 to 45A.494 part of the solicitation or advertisement for bids.

The reciprocal preference as described in KRS 45A.490-494 above shall be applied in accordance with 200 KAR 5:400.

Determining the residency of a bidder for purposes of applying a reciprocal preference
Any individual, partnership, association, corporation, or other business entity claiming resident bidder status shall submit along with its response the attached Required Affidavit for Bidders, Offerors, and Contractors Claiming Resident Bidder Status. The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

A nonresident bidder shall submit, along with its response, its certificate of authority to transact business in the Commonwealth as filed with the Commonwealth of Kentucky, Secretary of State. The location of the principal office identified therein shall be deemed the state of residency for that bidder. If the bidder is not required by law to obtain said certificate, the state of residency for that bidder shall be deemed to be that which is identified in its mailing address as provided in its bid.

Preferences for a Qualified Bidder or the Department of Corrections, Division of Prison Industries.
Pursuant to 200 KAR 5:410, and KRS 45A.470, Kentucky Correctional Industries will receive a preference equal to twenty (20) percent of the maximum points awarded to a bidder in a solicitation. In addition, the following “qualified bidders” will receive a preference equal to fifteen (15) percent of the maximum points awarded to a bidder in a solicitation: Kentucky Industries for the Blind, any nonprofit corporation that furthers the purposes of KRS Chapter 163 and any qualified nonprofit agencies for individuals with severe disabilities as defined in KRS 45A.465(3). Other than Kentucky Industries for the Blind, a bidder claiming “qualified bidder” status shall submit along with its response to the solicitation a notarized affidavit which affirms that it meets the requirements to be considered a qualified bidder- affidavit form included. If requested, failure to provide documentation to a public agency proving qualified bidder status may result in disqualification of the bidder or contract termination.

PRE-CONSTRUCTION MEETING:

A pre-construction conference will be scheduled with the successful bidder prior to the start of work so that certification procedures can be completed with as little inconvenience as possible. All reports and reporting procedures will be explained during the meeting.

END OF SECTION 002214
January 27, 2016

Aaron Bivens  
Integrity/Architecture, PLLC  
2414 Palumbo Drive, Ste 125  
Lexington, KY 40509  
aaron@integrityarch.com

Subject: Report of Geotechnical Engineering Subsurface Characterization  
Locust Street Garage  
Owensboro, Kentucky  
Vector Project 16-2982

Dear Mr. Bivens,

VECTOR Engineers, Inc., has completed the geotechnical engineering subsurface characterization for the proposed parking garage. This exploration was in general accordance with our proposal 16-174, dated November 18, 2016, which was accepted by Aaron Bivens with Integrity/Architecture, PLLC. The purpose of this exploration was to obtain subsurface data to develop site preparation and foundation recommendations for the proposed development. This report describes our understanding of the project, summarizes our findings, discusses the geotechnical concerns, and contains our engineering recommendations.

PROJECT INFORMATION

Project information has been provided through correspondence with Mr. Joseph Rasnick with Integrity/Architecture, PLLC. We have been provided with the following documents:

- Site Plan, Locust Street Garage, Sheet A1.0, undated, prepared by Integrity Architecture
- Site Plan, first through fourth - Floor Plans, Locust Street Garage, Sheet A1.1 through A1.4, undated, prepared by Integrity Architecture

The proposed site for a four-story, parking garage is located east of Locus Street and west of the existing Grits Garage on St. Elizabeth Street. The site location is shown on the aerial photograph on the next page. Based on our experience with Grits Garage, we have assumed the garage will be constructed with reinforced concrete frame
supported on auger cast-in-place piles. The building foot print will be approximately 127 by 330 feet. Columns spaced about 30-feet apart will support a maximum column load of 1000 kips per column. Settlement tolerances for the building are assumed to be ¾ inches differential between columns and 1 inch total.

The proposed garage is located between Locus Street and the existing Grits Garage. Vector Engineers has experience with several nearby sites.
Preliminary grading information was not available at time of this proposal. The site is nearly level; therefore, less than 2 feet of cut or fill will be required to achieve final grade. There are no below grade structures or retaining walls proposed for the project.

**FINDINGS**

As part of our geotechnical site characterization, we observed site conditions, reviewed regional geological maps, performed a subsurface exploration, and observed the groundwater conditions. The following sections report our findings.

**Site Surface Conditions**

Mr. Rob Folsom, PE, with Vector Engineers visited the site on December 14, 2016, to observe surface conditions to aid in interpreting the subsurface data and to detect conditions which could affect the project. The following is a general description of the site.

The downtown Owensboro site is about 900 feet south of the Ohio River in an existing parking lot. The parking lot is bordered on three sides by city streets: to the north by West Second Street, to the west by Locust Street, and to the south by West Third Street. The parking lot was bordered to the east by the Grits Garage structure, a three-story building with brick veneer. North of Second Street is the Hampton Inn, an eight-story building and to the northwest is the Owensboro-Daviess County Convention Center. West of Locust Street are two business housed in single-story masonry block buildings: Roto-Rooter to the southwest and Downtown Muffler and Brakes Shop to the northwest. South of Third Street is a single-story office building and a two-story office building.

The asphalt parking lot was in excellent to good condition. The northern portion of the lot was in excellent condition and appeared to have received an asphalt overlay within the last couple of years. The southern portion was in good condition with linear cracks which had been sealed. There were no obvious signs of subgrade failures such as extensive alligator cracking, shoveling, or rutting.
The terrain was generally level with a crown in the center sloping gradually toward the bordering streets. Only one storm drain was observed which was in the southwest corner of the lot. The perimeter of the lot was landscaped with mostly small bushes and a few small trees.

The Hampton Inn and Owensboro Convention Center were located to the north and northwest of the site. The north portion of the parking lot was in excellent condition.
The southern portion of the lot was in good condition with a few linear cracks. The parking garage structure border the site to the east.

**Area Geology**

The Geologic Map of the Owensboro East Quadrangle, Kentucky, (GQ-751), published by the U.S. Geological Survey indicates the site is underlain by the Tazewell Glacial outwash deposit. The deposit generally consists of sand, silt, clay, and gravel. The yellowish brown to gray sand is generally of fine grained near the surface and increases in size to fine gravel at depths greater than about 60 feet. The clay and silt are yellowish brown near the surface and gray at depth, and may be interbedded with sand and silty plastic clay. The clay may be lacustrine (lake deposit) in origin. The gravel occurs at depth and is subangular to subrounded pebbles of quartz, white and brown chert; some igneous and metamorphic rocks of glacial origin are also present.
A review of *The Geohydrology and Simulation of Ground-Water Flow for the Ohio River Alluvial Aquifer near Owensboro, Northwestern Kentucky*, published by USGS\(^1\) indicates a bedrock elevation ranges between 300 and 320 feet National Geodetic Vertical Datum (NGVD). Using an approximate site surface elevation of 395 feet, the depth to rock is about 75 to 95 feet deep.

**Subsurface Exploration**

After researching the readily available published geological information, a preliminary subsurface profile is formulated. The soil boring program is a means to substantiate the assumptions made in our preliminary profile and assist us in developing a representative subsurface profile of the site. The subsurface conditions will vary between borings thereby making the development of a representative and reliable profile dependent upon the number of borings or data points obtained during the field operations. The following discusses our interpretation of the subsurface profile on the site based on the published information and the results of our borings. The individual Boring Logs attached to this report will have specific details at the location of the boring.

**Field Exploration Methods**

The procedures used by Vector Engineers for field sampling and testing are in general accordance with ASTM procedures and established engineering practice. A summary of the field is included in the attachments.

We drilled seven borings to explore the subsurface conditions across the site and are label D-#. Mr. Rob Folsom, PE, directed drilling operations. In addition, we have included four borings previously drilled which Mr. Folsom witnessed in 2007 while employed at QORE. The additional borings are label A-# and with the project name "Grits Parking Garage and Office". The boring locations were located in the field by measuring distances from landmarks (i.e. – building corners and edge of pavements) using a distance wheel. Boring surface elevations were roughly estimated to be about

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397 feet based on USGS topographic maps. Because of the methods used, the soil boring locations shown on Boring Location Plan and elevations shown on the Boring Logs in the attachments are approximate. The stratification lines shown on the Boring Logs represent the approximate boundaries between soil or rock types. The transitions may be more gradual than shown.

We obtained soil samples using a split-barrel sampler driven by an automatic hammer assembly in general accordance with ASTM D1586. We also collected four relatively undisturbed soil sample using a thin-walled (Shelby) tube according to ASTM D1587. The soil samples were sealed in the field and returned to our laboratory. Since the soil was similar to the soil encountered at the Grits Garage, Mr. Folsom elected not perform laboratory tests, but would rely on the test results from the previous borings. The soil samples were visually classified, by Mr. Folsom according to the Unified Soil Classification System (USCS, ASTM D2487). During the previous exploration, laboratory testing included moisture contents on several soil samples. The sandy soils were washed over a No. 200 sieve to determine the about of clay and silt. The laboratory data and descriptions of these tests are included in the attachments.

**Grits Subsurface Conditions**

Beneath the surface materials, our boring generally encountered five soil strata:

1. Old fill consisting of various materials
2. Upper lean clay stratum
3. Upper fine sand stratum
4. Lower clay stratum
5. Lower sand stratum

The following paragraphs provide a description of each stratum.
The surface materials consisted of either 4 to 12 inches of topsoil, or 4 to 5 inches of asphalt underlain by crushed stone base. Beneath the surface materials, fill was encountered to depths ranging from 2 to 13 feet. For most of the site the fill depth was less than 4 feet. Fill depths exceed 8 feet in the southeast corner (borings A-7 and A-10, and sounding A-9). Boring D-4 located at the northwest corner encountered about 9 feet of fill. The remaining borings which covered most of the site encountered fill depth between 2 to 4 feet. The fill materials consisted of a variety of material including gray lean clay, bricks, organics, debris, and concrete. Standard penetration test (SPT) resistances (N-values) within the fill generally ranged from 2 to 25 blows per foot (bpf) indicating a wide range of soil consistency and variable soil support.

Stratum 2 generally consisted of mottled brown and gray, lean clay with a little silt and sand. The upper native clay stratum was generally extended to a depth of about 8 to 9 feet. In Boring D-4, where the fill was deeper, the upper native clay stratum was encountered from about 9 to 12 feet deep. SPT N-values generally ranged from 4 to 10 bpf indicating soft to stiff soil consistency with a median value of 7 bpf. Using standard visual-manual soil classification techniques, Stratum 2 soils were generally classified as “CL” type soils, according to the USCS.
Stratum 3, the upper sand layer, was generally encountered beneath the upper native clay stratum (Stratum 2). In borings A-7 and A-10, the fill material extended to Stratum 3 (e.g. Stratum 2 was not encountered in these borings). The stratum primarily consisted of orange, orangish brown, or grayish brown, wet, fine sand with various amounts of sand and clay. SPT N-values for Stratum 3 ranged from 2 to 13 bpf with a median value of 10 bpf. The soil samples were visually classified as “SP” (sand with less than 5 percent clay), “SP-SC” (sand with 5 to 12 percent clay), and “SC” (sand with 12 to 50 percent clay) according to the USCS system.

Underlying Stratum 3 is an approximate 10-foot thick layer of light gray or bluish gray, lean clay that comprises Stratum 4 and extends to depths of 27 to 30 feet in our borings. N-values ranged from weight of hammer\(^2\) to 11 bpf. These N-values indicate very soft to stiff clays. Soft clays are likely to settle excessively under the large column loads anticipated for this structure. During the 2007 geotechnical study, we found that moisture content from samples taken from Stratum 4 were approximately 23 percent at a depth of about 20 feet and approximately 34 percent at the base of the stratum (about 30 feet deep).

The lower sand stratum, Stratum 5, was encountered beneath Stratum 4 and extended to our boring termination depth. The firm to dense, orangish brown to gray, fine to medium sand stratum contained some clay and silt. Penetration values (N-values) ranged from 8 to 31 bpf with a median value of 18 bpf. Laboratory tests during 2007 of selected Stratum 5 samples indicated 5 to 15 percent silt- or clay-size particles. These results and our observations indicate the soils are “SP-SC” type soils using the USCS.

All borings were terminated without encountering auger refusal at approximate depths of 40 or 60 feet.

\(^2\) Weight of hammer indicates the weight of the 140-pound hammer drove the sampler more than 6 inches without any blows (i.e. SPT N-value of zero).
Groundwater

Groundwater was generally encountered from about 10 to 14 feet on the drilling tools while drilling. Drilling fluids (mud) were injected in the borings during drilling to control heaving sands; therefore, water depths at the completion of drilling were not reported.

Our experience suggests that two groundwater tables exist in this area; the upper groundwater table is a large perched groundwater table that is generally encountered about 10 to 12 feet deep. The second groundwater table is related to the Ohio River. A review of The Geohydrology and Simulation of Ground-Water Flow for the Ohio River Alluvial Aquifer near Owensboro, Northwestern Kentucky, published by USGS\(^3\) indicates a potentiometric\(^4\) surface altitude of 360 feet NVGD\(^5\) (about 35 feet deep) in November 1991. We believe both groundwater tables are extensive and will produce significant amounts of water.

In addition, some trapped or perched water, which occurs in irregular, discontinuous locations within the soil overburden, may be encountered within depths shallower than 10 feet below the surface. When these shallow water bearing strata are exposed in excavations, such as cut slopes or utility/footing trenches, they can produce widely varying seepage durations and rates—depending upon recent rainfall activity and other site specific characteristics of the area. These perched water sources are often not linked to the more continuous, relatively stable ground water table previously discussed.

DISCUSSION

Based on the results of our borings and our understanding of the proposed project, we believe construction of the proposed parking garage is achievable; however,

\(^4\) Altitude at which water level would have stood in tightly cased well.
\(^5\) National Geodetic Vertical Datum of 1929.
the old fill and liquefiable sands offer some geotechnical challenges. The following subsections provide additional details and discuss our geotechnical concerns.

Uncontrolled Fill

The site has been previously developed and contains fill placed without quality control (uncontrolled fill). Over most the site, the uncontrolled fill is 2 to 4 feet deep. Borings located in the northwest and south east corners encountered fill depths from 8 to 13 feet. We anticipate additional debris laden fill will be encountered at other locations within the proposed garage footprint. Whenever structures and/or pavements are supported over uncontrolled fill there is a risk of differential settlement; often due to a content of deleterious or miscellaneous materials that decays over time, thus causing subsidence at the surface. We have proposed a deep foundation system, which will extend through the uncontrolled fill, to support the superstructure; therefore, differential settlement due to the old fill would be limited and should not be a concern for the building superstructure.

If the floor slabs are supported by the uncontrolled fill in its current condition, there will be detrimental cracking in the slabs. To reduce the risk of cracking in the floor slab, the following options were considered:

1. Use a grade supported floor slab and undercut the old fill in its entirety beneath building footprint, and replace it with structural fill. Where the uncontrol fill depths are less than about 4 feet, this option is feasible. Where the fill depths exceed 8 feet, this option does not appear to be economically feasible. In addition, the high groundwater table would make deep excavations difficult.

2. Construct a structural floor slab (not a grade supported floor slab) to bear the entire floor slab loading. Our experience indicates this option is also expensive and is typically not selected; however, it was selected for the Owensboro-Daviess County Convention Center.

3. Construction of a Granular Fill Zone. Undercut 4-feet of the uncontrolled fill beneath the building footprint, backfill with a select granular material, and construct with a thicker, reinforced concrete, grade supported floor slab. The risk of detrimental cracking to the floor slab due to the variable support condition may be significantly reduced (but not eliminated) by undercutting the building footprint to a depth of 4 feet below finish floor elevation (FFE) and backfilling with the granular fill.
Options 1 and 2 have the least risk of a detrimental floor slab cracking. The Grits Garage implemented Option 3. For this site, we recommend a combination of Option 1 and Option 3 be used. Where the uncontrol fill is less than 4 feet use Option 1. Where the fill extends to depths greater than 4 feet use Option 3. The owner must understand Option 3 site improvements will reduce, but not eliminate, the risks associated with a grade supported floor constructed over uncontrolled fill.

**Seismic Concerns and Foundation Selection**

From our seismic classification and liquefaction analysis we have concluded the following: loose sands in the upper sand stratum (from about 10 to 20 feet deep) are liquefiable in thin, isolated locations. Provided the building is supported on deep foundations consistent with our recommendations, the building may be designed using a site seismic class of D, but the grade-supported floor slabs may experience large differential settlement, on the order of 2 to 4 inches, in the event of the design magnitude earthquake. The superstructure and upper deck should be capable of withstanding the design earthquake since they are founded on deep foundations. The following narrative provides additional details to support our conclusion.

**Liquefactions and Settlement Analysis**

A layer of loose sand was encountered below the groundwater in five of the eleven borings. While the loose sand was encountered from approximately 10 to 20 feet deep, the low N-values were generally limited to one 5-foot increment. The N-values recorded within this layer indicated loose to firm sands. Liquefaction potential is greatest where the ground-water level is shallow, and where saturated, loose sands occur. Liquefaction potential decreases as the grain size and clay and gravel content of the soil increases. The liquefaction potential increases as ground acceleration and shaking duration increase during an earthquake.

For the liquefaction analysis, we have used the probabilistic ground motion values from the USGS. The results of the liquefaction analysis indicate that the loose sands (SPT N-values less than 10 bpf) encountered in our borings will liquefy in the event of the design earthquake. Also, the firm sands in the upper stratum will be marginally stable during the design earthquake. Our experience with similar sites
suggests that settlement due to liquefaction is on the order of 2 to 4 inches at the ground surface.

**Seismic Site Categorization**

We estimated the average shear wave velocity to slightly greater than 600 feet per second based on the SPT N-values obtained in our borings. In addition, actual shear wave velocity measurements at the Hampton Inn and Owensboro-Daviess County Convention Center indicate an average shear velocity on the order of 800 fps. According to ASCE7-10, sites with an average shear wave velocity of greater than 600 feet per second (fps) and less than 1200 fps correspond to site seismic Class D.

The previous site classification was based upon: 1) a site without liquefiable soils and 2) shallow foundations. However, the liquefaction analysis indicates that thin layer of isolated soils will liquefy under the design earthquake loads, which would give cause for assigning seismic Class F to the site.

Considering the relatively thin layer of liquefiable sand, we have determined that a deep foundation system will aid in reducing the vulnerability for potential failure associated with liquefaction; therefore, a system of augered cast-in-place (ACIP) piles will be used to support the proposed parking garage. *The ACIP piles will extend through the loose sands. Considering the piles will be supported by the very firm to dense sands with an average shear wave velocity greater than 600 fps, we recommend the building structure be designed using a site seismic Class D.*

**Improved Seismic Design Category**

Our review of the building code indicates the structure will be placed seismic design category D6. The nearby Owensboro-Daviess County Convention Center and Hampton Inn were able to improve the seismic design category to Class C by performing a site-specific hazard study. If it is a financial benefit to the project, a similar study

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6 The seismic site class combined with the mapped bedrock acceleration and the building risk category are used to determine the seismic design category.
could be performed for this site. We recommend the project structural engineer discuss
the option with Vector Engineers.

LIMITATIONS OF RECOMMENDATIONS

This report has been prepared for the exclusive use of Integrity/Architecture,
PLLC for specific application to the project site. Our recommendations have been
prepared using generally accepted standards of geotechnical engineering practice in the
Commonwealth of Kentucky. No other warranty is expressed or implied. This company
is not responsible for the conclusions, opinions, or recommendations of others based
on these data. Additionally, our conclusions and recommendations are based on the
information provided to us, the data obtained from our subsurface exploration, and our
past experience. They do not reflect variations in the subsurface conditions which are
likely to exist between borings and in unexplored areas of the site. These variations
result from geologic variability of the subsurface conditions. If conditions are different
than those encountered in our exploration, it will be necessary for us to re-evaluate our
conclusions and recommendations based upon on-site observation of the conditions.
For more information on the use and limitations of this report, please read the ASFE
document included in the attachments.

If the overall design or location of the project is changed, the recommendations
contained in this report must not be considered valid unless our firm reviews the
changes and our recommendations are modified. When the design is finalized, we
should be given the opportunity to provide the additional service of reviewing the grading
plan, and applicable portions of the project specifications. This review will allow us to
check whether these documents are consistent with the intent of our recommendations.

We may recommend that a supplementary exploration be performed when
significant design changes such as movement of the project are incorporated in the final
design after the geotechnical exploration has been completed. This supplementary
exploration may include obtaining additional soil data along the new alignment to
provide specific recommendations.
RECOMMENDATIONS

Earthwork

Since a grading plan was not supplied to us at the time of this report preparation, our preliminary grading estimates suggest less than 2 feet of cut or fill will be required to achieve final grade.

As indicated in the previous section entitled Uncontrolled Fill, the site contains fill in the building footprint. Construction of a grade supported floor slab over an uncontrolled fill has inherent risks of detrimental cracking to the slab. Three options were presented to reduce the risks. For this site, we recommend a combination of Option 1 (undercut and replace) be used where the uncontrol fill is less than 4 feet deep. Where the fill extends to depths greater than 4 feet, we recommend that Option 3 (construct a 4-foot thick granular mat) be used. The owner must understand that Option 3 improvements will reduce, but not eliminate, the risks associated with a grade supported floor constructed over old, partially rehabilitated fill.

Stripping and Removal of Uncontrolled Fill

All asphalt, topsoil and organic materials should be stripped to prepare the site for construction. The uncontrolled (old) fill should be removed up to a maximum depth of 4 feet and the native ground (Stratum 2) surface exposed in areas where it is encountered at depths of 4 feet of less. The stripping and uncontrolled fill removal activity should extend five feet outside of the pavement and structural footprint areas. It is important that a Vector representative observe stripping and mass excavation as previously unexplored or unknown conditions could become evident during these operations. We must judge whether the recommendations in this report should be modified in view of the conditions encountered.

The organic topsoil, clay, and granular soils should be segregated and stockpiled separately. The old topsoil should be either wasted from the site or placed in landscaped areas. The clay or granular materials may be used in structural area where the uncontrolled fill has been removed provided the materials meet the structural fill requirements listed below. Backfill over uncontrolled fill is limited to granular materials.
approved by the geotechnical engineer and in accordance with the following subsections. Any debris, organic, or deleterious materials should be removed from the old fill material and wasted from the site. We anticipate large pieces of concrete may be encountered within the fill. Concrete pieces greater than 3 inches thick and 12 wide may be crushed and used as fill if approved during construction by a Vector geotechnical engineer. If these large pieces are not broken-up, they should not be used in structural fill areas.

**Subgrade Evaluation (Proofrolling)**

After stripping, the subgrade should be evaluated by a geotechnical engineer by observing proofrolling. Proofrolling consists of applying repeated passes (2 to 3 passes) on the subgrade with a fully loaded dump truck or similar rubber tired vehicle. Any materials judged to deflect excessively under the wheel loads should be undercut to more stable soils or stabilized in-place before placing fill.

**Construction of a Granular Fill Zone over Uncontrolled Fill**

In areas within the building footprint where the old fill was not completely removed (i.e. the uncontrolled fill extended greater than 4 feet) we recommend the undercut material be replaced with a select granular fill. Ideally, the select granular material would be an open graded stone similar to KYTC No. 57 or 23 stone. However, an open graded stone may be problematic for the construction of the augered cast-in-place piles. The construction team may request to use a crushed limestone with some fines (similar to densely graded aggregate - DGA). The select granular fill should contain some larger stone (½ to 1 inch) for bridging strength and some finer material to limit concrete grout from the ACIP piles spreading laterally. In Owensboro, crushed limestone may be expensive. We understand several gradations of river sand and gravel are available and may be suitable for this application. During construction, Vector should be retained to work with the contractor in selecting a granular material readily available in Owensboro that will provide suitable bridging strength.

Monitoring of some types of select fill placement must be done visually by an experienced geotechnician working directly and closely with our senior geotechnical engineer. Placement of these materials is a blend of art and science; the experience of the equipment operators and testing personnel are crucial to achieving the desired
performance from the fill. Each lift should be compacted, observed and tested by a Vector technician, and approved before additional lifts are placed. Ultimately, approval of each lift will be based on the judgment of the geotechnical engineer based on all of the following criteria:

- Compliance with lift thickness guidelines
- Gradation of material throughout the lift
- Adequate and uniform compactive effort by the contractor
- Performance of the lift under construction traffic
- Intensity of construction traffic on each lift (e.g. is equipment traversing the entire width of the lift)

Other types of select fill materials should be monitored with in-place density testing. In-place density testing on structural fill assures that the required compaction criteria have been achieved. This allows our project engineer to monitor the quality of the fill construction and to verify that the design criteria are being achieved in the field. We further recommend that fill monitoring be performed on a full-time basis by Vector. The testing frequency for density tests, performed on a full-time basis, can be determined by our personnel based on the area to be tested, the grading equipment used, and the construction schedule. Tests should be performed at vertical intervals of one-foot or less as the fill is being placed.

**Structural Fill Placement Over Native Soil**

In structural areas where all the uncontrolled fill has been removed, structural fill may be composed of either granular or clay fill. The following recommendations are provided for areas were the uncontrolled fill has been removed.

After subgrade evaluation, fill areas may be brought to the design subgrade levels with structural fill. Ideally, structural fill is defined as inorganic natural soil with maximum particle sizes of 3 inches and a maximum dry density of at least 95 pounds per cubic foot (pcf) when tested by the standard Proctor method (ASTM D698). Limit the fill materials to a Plasticity Index less than 32.

Structural fill should be placed in relatively thin (6- to 8-inch) layers and compacted to at least 95 percent of the soil’s maximum dry density as determined by
the standard Proctor test. Additionally, the moisture content of the fill material should be maintained within 2 percent of its standard Proctor optimum moisture content. We anticipate any new fill will come from an off-site borrow source. The fill source should be tested and approved by a Vector geotechnical engineer before it is allowed to be used as

In-place density testing must be performed as a check that the previously recommended compaction criteria (density and moisture) have been achieved. This allows our project engineer to monitor the quality of the fill construction and verify that his design criterion is being achieved in the field. Performance of slabs-on-grade will depend directly on the quality of the fill construction. The testing frequency for density tests performed on a full-time basis can be determined by our personnel based on the area to be tested, the grading equipment used, and construction schedule. Tests should be performed at vertical intervals of at least one-foot as the fill is being placed. We recommend that an engineering technician working under the direction of our project geotechnical engineer perform the density tests.

Foundations

We believe the proposed parking garage superstructure should be supported by a deep foundation system to reduce the seismic and settlement risks associated with the underlying fill, loose sands, and band of soft clay. A system of augered cast-in-place (ACIP) piles was used to support the adjacent parking garage. The following sections provide specific recommendations to be used during the design and construction of the ACIP piles.

Design Considerations:

Our analysis methodology for calculating pile capacity between concrete and soil is based on the laboratory analysis performed on samples from the site and our experience. Based on a maximum gravity load of 100 tons per pile, we recommend the following pile lengths:
Table 1  Pile Lengths for 100 Ton Pile Capacity

<table>
<thead>
<tr>
<th>Pile Diameter (inches)</th>
<th>Pile Length¹ (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>16</td>
<td>60</td>
</tr>
<tr>
<td>18</td>
<td>50</td>
</tr>
</tbody>
</table>

¹. Pile length below the bottom of pile cap

Our pile capacity analysis is based on a single pile and does not include group effects. We recommend a minimum, center-to-center pile spacing of 3 pile diameters to avoid reduction of pile capacity due to group effects, to limit surface heave, and to reduce the possibility of damaging previously installed piles.

Piles obtain their strength from two mechanisms: 1) friction between the sides of the pile and the surrounding soil (skin friction) and 2) end-bearing resistance due to the support of the materials that are at the base of the pile. Our recommended piles derive approximately 80 percent or more of their capacity from skin friction. A static factor of safety of 2 was used to calculate the gravity capacity. Our analysis methodology for calculating pile capacity between concrete and soil is based on the laboratory analyses and our experience. Our experience includes ACIP piles at nearby sites in Downtown Owensboro.

Construction Consideration

Augered cast-in-place (ACIP) piles are constructed by first rotating a continuous flight, hollow shaft auger into the ground to a pre-determined depth. Cement grout is then pumped through the auger shaft as the auger is gradually withdrawn, leaving a continuous grout column in the ground. Improper grout injection and auger withdrawal techniques can result in lower capacity ACIP piles and/or influence the surrounding existing building foundations within a limited reach. Because piles cannot be inspected after construction, the use of proper construction procedures is crucial to pile
functionality. The Kentucky Building Code (KBC) Section 1810.3.5.2 states that cast-in-place concrete piles should not have a length to diameter ratio greater than 30, unless design and installation of the pile foundations is under the direct supervision of a licensed geotechnical engineer. Our recommended piles have length to diameter ratios exceeding 30. Prudent engineering practice would include a geotechnical engineer, or at least his experienced representative, carefully monitoring the pile installation.

We recommend the auger be withdrawn in a steady, continuous motion. It has been our experience that withdrawal of the auger during cast-in-place pile installation is an incremental process, and that the augers are generally slowly rotated during withdrawal to prevent a flash set of the grout against the auger flights. The rate of rotation is generally much less during withdrawal than during drilling; however, a reversal of the direction of rotation of the augers during withdrawal should not be allowed. A reversal could allow soil cuttings to contaminate the fluid grout, possibly causing a reduction in the pile section.

It is critical that a sufficient volume of grout be continuously pumped at sufficient pressure head to prevent suction from developing as the augers are withdrawn. Such suction can cause the soil to mix with the grout, the bearing soils to be disturbed, and the drilled hole to collapse. This action results in a low capacity pile and a reduced cross-sectional area. We recommend the quantity of grout injected into each pile be monitored and compared to the theoretical pile volume (pile cross-sectional area times

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the pile length). We recommend the installed grout volume be at least 30 percent greater than the theoretical volume\(^8\). Piles with a lower grout ratio should be redrilled.

The grout should be pumped with sufficient pressure, and the auger withdrawn slowly enough, to keep the hole filled so as to prevent hole collapse, and to cause lateral penetration of the grout into soft or porous zones of surrounding soil. A pressure head, of at least 10 feet of grout above the injection point, should be maintained at all times during auger pulls so that the grout has a displacing action and resists the movement of loose material into the hole. As the augers are rotated, they remove soil around them; the more they rotate, the more soil is removed. Our experience indicates localized sloughing of soil against the augers eventually develops as more soil is removed. This sloughing often extends up to the ground surface and could undermine any adjacent spread footing foundations. To reduce the potential for localized sloughing, we recommend a minimum torque capacity of 25,000 foot-pounds for 14-inch diameter piles be specified for the pile installation equipment. The auger rotation during withdrawal should be limited to no greater than about 25 revolutions per minute (rpm). The auger withdrawal rate should not exceed 10 feet per minute, unless a faster rate can be demonstrated to be acceptable. This method of placement should be used at all times regardless of whether the hole is sufficiently stable to retain its shape without support from the earth-filled auger flights.

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\(^8\) KBC Section 1809.3.3 requires the grout volume be equal to or greater than the theoretical volume.
The installation of additional piles in close proximity of a recently constructed pile can damage that new pile if the concrete has not yet gained sufficient strength. The IBC restricts the construction of new piles to distances greater than 6 diameters center-to-center spacing of any pile filled with concrete less than 12 hours old.

The grout properties are critical in achieving a well-constructed pile which performs adequately. The grout should include additives which adequately control setting shrinkage. The grout must be fluid enough to be pumped easily and must flow without excessive pressure losses.

Augered cast-in-place piles may be reinforced with single or bundled steel reinforcing bars, rolled steel sections, or steel reinforcing cages. All reinforcement should be inserted before the grout sets up; normally within ten minutes after the augers are withdrawn. The reinforcement should be placed in the center of the pile, and be plumb to avoid having it protrude from the grout into the soil. Because flexible reinforcing rods are difficult to center, they should be installed with a centering device or through the center of the augers.

We recommend the foundations be designed to accommodate the installed pile location to an accuracy of ±6 inches. This tolerance is recommended due to the possibility that near-surface obstructions from the previously placed fill could cause the auger to deviate from the staked location. The piles should be vertically plumb within 2 percent of the pile length as measured when the auger is above ground in the leads.

During pile installation, the following quality control observations should be performed by Vector due to our familiarity with the site and the project design requirements.

- Monitor installation procedures to check that the tip depths are properly achieved and that auger withdrawal techniques are sufficient to remove loose cuttings from the pile.
- Monitor and record the rate of auger penetration and withdrawal.
- Check and calibrate the equipment for controlling and measuring the flow rate of the grout into the pile.
- Monitor installation of steel reinforcement.
Load Test Program

We recommend a pile load test program be implemented and monitored by Vector's geotechnical engineer to evaluate the adequacy of the contractor's installation procedures and equipment, as well as our design assumptions. The geotechnical engineer should be retained to monitor installation of the test and reaction piles, and the load test. The pile load tests should be conducted in accordance with the KBC and ASTM D1143. We recommend the maximum test load be no less than 2 times the design load. Based on the subsurface conditions encountered, we recommend using the “Quick Load Test Method” as referenced in ASTM D1143. If reaction piles are used for applying the test loads, a portion of the reaction piles should be installed similarly to the test pile to aid in the installation evaluation. The test pile can be used as a production pile as long as the net "set" experienced during the load tests is in acceptable ranges. Reaction piles should not be used as production piles.

Floor Slabs

As mentioned previously, if the floor slabs are supported on the uncontrolled fill in its current condition, significant cracking would ensue. To prevent cracking in the floor slab, there are two low risk options mentioned previously in the section entitled Uncontrolled Fill and noted as expensive. Option 3, construction of a four-foot thick select granular fill zone provides a balance of economy and risk.

We recommend floor slab be design to be crack resistance due to variable support conditions. The concrete floor slab should be at least 6 inches thick and contain steel reinforcement to control cracking.

We recommend frequent control joints be used. Control joints should be placed in the slab around columns and along footing supported walls so these elements may move independently. We recommend a 6-inch thick (minimum) layer of compacted, well-graded crushed stone directly beneath the slab to enhance support and provide a working base for construction of the floor slab. The crushed stone should be moist, but not wet, as the concrete is placed to reduce curling of the slab as the concrete cures.
Between completion of grading and slab construction, floor slab subgrades are often disturbed by weather, footing and utility line installation, and other construction activities. For this reason, the subgrade should be evaluated by a geotechnical engineer immediately prior to constructing the slab. During this evaluation, the subgrade should be proofrolled with relatively heavy rubber-tired equipment. Areas judged by the geotechnical engineer to perform unacceptably under the moving load should be undercut and replaced with dense graded crushed stone compacted to at least 95 percent of its standard Proctor maximum dry density.

Valediction

Vector Engineers, Inc. appreciates the opportunity to provide you with these geotechnical services. Should you have questions or require any additional information, please contact us.

Respectfully submitted,

Vector Engineers, Inc.

W. Robert Folsom, PE
Senior Engineer
Licensed Kentucky 18787

Matthew J. Slusser, PE
Project Engineer

Attachments:
   ASFE - Important Information about This Geotechnical-Engineering Report
   Site Location Map
   Aerial Photograph Map
   Boring Location Plan
   Boring Logs
   Field Testing Procedures
   Laboratory Data Summary
   Seismic Design Map
The Geoprosessional Business Association (GBA) has prepared this advisory to help you – presumably a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprosessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared solely for the client. Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it in its entirety. Do not rely on an executive summary. Do not read selected elements only. Read this report in full.

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:
- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:
- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, always inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:
- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. If your geotechnical engineer has not indicated an "apply by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed. The data derived from those sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual site-wide subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.
This Report’s Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations only after observing actual subsurface conditions revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.

This Report Could Be Misinterpreted

Other design professionals’ misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team; to:

- confer with other design team members,
- help develop specifications,
- review pertinent elements of other design professionals’ plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift the risk of unanticipated subsurface conditions to constructors by limiting the information they provide for bidding preparation. To help prevent the costly, contentious problems that have occurred, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, but be certain to note that you’ve included the material for informational purposes only. To avoid misunderstanding, you may also want to note that “informational purposes” means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, only from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and be sure to allow enough time to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled “limitations,” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a “phase-one” or “phase-two” environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations to the likelihood of encountering underground storage tanks or regulated contaminants. Unanticipated subsurface environmental problems have led to project failures. If you have not yet obtained your own environmental information, ask your geotechnical consultant for responsibility guidance. As a general rule, do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer’s services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, proper implementation of the geotechnical engineer’s recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. Geotechnical engineers are not building-envelope or mold specialists.

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

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# Boring Log

**Project:** Locust Street Garage  
**Owensboro, KY**

<table>
<thead>
<tr>
<th>From (ft)</th>
<th>To (ft)</th>
<th>Material Description</th>
<th>Symbol</th>
<th>Sample Depth (ft)</th>
<th>Sample Type</th>
<th>Blows per 6-inch increment</th>
<th>Recovery (in)</th>
<th>SPT N value</th>
<th>Rock Quality (RQD, %)</th>
<th>Atterberg Limits (L, Pl)</th>
<th>Moisture Content (%)</th>
<th>% Fines (clay &amp; silt)</th>
<th>Unconfined Compressive Strength (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>0.8</td>
<td>ASPHALT 5 inches</td>
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<td>STONE BASE 5 inches</td>
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<td>0.8</td>
<td>3.8</td>
<td>FILL - LOOSE, white gravel (GW) with coarse sand, dry</td>
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<td>2 1/2</td>
<td>SS</td>
<td>8, 5, 3</td>
<td>6</td>
<td>8</td>
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<td>3.8</td>
<td>7.5</td>
<td>STIFF, mottled brown and gray LEAN CLAY (CL) moist</td>
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<td>5 5.5</td>
<td>SS</td>
<td>5, 4, 5</td>
<td>18</td>
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<td>LOOSE, brown, fine SAND (SP) moist wet below 13.8 ft.</td>
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<td>SS</td>
<td>3, 3, 5</td>
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<td>18.0</td>
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<td>SS WOH, WOH, 1</td>
<td>3, 5, 7</td>
<td>18</td>
<td>12</td>
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<td>SS WOH, WOH, 1</td>
<td>3, 5, 7</td>
<td>18</td>
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<tr>
<td>20</td>
<td>25</td>
<td>VERY SOFT, light gray LEAN CLAY (CL) moist</td>
<td></td>
<td></td>
<td>SS WOH, WOH, 1</td>
<td>6, 10, 9</td>
<td>18</td>
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<td>25</td>
<td>30</td>
<td>FIRM, orange, fine CLAYEY SAND (SC) wet</td>
<td></td>
<td></td>
<td>SS WOH, WOH, 1</td>
<td>6, 10, 9</td>
<td>18</td>
<td>19</td>
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<tr>
<td>30</td>
<td>35</td>
<td>FIRM, orange to brown, medium SAND (SP-SC) with a little clay, wet</td>
<td></td>
<td></td>
<td>SS WOH, WOH, 1</td>
<td>6, 10, 9</td>
<td>18</td>
<td>19</td>
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<td>SS WOH, WOH, 1</td>
<td>6, 10, 9</td>
<td>18</td>
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<td>SS WOH, WOH, 1</td>
<td>6, 10, 9</td>
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<td>40.5</td>
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<td>Boring terminated at 40.5 feet without refusal</td>
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<td>From (ft)</td>
<td>To (ft)</td>
<td>Material Description</td>
<td>Symbol</td>
<td>Sample Depth (ft)</td>
<td>Blows per 6-inch increment</td>
<td>Recovery (in)</td>
<td>SPT N value</td>
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<tr>
<td>0.0</td>
<td>1.0</td>
<td>ASPHALT 4.5 inches STONE BASE 8 inches</td>
<td></td>
<td>SS 2 1/2</td>
<td>6, 11, 14</td>
<td>15</td>
<td>25</td>
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<tr>
<td>1.0</td>
<td>4.5</td>
<td>FILL - DENSE, red bricks with asphalt pieces, dry</td>
<td></td>
<td>SS 5</td>
<td>5, 2, 4</td>
<td>18</td>
<td>6</td>
<td></td>
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<tr>
<td>4.5</td>
<td></td>
<td>FIRM, mottled brown and gray LEAN CLAY (CL) moist</td>
<td></td>
<td>SS 7 1/2</td>
<td>3, 2, 3</td>
<td>18</td>
<td>5</td>
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<tr>
<td>9.5</td>
<td></td>
<td>LOOSE, brown, fine SAND (SP) moist wet below 10 ft.</td>
<td></td>
<td>SS 10</td>
<td>3, 3, 2</td>
<td>18</td>
<td>5</td>
<td></td>
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<tr>
<td>18.0</td>
<td></td>
<td>VERY SOFT, light gray LEAN CLAY (CL) wet</td>
<td></td>
<td>SS 15</td>
<td>2, 2, 4</td>
<td>18</td>
<td>6</td>
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<tr>
<td>22.0</td>
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<td>FIRM, light gray LEAN CLAY (CL) wet</td>
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<td>SS 25</td>
<td>3, 3, 4</td>
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<tr>
<td>28.0</td>
<td></td>
<td>FIRM, orange, fine SAND (SF-SC) with a little clay, wet</td>
<td></td>
<td>SS 30</td>
<td>6, 8, 11</td>
<td>18</td>
<td>19</td>
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<tr>
<td>43.0</td>
<td></td>
<td>FIRM, orange, medium SAND (SP-SC) with a little clay, wet</td>
<td></td>
<td>SS 35</td>
<td>6, 8, 9</td>
<td>15</td>
<td>17</td>
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<tr>
<td>48.0</td>
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<td>FIRM to VERY FIRM, gray, medium to coarse SAND (SP-SC) with a few gravel, wet</td>
<td></td>
<td>SS 40</td>
<td>5, 9, 10</td>
<td>15</td>
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<tr>
<td>55.0</td>
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<td>FIRM to VERY FIRM, gray, medium to coarse SAND (SP-SC) with a few gravel, wet</td>
<td></td>
<td>SS 45</td>
<td>3, 9, 11</td>
<td>16</td>
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<tr>
<td>60.5</td>
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<td>Boring terminated at 60.5 feet without refusal</td>
<td></td>
<td>SS 50</td>
<td>9, 9, 9</td>
<td>16</td>
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<td>SS 60</td>
<td>13, 12, 14</td>
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<td>26</td>
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<td>From (ft)</td>
<td>To (ft)</td>
<td>Material Description</td>
<td>Symbol</td>
<td>Sample (ft)</td>
<td>Blows per 6-inch increment</td>
<td>Recovery (in)</td>
<td>SPT-N value</td>
<td>Rock Quality (RQD, %)</td>
<td>Atterberg Limits (L, PI)</td>
<td>Moisture Content (%)</td>
<td>% Fine (Gravel, sand)</td>
<td>Unconfined Compressive Strength (psi)</td>
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<td>0.0</td>
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<td>ASPHALT 4 inches</td>
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<td>1.0</td>
<td>3.5</td>
<td>FILL - FIRM, dark gray, LEAN CLAY (CL) with brick pieces</td>
<td>2 1/2</td>
<td>SS</td>
<td>3, 3, 3</td>
<td>18</td>
<td>6</td>
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<tr>
<td>3.5</td>
<td>7.5</td>
<td>FIRM, mottled brown and light gray LEAN CLAY (CL) moist</td>
<td>5</td>
<td>SS</td>
<td>3, 4, 3</td>
<td>18</td>
<td>7</td>
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<tr>
<td>7.5</td>
<td>12.0</td>
<td>VERY LOOSE, brown, CLAYEY SAND (SC) moist wet below 10 ft.</td>
<td>10</td>
<td>SS</td>
<td>3, 1, 1</td>
<td>18</td>
<td>2</td>
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<tr>
<td>12.0</td>
<td>18.0</td>
<td>FIRM, brown CLAYEY SAND (SC), wet</td>
<td>15</td>
<td>SS</td>
<td>2, 5, 6</td>
<td>18</td>
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<tr>
<td>18.0</td>
<td>23.0</td>
<td>VERY SOFT, light gray LEAN CLAY (CL) wet</td>
<td>20</td>
<td>SS</td>
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<td>Sample Type</td>
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<td>SPT-N Value</td>
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<td>Moisture Content (%)</td>
<td>% Finers (Clay &amp; silt)</td>
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<td>Recovery (in)</td>
<td>SPT N value</td>
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<td>Atterberg Limits (FL, PI)</td>
<td>Moisture Content (%)</td>
<td>% Fines (Clay &amp; silt)</td>
<td>Unconfined Compressive Strength (ksi)</td>
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<td>7, 9, 12</td>
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</table>

Boring terminated at 60.5 feet without refusal.
# Boring Log

**Project:** Locust Street Garage  
**Location:** Owensboro, KY

**Method:** H.S.A.  
**Date:** December 19, 2016  
**West side**  
**Groundwater:** Water on drilling tools at 9.5 feet.  
**Engineering:** Rob Folsom, PE  
**Driller:** Pete Nemeth  
**Notes:** Charged augers with drilling mud at 18 feet.

<table>
<thead>
<tr>
<th>From (ft)</th>
<th>To (ft)</th>
<th>Material Description</th>
<th>Symbol</th>
<th>Sample Depth (ft)</th>
<th>Blows per 6-inch increment</th>
<th>Recovery (in)</th>
<th>SPT 'N' value</th>
<th>Density (GSD, %)</th>
<th>Atterberg Limits (LL, PI)</th>
<th>Moisture Content (%)</th>
<th>% Fines ( Clay &amp; silt)</th>
<th>Unconfined Compressive Strength (psi)</th>
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<td>FILL - FIRM, dark gray, LEAN CLAY (CL) with little sand and trace brick</td>
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<td>SS</td>
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<td>Sample Type</td>
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<td>Rock Quality (ROD, %)</td>
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<td>Moisture Content (%)</td>
<td>% Fines ( Clay &amp; silt)</td>
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**TEST BORING RECORD**

---

**PROJECT:** Grits Parking Garage and Office  
**JOB NO:** 24304839  
**REPORT NO:**

---

**PROJECT LOCATION:** Owensboro, KY

---

**ELEVATION:**

---

**BORING STARTED:** 10/29/2007  
**BORING COMPLETED:** 10/29/2007

---

**DRILLING METHOD:** 3" Wash Boring  
**RIG TYPE:** Mobil Drill B-61  
**HAMMER:** Manual

---

**GROUNDWATER (ft):** 12.1

---

**Remarks:** Driller: Glen Powers  
Weather: Sunny 50's

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### TEST BORING RECORD

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<th>MATERIAL DESCRIPTION</th>
<th>Lithology</th>
<th>Sample Type</th>
<th>Recovery (in.)</th>
<th>% Finer 200 Sieve</th>
<th>STANDARD PENETRATION RESISTANCE (N)</th>
<th>BLOWS /6&quot;</th>
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**BORING TERMINATED AT 40 FEET**
**TEST BORING RECORD**

**PROJECT:** Grits Parking Garage and Office  
**JOB NO:** 24304839  
**REPORT NO:**

**PROJECT LOCATION:** Owensboro, KY

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<th>Lithology</th>
<th>% Finer 200 Sieve</th>
<th>Recovery (in)</th>
<th>Moisture (%)</th>
<th>Standard Penetration Resistance (N)</th>
<th>Bows /6&quot;</th>
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**ELEVATION:**

**BORING STARTED:** 10/25/2007  
**BORING COMPLETED:** 10/25/2007

**DRILLING METHOD:** 3" Wash Boring  
**RIG TYPE:** Mobil Drill B-61  
**HAMMER:** Manual

**GROUNDWATER (ft):** 12.2  
**GROUNDWATER:**

**Remarks:** Driller: Glen Powers  
Weather: Sunny 50's
## Test Boring Record

**Project:** Grits Parking Garage and Office  
**Job No:** 24304839  
**Report No:**  
**Project Location:** Owensboro, KY

**Elevation:**  
**Boring Started:** 10/25/2007  
**Boring Completed:** 10/25/2007  
**Drilling Method:** 3" Wash Boring  
**Rig Type:** Mobil Drill B-61  
**Hammer:** Manual  
**Groundwater (ft):** 11.4  
**Boring Diameter (in):** 3  
**Sheet:** 1 of 1

**Remarks:** Driller: Glen Powers  
Weather: Sunny 50's

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<th>ELEV. (FT.)</th>
<th>DEPTH (FT.)</th>
<th>MATERIAL DESCRIPTION</th>
<th>Lithology</th>
<th>Sample Type (in)</th>
<th>Recovery (in)</th>
<th>Moisture (%)</th>
<th>% Finer 200 Sieve</th>
<th>Standard Penetration Resistance (N)</th>
<th>B-blows /6&quot;</th>
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### Test Boring Record

**Project:** Grits Parking Garage and Office  
**Job No:** 24304839  
**Report No:**

**Project Location:** Owensboro, KY

**Elevation:**
- **Boring Started:** 10/25/2007  
- **Boring Completed:** 10/25/2007

**Drilling Method:** 3" Wash Boring  
**Rig Type:** Mobil Drill B-61  
**Hammer:** Manual

**Groundwater (ft):** Not recorded  
**Boring Diameter (in):** 3

**Remarks:**
- Driller: Glen Powers  
- Weather: Sunny 50's

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<th>Lithology</th>
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<th>Recovery (%</th>
<th>MOISTURE (%)</th>
<th>% Finer 200 Sieve</th>
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**Remarks:** Driller: Glen Powers  
**Weather:** Sunny 50's
Vector Engineers performs field tests in general accordance with the American Society for Testing and Materials (ASTM). These procedures are generally recognized as the basis for uniformity and consistency of test results in the geotechnical engineering profession. All work is initiated and supervised by qualified geotechnical professionals.

Subsequent portions of this attachment present briefly describe of our field testing procedures. Where applicable, we have referenced these procedures to ASTM standards which contain specific descriptions of apparatus, procedures, reporting, etc.

**SOIL TEST BORING, ASTM D-1586**

The borings were made with a hollow-stem auger powered by a drill rig. At regular intervals, soil samples were obtained through the hollow augers with a standard 1.4-inch I.D., 2.0-inch O.D. split-tube sampler. The auger were filled (charged) with drilling mud when groundwater was encountered.

The sampler was initially seated 6 inches to penetrate any loose cuttings; then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated as the *standard penetration resistance (SPT N-value)*. Penetration resistance, when properly evaluated, is an index to soil consistency and strength.

In the field, our geotechnical professional logged and described the samples as they were obtained. Representative portions of each soil sample were labeled and sealed, then transported to our laboratory. The samples were examined by a graduate geotechnical engineer or geologist to visually check the field descriptions. Boring data, including sample intervals, penetration resistances, soil descriptions, and groundwater level are shown on the attached Test Boring Records.

**AUGER REFUSAL MATERIALS**

Auger refusal is a term that describes subsurface materials sufficiently competent to prevent further penetration by our drilling augers. Our criterion for auger refusal is the inability of our drill rig to advance the augers with 300 psi down pressure. Typically, refusal materials exhibit penetration resistances in excess of 100 blows per foot. Refusal materials can be hard cemented soil, soft weathered rock, coarse gravel or boulders, rubble or other hard debris, thin rock seams, or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.
## FIELD TESTING PROCEDURES

**Correlation of Standard Penetration Resistance with Relative Compactness and Consistency**

### Sand and Gravel

<table>
<thead>
<tr>
<th>Standard Penetration Resistance (Blows/Foot)</th>
<th>Relative Compactness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>Very Loose</td>
</tr>
<tr>
<td>5-10</td>
<td>Loose</td>
</tr>
<tr>
<td>11-20</td>
<td>Firm</td>
</tr>
<tr>
<td>21-30</td>
<td>Very Firm</td>
</tr>
<tr>
<td>31-50</td>
<td>Dense</td>
</tr>
<tr>
<td>Over 50</td>
<td>Very Dense</td>
</tr>
</tbody>
</table>

### Silt and Clay

<table>
<thead>
<tr>
<th>Standard Penetration Resistance (Blows/Foot)</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>Very Soft</td>
</tr>
<tr>
<td>3-4</td>
<td>Soft</td>
</tr>
<tr>
<td>5-8</td>
<td>Firm</td>
</tr>
<tr>
<td>9-15</td>
<td>Stiff</td>
</tr>
<tr>
<td>16-30</td>
<td>Very Stiff</td>
</tr>
<tr>
<td>31-50</td>
<td>Hard</td>
</tr>
<tr>
<td>Over 50</td>
<td>Very Hard</td>
</tr>
</tbody>
</table>
FIELD TESTING PROCEDURES

UNDISTURBED SAMPLING, ASTM D-1587

Split-tube samples obtained in conjunction with penetration testing are suitable for visual examination and classification tests but are not sufficiently intact for quantitative testing. Relatively undisturbed samples suitable for quantitative laboratory testing were obtained by slowly and uniformly pushing sections of 3-inch O.D., steel tubing into the soil at the desired sampling levels. The length of the soil sample was measured and recorded immediately after removing a sampling tube and the encased soil from the ground. The ends of the tube were then sealed with plastic caps, and tape, and transported to our laboratory in protective containers. The locations of the undisturbed samples are shown on the Test Boring Records.
<table>
<thead>
<tr>
<th>BORING NO.</th>
<th>SAMPLE DEPTH, FT.</th>
<th>SAMPLE TYPE*</th>
<th>USCS</th>
<th>NATURAL MOISTURE CONTENT, PERCENT</th>
<th>ATTERBERG LIMITS</th>
<th>MAX. DRY DENSITY PCF /OPTIMUM MOISTURE %</th>
<th>UNIT WEIGHT PCF</th>
<th>UNCONFINED COMPRESSIVE STRENGTH PSF</th>
<th>%FINER NO. 200</th>
<th>SPECIFIC GRAVITY</th>
<th>CBR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-4</td>
<td>18.5-20.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>59.5</td>
</tr>
<tr>
<td>A-4</td>
<td>38.5-40.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.8</td>
</tr>
<tr>
<td>A-10</td>
<td>18.5-20.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>88.4</td>
</tr>
<tr>
<td>A-10</td>
<td>38.5-40.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.4</td>
</tr>
<tr>
<td>C-1</td>
<td>18.5-20.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>87.7</td>
</tr>
<tr>
<td>C-1</td>
<td>38.5-40.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20.5</td>
</tr>
<tr>
<td>B-5</td>
<td>68.5-70.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19.7</td>
</tr>
<tr>
<td>B-9</td>
<td>8.5-10.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19.1</td>
</tr>
<tr>
<td>B-9</td>
<td>13.5-10.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.8</td>
</tr>
<tr>
<td>B-9</td>
<td>18.5-25.0</td>
<td>SS</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>76.8</td>
</tr>
<tr>
<td>B-9</td>
<td>28.5-30.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11.6</td>
</tr>
<tr>
<td>B-9</td>
<td>33.5-35.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14.3</td>
</tr>
<tr>
<td>B-9</td>
<td>38.5-40.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.7</td>
</tr>
<tr>
<td>B-9</td>
<td>43.5-45.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.7</td>
</tr>
<tr>
<td>B-9</td>
<td>48.5-50.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.9</td>
</tr>
<tr>
<td>B-9</td>
<td>53.5-60.0</td>
<td>SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.7</td>
</tr>
</tbody>
</table>

* SS = Split-Spoon Sample (ASTM D 1586); UD = Undisturbed Sample (ASTM D 1587); BG = Bulk Bag Sample

QORE, INC.
Louisville, Kentucky
Project Name: Grits Parking Garage
Project Number: 24304839

Table Checked/Reviewed By: SB/WRF
**USGS-Provided Output**

\[
\begin{align*}
S_s &= 0.439 \text{ g} \\
S_{s1} &= 0.171 \text{ g} \\
S_{ms} &= 0.636 \text{ g} \\
S_{m1} &= 0.362 \text{ g} \\
S_{ds} &= 0.424 \text{ g} \\
S_{d1} &= 0.241 \text{ g}
\end{align*}
\]

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.

For PGA\(_{h0}\), \(T_L\), \(C_{ks}\), and \(C_{n1}\) values, please [view the detailed report](#).

Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.
February 23, 2017

Aaron Bivens
Integrity/Architecture, PLLC
2414 Palumbo Drive, Ste 125
Lexington, KY 40509
aaron@integrityarch.com

Subject: Seismic Site Specific Hazard Analysis Addendum to
Report of Geotechnical Engineering Subsurface Characterization
Locust Street Garage
Owensboro, Kentucky
Vector Project 16-2982

Dear Mr. Bivens,

VECTOR Engineers, Inc., previously completed the geotechnical engineering subsurface characterization for the proposed parking garage. Our findings and recommendations were documented in our Report of Geotechnical Engineering Subsurface Characterization, Locust Street Garage, Vector Project 16-2982, dated January 27, 2017. In our report, we indicate it may be possible to improve the Seismic Design Category by performing site specific seismic hazard analysis. In this addendum, Vector Engineers describes our site-specific hazard analysis which has resulted in recommending reduced bedrock accelerations and a more favorable seismic design category.

**Seismic Hazard Analysis**

The United States Geological Survey (USGS) performs probabilistic seismic hazard analyses for the entire country periodically with the most recent version being performed in 2008. According to the 2008 data, the peak bedrock acceleration for downtown Owensboro is 0.228 g, which is based on bedrock with a shear wave velocity of 2,500 feet per second (fps). However, research and our experience demonstrate that the shear wave velocity of bedrock in Owensboro area is closer to 6,730 fps. With a higher bedrock shear wave velocity, bedrock shaking tends to be less. According to the USGS database for Owensboro, the use of the higher bedrock shear wave velocity leads to a reduced peak bedrock acceleration of 0.156 g.
During our seismic hazard study, we consulted four sources:

1) USGS mapping using the standard bedrock velocity assumption of 2,500 fps. This is the standard method.

2) USGS mapping using central and eastern US bedrock velocity of 6,730 fps. In our opinion, the most technically accurate method.

3) Minimum acceleration values listed in the 2013 Kentucky Building Code, Table 1613.3.1

4) Kentucky Geological Survey\(^1\) published data by Dr. Zhenming Wang

The following table summarizes bedrock accelerations using the different methods.

<table>
<thead>
<tr>
<th>Method</th>
<th>Rock Accelerations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(S_\text{S} )</td>
</tr>
<tr>
<td>1) USGS Mapped for ASCE 7-10 Standard Method</td>
<td>46.2%</td>
</tr>
<tr>
<td>2) USGS Mapping for Central &amp; Eastern US Site Specific Method</td>
<td>27.0%</td>
</tr>
<tr>
<td>3) KBC 2013 Minimum Values, Table 1613.3.1</td>
<td>36.5%</td>
</tr>
<tr>
<td>4) Kentucky Geological Survey</td>
<td>20%</td>
</tr>
</tbody>
</table>

Vector Engineers recommends using method 2, the USGS Mapping for Central and Eastern US acceleration values.

**Seismic Site Classification and Design Category**

By conducting a seismic hazard analysis, we could obtain lower bedrock and ground accelerations than indicated by the USGS mapping. In our geotechnical report, we assigned a site seismic classification of “D”.

In the previous Seismic Hazard Analysis section, we presented four methods for determining the bedrock acceleration for the maximum considered earthquake. In Table

---

\(^1\) *Ground Motion for the Maximum Credible Earthquake in Kentucky*, Report of Investigations 22, Series XII, 2010, Kentucky Geological Survey, Zhenming Wang, Ph.D.
2, we list the design accelerations for each of the methods and the corresponding seismic design category.

<table>
<thead>
<tr>
<th>Method</th>
<th>Site Class</th>
<th>Rock Accelerations</th>
<th>Design Accelerations</th>
<th>Seismic Design Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-site shear wave measurements indicated Seismic Site Class D</td>
<td>D</td>
<td>46.2%</td>
<td>15.0%</td>
<td>44.1%</td>
</tr>
<tr>
<td>1) STANDARD METHOD USGS Mapped ASCE 7-10 with 2013 update</td>
<td>D</td>
<td>27.0%</td>
<td>11.3%</td>
<td>28.5%</td>
</tr>
<tr>
<td>2) Site Specific Hazard Analysis Considering Central &amp; Eastern US Rock</td>
<td>D</td>
<td>36.5%</td>
<td>15.3%</td>
<td>36.7%</td>
</tr>
<tr>
<td>3) KBC 2013 Minimum Values Table 1613.3.1</td>
<td>D</td>
<td>20.0%</td>
<td>5.0%</td>
<td>21.3%</td>
</tr>
</tbody>
</table>

Assumptions:
1. Non-essential Structure with an Occupancy Category I, II, or III
2. Building Configuration: Regular

Vector recommends using site specific hazard analysis values and Design Category C

In our opinion, method 2 technically provides the most accurate values; therefore, we recommend using a Seismic Design Category C for the proposed structure. Ultimately, it is the responsibility of the structural engineer to select the values best suited for the design. In the attachments, we have provided our calculations for method 2.
Valediction

Vector Engineers, Inc. appreciates the opportunity to provide you with these geotechnical services. Should you have questions or require any additional information, please contact us.

Respectfully submitted,

Vector Engineers, Inc.

W. Robert Folsom, PE
Chief Engineer
Licensed Kentucky

Matthew J. Slusser, PE
Project Engineer

Attachments:
Determination of Seismic Design Category
Determination of Seismic Design Category

Determination of Mapped Spectral Acceleration Values as a Function of Latitude & Longitude
Rock Accelerations from USGS 2008 Deaggregation for Central and Eastern US

Design Professional: Rob Folsom, PE
Project Number: 16-2983
Date: February 23, 2017
Project Name: Locust Street Garage
County: Daviess

Method

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.4º</td>
<td>39.2º</td>
</tr>
<tr>
<td>81.9º</td>
<td>89.7º</td>
</tr>
</tbody>
</table>

Latitude N 37.77401º
Longitude W 87.11548º

Site Specific Using A Rock (V_s30 = 2000 m/s)

Site Class Designation: D
Occupancy Category: III
Building Configuration: Regular

Results:
- Mapped Spectral Acceleration for short periods (S_s) 27.0 %
- Mapped Spectral Acceleration for a 1-second period (S_I) 11.3 %

<= These accelerations values are from the USGS Website for "A" rock (i.e. 2000 m/s)
Seismic Design Accelerations Calculation for the Locust Street Garage
Rock Accelerations from USGS 2008 Deaggregation for Central and Eastern US (A rock)

Additional Calculated Values Derived from Input Data:

For Site Class D: IBC 2012 ASCE 7-10

<table>
<thead>
<tr>
<th></th>
<th>$F_a$</th>
<th>$F_v$</th>
<th>$F_{a}$</th>
<th>$F_{v}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Considered Spectral Acceleration for short periods ($S_{MS}$):</td>
<td>1.58</td>
<td>2.35</td>
<td>$S_{MS} = 1.58 \times 27% = 42.77%$</td>
<td>Eq. 16-37</td>
</tr>
<tr>
<td>Maximum Considered Spectral Acceleration for 1-second period ($S_{M1}$):</td>
<td>2.35</td>
<td>11.3</td>
<td>$S_{M1} = 2.35 \times 11.3% = 26.53%$</td>
<td>Eq. 16-38</td>
</tr>
<tr>
<td>Design Spectral Acceleration for short periods ($S_{DS}$):</td>
<td>$2/3 \times S_{MS} = 2/3 \times 42.77% = 28.51%$</td>
<td>Eq. 16-39</td>
<td>Eq. 11.4-3</td>
<td></td>
</tr>
<tr>
<td>Design Spectral Acceleration for 1-second period ($S_{D1}$):</td>
<td>$2/3 \times S_{M1} = 2/3 \times 26.53% = 17.69%$</td>
<td>Eq. 16-40</td>
<td>Eq. 11.4-4</td>
<td></td>
</tr>
</tbody>
</table>

Design Seismic Accelerations Calculation for the Locust Street Garage

Response Spectra Curve Data:

<table>
<thead>
<tr>
<th></th>
<th>$T_L = 12$ sec</th>
<th>$T_L = 12$ sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>$T_h = 0.2 (S_{D1} / S_{DS}) = 0.2 \times (17.68827 / 28.512) = 0.124$ sec</td>
<td>$T_s = S_{D1} / S_{DS} = 17.68827 / 28.512 = 0.620$ sec</td>
<td>Section 11.4.5</td>
</tr>
<tr>
<td>$S_0 = 0.4 S_{DS} = 0.4 \times 28.512 = 11.40480$ %</td>
<td>$S_{D1} = 17.69%$</td>
<td>Section 11.4.5</td>
</tr>
</tbody>
</table>

Seismic Design Category:

<table>
<thead>
<tr>
<th>Seismic Design Category Based on Short Period Response Accelerations:</th>
<th>$B$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seismic Design Category Based on 1-Second Period Response Acceleration:</td>
<td>$C$</td>
<td>$C$</td>
</tr>
</tbody>
</table>

Critical Seismic Design Category:

<table>
<thead>
<tr>
<th>Critical Seismic Design Category:</th>
<th>$C$</th>
</tr>
</thead>
</table>

(See 2012 IBC and 2013 KBC, Section 1613.5.6.1; and ASCE 7-10, Section 11.6 for cases when the Short Period based SDC alone may be permitted)
SECTION 004200 – FORM OF PROPOSAL

Date: November 09, 2017

To: (Owner) City of Owensboro

Project Title: Owensboro Parking Structure

City, County: Owensboro, Daviess County, Kentucky

Name of Contractor: ______________________________________________________________

Mailing Address: ________________________________________________________________

Business Address: ______________________________________________________________

Telephone: __________________________________________________________________

Having carefully examined the Instructions to Bidders, Contract Agreement, General Conditions,
Supplemental and Special Conditions, Specifications, Project Manual and Drawings, on the above
referenced project, the undersigned bidder proposes to furnish all labor, materials, equipment, tools,
supplies, and temporary devices required to complete the work in accordance with the contract
documents and any addenda listed below for the price stated herein.

Addendum ________________________ (Insert the addendum numbers received or the word "none" if
no addenda was received.)

BASE BID
For the construction required to complete the work, in accordance with the contract documents,
I/We submit the following lump sum price of:

_______________________________________________ Dollars and ________________ Cents

Use Figures

_______________________________________________ Dollars and ________________ Cents

Use Words

ALTERNATES
For the construction required to complete the work, in accordance with the contract documents,
I/We submit the following lump sum price of:

Additive Alternate #1: Access control and barrier arms

_______________________________________________ Dollars and ________________ Cents

Use Figures

_______________________________________________ Dollars and ________________ Cents

Use Words
UNIT PRICES

Indicate on Attachment No. 1 unit prices to determine any adjustment to the contract price due to changes in work or extra work performed under this contract. The unit prices shall include the furnishing of all labor and materials, cost of all items, and overhead and profit for the Contractor, as well as any subcontractor involved. These unit prices shall be listed in units of work.

Note: Attachment No. 1 must be submitted with bid

LIST OF PROPOSED SUBCONTRACTORS

List on Attachment No. 1 each major branch of work and major material category for this project and the subcontractor or supplier involved with that portion of work. If the branch of work is to be done by the Contractor, so indicate.

The listing of more than one subcontractor in a work category shall invalidate the bid.

The listing of the bidder as the subcontractor for a work category certifies that the bidder has in current employment, skilled staff and necessary equipment to complete that category. The architect/engineer will evaluate the ability of all listed subcontractors to complete the work and notify the Owner. Listing of the bidder as the subcontractor may invalidate the bid should the architect's review indicate bidder does not have skilled staff and equipment to complete the work category at the time the bid was submitted.

Note: Attachment No. 1 must be submitted with bid

LIST OF MATERIALS/MANUFACTURERS

Bidders are hereby advised that this list shall be filled out completely by the apparent low bidder within one (1) hour from the close of the official reading of the bids. Each item listed under the different phases on construction must be clearly identified so that the Owner will know what the bidder proposes to furnish.

The use of the manufacturer’s dealer’s name only or stating “as per plans and/or specifications” will not be considered sufficient information. When more than one “brand” is listed for any one item, the Owner has the right to select the “brand” to be used.

Failure to submit a proper list may result in rejection of the bidder’s proposal.

Note: Attachment No. 1 must be submitted with bid

CONTRACTOR’S LICENSE

The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in the State of Kentucky, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

TIME LIMIT FOR EXECUTION OF CONTRACT DOCUMENTS

In the event that a bidder's proposal is accepted by the Owner and such bidder should fail to execute the contract within ten (10) consecutive days from the date of notification of the awarding of the contract, the Owner, at his option, may determine that the awardee has abandoned the contract. The bidder's proposal shall then become null and void, and the bid bond or certified check which accompanied it shall be forfeited to and become the property of the Owner as liquidated damages for failure to execute the contract.
The bidder hereby agrees that failure to submit herein above all required information and/or prices can cause disqualification of this proposal.

Submitted by:

NAME OF CONTRACTOR:

Printed

AUTHORIZED REPRESENTATIVE:

Signature

NAME:

Printed

TITLE:

Printed

NOTICE: A bid bond or certified check or cash must accompany this proposal.

This form shall not be modified. Attach supplemental form of proposal information pages for project specific requirements as needed.

END OF SECTION 004200
SECTION 004300 – FORM OF PROPOSAL: ATTACHMENT NO. 1

UNIT PRICES:
Indicate on the lines below unit prices to determine any adjustment to the contract price due to changes in work or extra work performed under this contract. The unit prices shall include the furnishing of all labor and materials, cost of all items, and overhead and profit for the Contractor, as well as any subcontractor involved. These unit prices shall be listed in units of work. All unit prices must be completely filled out by each bidder and submitted with the bid.

CIVIL / ARCHITECTURAL / STRUCTURAL UNIT PRICES

<table>
<thead>
<tr>
<th>WORK</th>
<th>PRICE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Imported mass earth excavation (including compacted disposition)</td>
<td></td>
<td>per CY</td>
</tr>
<tr>
<td>2 Trench excavation- earth (including compacted backfill)</td>
<td></td>
<td>per CY</td>
</tr>
<tr>
<td>3 Trench excavation- rock (as defined by Civil Engineer, including compacted backfill)</td>
<td></td>
<td>per CY</td>
</tr>
<tr>
<td>4 Dense Grade Aggregate</td>
<td></td>
<td>per TN</td>
</tr>
<tr>
<td>5 No. 57 Stone</td>
<td></td>
<td>per TN</td>
</tr>
<tr>
<td>6 Class A Concrete</td>
<td></td>
<td>per CY</td>
</tr>
</tbody>
</table>

Trenching items listed here are for scope not included in MPE items listed below.

MECHANICAL / PLUMBING / ELECTRICAL UNIT PRICES

<table>
<thead>
<tr>
<th>WORK</th>
<th>PRICE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Surface Mounted Raceway (Metal), Installed</td>
<td></td>
<td>per LF</td>
</tr>
<tr>
<td>2 Surface Mounted Box (Metal), Installed</td>
<td></td>
<td>each</td>
</tr>
<tr>
<td>3 ½” Rigid Conduit, Installed</td>
<td></td>
<td>per LF</td>
</tr>
<tr>
<td>4 1” Rigid Conduit, Installed</td>
<td></td>
<td>per LF</td>
</tr>
<tr>
<td>5 2 ½” Rigid Conduit, Installed</td>
<td></td>
<td>per LF</td>
</tr>
<tr>
<td>6 Type EX1 Light Fixture, Installed</td>
<td></td>
<td>each</td>
</tr>
<tr>
<td>7 Type EX2 Light Fixture, Installed</td>
<td></td>
<td>each</td>
</tr>
<tr>
<td>8 Data Cable, Installed</td>
<td></td>
<td>per LF</td>
</tr>
<tr>
<td>9 Voice Cable, Installed</td>
<td></td>
<td>each</td>
</tr>
<tr>
<td>10 10 pack, Access Control Transmitter &amp; Proximity Keyfob</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LIST OF PROPOSED SUBCONTRACTORS:

The listing below of Subcontractors shall be complete and turned in with the Bid. List on the lines below each major branch of work and major material category for this project and the subcontractor of supplier involved with that portion of work. If the branch of work is to be done by the Contractor, so indicate. The Owner has no right to change any proposed subcontractors or suppliers. That is the responsibility of the Contractor, however, the Owner or the Architect may indicate their concerns about anyone which they have reason to believe past experience indicates poor performance. The Contractor has full responsibility for the execution of the total work as specified. Any change of proposed subcontractors will be at no additional cost to the Owner, as the contractor has full responsibility.
The listing of more than one subcontractor in a work category shall invalidate the bid.

The listing of the bidder as the subcontractor for a work category certifies that the bidder has in current employment, skilled staff and necessary equipment to complete that category. List current and valid certification(s) held by the subcontractor from the product manufacturer or industry organization after “SUBCONTRACTOR/SUPPLIER” in the listing below; if none are held for the branch of work/material listed then state (NONE) for clarification. The Architect/Engineer will evaluate the ability of all listed subcontracts to complete the work and notify the Owner. Listing of the bidder as the subcontractor may invalidate the bid should the architects review indicated bidder does not have skilled staff and equipment to complete the work category at the time the bid was submitted.

<table>
<thead>
<tr>
<th>BRANCH OF WORK/MATERIAL CATEGORY</th>
<th>SUBCONTRACTOR/SUPPLIER (CERTIFICATION)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Excavation</td>
<td></td>
</tr>
<tr>
<td>2 Site concrete</td>
<td></td>
</tr>
<tr>
<td>3 Storm</td>
<td></td>
</tr>
<tr>
<td>4 Landscaping</td>
<td></td>
</tr>
<tr>
<td>5 Cast-in-place concrete</td>
<td></td>
</tr>
<tr>
<td>6 Precast concrete</td>
<td></td>
</tr>
<tr>
<td>7 Brick veneer</td>
<td></td>
</tr>
<tr>
<td>8 Steel stud framing</td>
<td></td>
</tr>
<tr>
<td>9 Roofing</td>
<td></td>
</tr>
<tr>
<td>10 Painting</td>
<td></td>
</tr>
<tr>
<td>11 Hollow metal doors and windows</td>
<td></td>
</tr>
<tr>
<td>12 Electrical</td>
<td></td>
</tr>
<tr>
<td>13 Communications**</td>
<td></td>
</tr>
<tr>
<td>14 HVAC</td>
<td></td>
</tr>
<tr>
<td>15 HVAC Insulation**</td>
<td></td>
</tr>
<tr>
<td>16 Test, adjustment, balance**</td>
<td></td>
</tr>
<tr>
<td>17 Sheet metal</td>
<td></td>
</tr>
<tr>
<td>18 Plumbing</td>
<td></td>
</tr>
<tr>
<td>19 Plumbing Insulation**</td>
<td></td>
</tr>
<tr>
<td>20 Data</td>
<td></td>
</tr>
<tr>
<td>21 Fire protection</td>
<td></td>
</tr>
<tr>
<td>22 Fire alarm**</td>
<td></td>
</tr>
</tbody>
</table>

**Provide subcontractor’s name, if used.

LIST OF MATERIALS AND EQUIPMENT:
Bidders are hereby advised that this list shall be filled out completely by the apparent low bidder within one (1) hour from the close of the official reading of the bids.

The above requirements does not include any bidder from submitting this list, fully executed, at the time the bids are submitted.

Each item listed under the different phases of construction must be clearly identified so that the Owner will definitely know what the bidder proposes to furnish. The use of the manufacturer's dealer's name only or stating "as per plans and specifications" will not be considered as sufficient identification.

Where more than one "make" or "brand" is listed for any one item, the Owner has the right to select the one to be used.
Failure to submit a proper list may result in rejection of the bidder's proposal.

<table>
<thead>
<tr>
<th>CIVIL / ARCHITECTURAL / STRUCTURAL MATERIAL AND EQUIPMENT ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIAL/EQUIPMENT</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>1 Site Concrete</td>
</tr>
<tr>
<td>2 Precast Concrete</td>
</tr>
<tr>
<td>3 Brick Veneer</td>
</tr>
<tr>
<td>4 Hollow Metal Doors &amp; Frames</td>
</tr>
<tr>
<td>5 Exterior Screen Wall</td>
</tr>
<tr>
<td>6 Paint</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MECHANICAL/PLUMBING/ELECTRICAL MATERIAL AND EQUIPMENT ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIAL/EQUIPMENT</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>1 Fire Protection Hose Connections</td>
</tr>
<tr>
<td>2 Plumbing Area Drains</td>
</tr>
<tr>
<td>3 Plumbing Backflow Preventer</td>
</tr>
<tr>
<td>4 Plumbing Valves</td>
</tr>
<tr>
<td>5 Submersible Pumps</td>
</tr>
<tr>
<td>6 Vibration/Seismic Controls</td>
</tr>
<tr>
<td>7 Ductless Split Heat Pump Systems</td>
</tr>
<tr>
<td>8 Packaged Terminal Heat Pumps</td>
</tr>
<tr>
<td>9 Energy Recover Ventilation Air Units</td>
</tr>
<tr>
<td>10 Electric Unit Heaters</td>
</tr>
<tr>
<td>11 Ventilating Fans</td>
</tr>
<tr>
<td>12 Louvers</td>
</tr>
<tr>
<td>13 Diffusers and Grilles</td>
</tr>
<tr>
<td>14 Electric Panel Boards</td>
</tr>
<tr>
<td>15 Electric Disconnects</td>
</tr>
<tr>
<td>16 Wiring Devices</td>
</tr>
<tr>
<td>17 Light Poles/Fixtures</td>
</tr>
<tr>
<td>18 Light Fixtures Garage</td>
</tr>
<tr>
<td>19 Light Fixtures and Controls for Front Screen Wall</td>
</tr>
<tr>
<td>20 Light Fixtures (Other)</td>
</tr>
<tr>
<td>21 Emergency Lighting Inverters</td>
</tr>
<tr>
<td>22 Occupancy Sensors</td>
</tr>
<tr>
<td>23 Fire Alarm Systems</td>
</tr>
<tr>
<td>24 Wall Mounted Racks</td>
</tr>
<tr>
<td>25 Patch Panels</td>
</tr>
<tr>
<td>26 Communication Equipment</td>
</tr>
<tr>
<td>27 Communication Cabling</td>
</tr>
<tr>
<td>28 Fiber Optic Cabling</td>
</tr>
</tbody>
</table>

END OF SECTION 004300
## SUBCONTRACTORS REGISTRY PAGE
All subcontractors performing work in fulfillment of this bid must be listed on this page with the information requested.

<table>
<thead>
<tr>
<th>NAME</th>
<th>ADDRESS</th>
<th>PHONE</th>
<th>FAX</th>
<th>CRAFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>12.</td>
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<td>13.</td>
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<td>14.</td>
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<tr>
<td>15.</td>
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<td></td>
</tr>
</tbody>
</table>
EXCEPTIONS TO BID SPECIFICATIONS:
Exceptions to bid specifications should be noted by number on the appropriate specifications sheet and those exceptions are to be explained on this page.

LIST ALL EXCEPTIONS:

1. ____________________________________________________________________________
2. ____________________________________________________________________________
3. ____________________________________________________________________________
4. ____________________________________________________________________________
5. ____________________________________________________________________________
6. ____________________________________________________________________________
7. ____________________________________________________________________________
8. ____________________________________________________________________________
9. ____________________________________________________________________________
10. ____________________________________________________________________________
11. ____________________________________________________________________________
12. ____________________________________________________________________________

OTHER REMARKS AND COMMENTS______________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

DATE _______________FIRM ______________________ SIGNED__________________
STATEMENT REQUIRED PURSUANT TO KRS45A.395

The provisions of KRS45A.395 require that any bidder or offeror submit a sworn statement in conformity with such statute as a prerequisite to a determination that such bidder or offeror is a responsible bidder.

The undersigned, individually and as the ________________________________ (office or title) of ______________________________________________________ (bidder or offeror) states under penalty of perjury that neither he (she), nor, to the best of his (her) knowledge, anyone acting on behalf of Bidder or Offeror, has knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky and that the award of a contract to the Bidder or Offeror will not violate any provision of the campaign finance laws of the Commonwealth. “Knowingly” means, with respect to conduct or to a circumstance described by a statute defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

This _______ day of _____________________, 20__

________________________________________
(Signature)

________________________________________
(Typed or printed name)
VENDOR'S STATEMENT PURSUANT TO KRS45A.343

45A.343 Local Public Agency may adopt provisions of KRS 45A.345 to 45A.460—
Effect of adoption – Contracts required to mandate revealing of violations of and compliance with
specified KRS chapters – Effect of nondisclosure or noncompliance. (KRS 136 – Corporate
taxes; KRS 139 – Sales & use taxes; KRS 141 – Income taxes; KRS 337 – Wage and hour; KRS
338 – Occupational safety; KRS 341 – Unemployment; KRS 342 – Workers Comp.)

The undersigned, as a duly authorized officer of ______________________________ pursuant to
KRS45A.343 states;

1. To the best of my knowledge, information and belief, ________________________ has not been
finally determined to have violated any of the provisions of KRS Chapters 136, 139, 141, 337, 338, 341,
or 342 that apply to it within the five year period preceding this statement.

2. ______________________________ acknowledges that it will be required to be in
compliance with those provisions of KRS Chapters 136, 139, 141, 337, 338, 341, and 342 that apply to it
for the duration of the Contract to be entered into with the City of Owensboro, Kentucky.

3. ______________________________ acknowledges that if it fails to reveal any final
determination of violation of KRS Chapters 136, 139, 141, 337, 338, 341, or 342, or to comply with the
applicable provisions of those statutes for the duration of the aforesaid Contract, such shall be grounds
for The City of Owensboro, Kentucky to:
   a. Cancel its contract with ______________________________, and
   b. Disqualify ______________________________ from eligibility for future
      contracts awarded by The City of Owensboro for a period of two years.

This the______day of __________________________, 20__

________________________________
(Company Name)

By:_______________________________
Title:_____________________________
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING QUALIFIED BIDDER STATUS
FOR BIDS AND CONTRACTS IN GENERAL:
I. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, and all subcontractors therein, meets the requirements to be considered a "qualified bidder" in accordance with 200 KAR 5:410(3); and will continue to comply with such requirements for the duration of any contract awarded. Please identify below the particular "qualified bidder" status claimed by the bidding entity.

- __________ A nonprofit corporation that furthers the purposes of KRS Chapter 163
- __________ Per KRS 45A.465(3), a "Qualified nonprofit agency for individuals with severe disabilities" means an organization that:
  (a) Is organized and operated in the interest of individuals with severe disabilities; and
  (b) Complies with any applicable occupational health and safety law of the United States and the Commonwealth; and
  (c) In the manufacture or provision of products or services listed or purchased under KRS 45A.470, during the fiscal year employs individuals with severe disabilities for not less than seventy-five percent (75%) of the man hours of direct labor required for the manufacture or provision of the products or services; and
  (d) Is registered and in good standing as a nonprofit organization with the Secretary of State.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of qualified bidder status. Failure to provide such documentation upon request may result in disqualification of the bidder or contract termination.

Signature __________________________ Printed Name __________________________

Title __________________________ Date __________________________

Company Name __________________________

Address __________________________

Subscribed and sworn to before me by __________________________ (Affiant) __________________________ (Title)
of __________________________ (Company Name) this _______ day of ____________. 20____.

______________________________
Notary Public

[seal of notary]

My commission expires: ___________
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING RESIDENT BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:
The bidder or offeror hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the entity bidding is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:

1. Is authorized to transact business in the Commonwealth;
2. Has for one year prior to and through the date of advertisement
   a. Filed Kentucky income taxes;
   b. Made payments to the Kentucky unemployment insurance fund established in KRS 341.49; and
   c. Maintained a Kentucky workers' compensation policy in effect.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

______________________________  ________________________________
Signature                        Printed Name

______________________________  ________________________________
Title                            Date

Company Name

Address

Subscribed and sworn to before me by

______________________________  ________________________________
(Affiant)                       (Title)

of ___________________________ this _____ day of ______________ , 20__.

_________________________________________________________________
(Company Name)

______________________________
Notary Public

[seal of notary]  My commission expires: __________________
AGREEMENT made as of the day of in the year
(In words, indicate day, month and year)

BETWEEN the Owner:
(Name, legal status, address and other information)

City of Owensboro
101 E. 4th City Hall
P.O. Box 10003
Owensboro, KY 42302-9003

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

Owensboro Parking Garage.

The Architect:
(Name, legal status, address and other information)

INTEGRITY / ARCHITECTURE, PLLC
2414 PALUMBO DRIVE
SUITE 125
LEXINGTON, KY 405

The Owner and Contractor agree as follows.

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 A201™–2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.
TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS
2 THE WORK OF THIS CONTRACT
3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4 CONTRACT SUM
5 PAYMENTS
6 DISPUTE RESOLUTION
7 TERMINATION OR SUSPENSION
8 MISCELLANEOUS PROVISIONS
9 ENUMERATION OF CONTRACT DOCUMENTS
10 INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS
The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Request for Proposal, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9. If anything in the other Contract Documents is inconsistent with this Agreement, this Agreement shall govern.

ARTICLE 2 THE WORK OF THIS CONTRACT
The Contractor shall fully execute the Work described in the Contract Documents, or reasonably inferable by the Contractor as necessary to produce the results intended by the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others. The Contractor shall work in coordination with the architect, general contractor, and Owner’s representatives to execute the completion of the scope of Work, as defined the Plans and Specifications, within the schedule established by the general contractor.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.
(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

The date set forth in the Notice to Proceed issued by the Owner.

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner’s time requirement shall be as follows:

§ 3.2 The Contract Time shall be measured from the date of commencement.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than August 1, 2018 ("Contract Time")
(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

### Portion of Work | Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.

(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

§ 3.4 Time is of the essence to the Contract Documents and all obligations thereunder. The Contractor acknowledges and recognizes that the Owner is entitled to full and beneficial occupancy and use of the completed Work following expiration of the Contract Time. The Contractor further acknowledges and agrees that if the Contractor fails to complete substantially, or cause Substantial Completion of any portion of the Work within the Contract Time, the Owner will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be extremely difficult to ascertain. Therefore, the Owner and the Contractor agree that if the Contractor fails to achieve Final Completion of the Work within the Contract Time, Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty One Thousand Two-Hundred Dollars ($1200.00) per day commencing upon the first day following expiration of the Final Completion Date and continuing until the actual date of Final Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed completion of the Work. The Owner may deduct liquidated damages prescribed in this paragraph from any unpaid amounts then or thereafter due the Contractor under this Agreement and any liquidated damages not so deducted shall be payable to the Owner by the Contractor upon demand by the Owner plus interest from the date of demand.

### ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor’s performance of the Contract. The Contract Sum shall be ($ ), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 4.3 Unit prices, if any:

(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Units and Limitations</th>
<th>Price Per Unit ($ 0.00)</th>
</tr>
</thead>
</table>

§ 4.4 Allowances included in the Contract Sum, if any:

(Identify allowance and state exclusions, if any, from the allowance price.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
</table>

ARTICLE 5 PAYMENTS

§ 5.1 PROGRESS PAYMENTS

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on approved amounts of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents. Contractor shall submit applications for payment on AIA Document G702 and G703.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment including all supporting documentation is received by the Architect not later than the last day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the last day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than thirty (30) days after the Architect receives the Application for Payment.1.1

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor’s Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of ten (10%). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™—2007, General Conditions of the Contract for Construction, as modified;

.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of ten (10%);

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201—2007 as modified.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and

(Section 9.8.5 of AIA Document A201—2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)

.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201—2007 as modified.

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:
(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

After the project is 51% complete, the retainage shall be reduced to five percent (5%) of the total contract amount. Thirty days after substantial completion is achieved, retainage shall be reduced to 200% of the reasonably estimated cost of the balance of Contractor’s contractually obligated, yet uncompleted, work remaining.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 FINAL PAYMENT

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201–2007, as modified, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, as modified, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 BINDING DISPUTE RESOLUTION

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007, as modified, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

[X] Arbitration pursuant to Section 15.4 of AIA Document A201–2007 as modified, Such arbitration shall take place in Owensboro, Kentucky.

[ ] Litigation in a court of competent jurisdiction

[ ] Other (Specify)

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2007 as modified.
§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007, as modified.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

§ 8.3 The Owner’s representative:

(Name, address and other information)

Ed Ray
101 E. 4th City Hall
P.O. Box 10003
Owensboro, KY 42302-9003
270.687.8554
Rayea@owensboro.org

§ 8.4 The Contractor’s representative:

(Name, address and other information)

§ 8.5 Neither the Owner’s nor the Contractor’s representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

The Contractor accepts assignment of, and liability for, all purchase orders and other agreements executed or entered into by the Owner for the procurement of materials, supplies or equipment for the Project as set forth in the Contract Documents. The Contractor shall be responsible for the items purchased directly by the Owner as if the Contractor were the original purchaser. The Contract sum includes, without limitation, all costs and expenses which may be incurred by the Contractor for the installation, delivery, storage and testing of all Owner purchased items. All of Contractor’s obligations under the Contract Documents to warrant and correct the Work shall apply to any materials directly purchased by Owner. For purposes of clarity, Contractor is still responsible for the proper completion of the Work, including compliance with the Schedule, even when the Owner has purchased materials directly. Contractor will prepare all Purchase Orders for the Owner. Contractor shall assist Owner with obtaining and completing credit applications. All material invoices from Material Vendors shall be made out to Owner and forwarded to the Contractor. Copies of invoices shall be compared to Purchase Order and reviewed by the Contractor for accuracy before transmitting to Owner for payment. The original invoices must be forwarded to the
Owner will submit all direct payments per Purchase Orders after the Contractor’s review and Owner will transmit material vendor payment check to appropriate Material Vendors. The material breakout amount indicated by a perspective bidder on the bid form is considered final. The Material Supplier Authorization Form, required by 702 KAR 4:160, CAPITAL CONSTRUCTION PROCESS, stipulates the cost of the material and is validated by signatures of the Suppliers, the Contractor and the Architect. In order to qualify for tax exemption the Revenue Cabinet requires that the bid for the labor component and the material component for a given item remain separate. Surplus material occurring at the completion of the project shall be considered the Owner’s property and shall be delivered to the project site and turned over to the Owner. At the Owner’s option, credit for the value of the surplus materials may be provided in lieu of the materials to the Owner from the Contractor via Change Order. Any dollar balance remaining on open purchase orders will remain the Owners.

§ 8.7 The Contractor represents and warrants the following to the Owner (in addition to any other representations and warranties contained in the Contract Documents) as an inducement to the Owner to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement, any termination of this Agreement and the final completion of the Work: (1) That it and its subcontractors are financially solvent, able to pay all debts as they mature and possess of sufficient working capital to complete the Work and perform all obligations hereunder; (2) That it is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the Work and perform its obligations hereunder; (3) That it is authorized to do business in the State of Kentucky and is properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over it and over the Work and the Project; (4) That its execution of this Agreement and its performance thereunder is within its duly authorized power; (5) That its duly authorized representative has visited the site of the Project, is familiar with the local and special conditions under which the Work is to be performed and has correlated onsite observations with the requirements of the Contract Documents; and (6) That it possesses a high level of experience and expertise in the business administration, construction, construction management and superintendents of projects of the size, complexity and nature of this particular Project, and that it will perform the Work with the case, skill and diligence of such a Contractor.

§ 8.8 The partial or complete invalidity of any one or more provisions of this Agreement shall not affect the validity or continuing force and effect of any other provision. The failure of either party hereto to insist, in any one or more instances, upon the performance of any of the terms, covenants or conditions of this Agreement, or to exercise any right herein, shall not be construed as a waiver or relinquishment of such term, covenant, condition or right as respects further performance.

§ 8.9 Contractor shall 1) reimburse Owner for all of Owner’s attorney’s fees, court costs and other expenses incurred in enforcing Contractor’s obligations under this Agreement, 2) incurred in exercising any right or remedy hereunder or under law or equity, or 3) incurred in any litigation in which Owner becomes involved by reason of the existence of this Agreement.

§ 8.10 This Agreement is solely for the benefit of the signatories hereto and represents the entire and integrated Agreement between the parties hereto and supersedes all prior contemporaneous negotiations, representations, understandings or agreements, either written or oral. This Agreement shall not be modified except by a written instrument signed by the parties.

§ 8.11 Should inconsistencies or omissions appear in the Contract Documents, it shall be the duty of the Contractor to so notify the Owner in writing within three (3) working days of Contractor’s discovery thereof. Upon receipt of said notice, Owner shall instruct Contractor as to the measures to be taken and the Contractor shall comply with Owner’s instructions.

§ 8.12 Retention and Audit of Records. Contractor shall maintain all financial, design and performance records related to the Project for any time period required by law or until any applicable statute of limitations has expired but in any case not less than three (3) years after final payment has been made. Such records shall include, but not be limited to, accounting records, written policies and procedures, subcontract files, proposals, all documentation for reimbursable expenses and invoices (bank ledgers, cancelled checks, etc), estimates, change orders, contracts, insurance documents, payroll documents and time sheets, memoranda and correspondence. Owner shall have access to any books, documents, papers, and records of Contractor which are directly pertinent to a Project, for the purpose of making audits, examinations, excerpts, and transcriptions. Contractor shall ensure that Owner has this right with respect to Contractor’s subcontractors, suppliers, and consultants. If the audit identifies overpricing,
overcharges, Contractor shall reimburse Owner for such costs within a reasonable time not to exceed thirty (30) days.

§8.13 Contractor will be responsible for the execution of a satisfactory and complete piece of Work, in accordance with the intent of the Contract Documents. Contractor shall provide, without extra charge, all incidental items required as a part of the Work. If Contractor objects to methods or materials specified, Contractor shall notify Owner in writing and have written adjustments to the Contract Documents made and executed before proceeding with the Work.

§8.14 The Architect and their consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submission or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect’s or its consultants’ reserved rights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner or Architect. Nothing in this Paragraph shall modify the terms of the Agreement Between Owner and Architect for Professional Services.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS
§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor, as modified.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction, as modified.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

<table>
<thead>
<tr>
<th>Document</th>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
</table>

§ 9.1.4 The Specifications:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manual</td>
<td>Owensboro Parking</td>
<td>August 4, 2017</td>
<td>724 and 180, respectively</td>
</tr>
<tr>
<td>Volume I</td>
<td>STructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Manual Volume II</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

§ 9.1.5 The Drawings:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)
See Exhibit 1 – Drawing Index for the Construction Drawings dated September 13, 2017.

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
</table>
§ 9.1.6 The Addenda, if any:

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
</table>

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

.1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

.2 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

Form of Lien Waivers for Contractor and Subcontractor

Exhibit 1 – Drawing Index

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007, as modified.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

<table>
<thead>
<tr>
<th>Type of insurance or bond</th>
<th>Limit of liability or bond amount (§ 0.00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment and Performance Bonds</td>
<td>Penal Sum of the Contract Price</td>
</tr>
<tr>
<td>Commercial General Liability</td>
<td></td>
</tr>
<tr>
<td>Bodily injury and property damage per project. Each occurrence:</td>
<td>$1,000,000.00</td>
</tr>
<tr>
<td>General Aggregate:</td>
<td>$2,000,000.00</td>
</tr>
<tr>
<td>Automobile Liability</td>
<td></td>
</tr>
<tr>
<td>Bodily injury and property damage combined single limit. Each Occurrence:</td>
<td>$1,000,000.00</td>
</tr>
<tr>
<td>Workers’ Compensation Insurance/Employer’s Liability Insurance</td>
<td></td>
</tr>
<tr>
<td>Worker’s Compensation Insurance Statutory in compliance with the laws of the State(s) in which any part of the work is to be performed.</td>
<td></td>
</tr>
<tr>
<td>Employer’s Liability Each Accident:</td>
<td>$1,000,000.00</td>
</tr>
<tr>
<td>Disease, Policy Limit:</td>
<td>$1,000,000.00</td>
</tr>
</tbody>
</table>

Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor’s bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

Form of Lien Waivers for Contractor and Subcontractor

Exhibit 1 – Drawing Index
Disease, Each Employee: $1,000,000.00

.5 Excess or Umbrella Liability

Each Occurrence: $5,000,000.00
General Aggregate: $5,000,000.00

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

OWNER (Signature)  
(Printed name and title)

CONTRACTOR (Signature)  
(Printed name and title)
SECTION 006000 – PROJECT FORMS

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:

1. AIA Document A101, "Standard Form of Agreement between Owner and Contractor, Stipulated Sum."
   a. The General Conditions for Project are AIA Document A201, "General Conditions of the Contract for Construction."

2. The General Conditions are included in the Project Manual
3. The Supplementary Conditions for Project are separately prepared and included in the Project Manual.
4. Owner's document(s) bound following this Document.

1.2 ADMINISTRATIVE FORMS

A. Administrative Forms: Additional administrative forms are specified in Division 01 General Requirements.

B. Copies of AIA standard forms may be obtained from the American Institute of Architects; http://www.aia.org/contractdocs/purchase/index.htm; docspurchases@aia.org; (800) 942-7732.

C. Information and Modification Forms to be utilized during construction shall include the following unless agreed upon by Architect:

1. Requests for Information (RFIs): form by Architect

D. Payment Forms:

1. Schedule of Values Form: AIA Document G703, "Continuation Sheet."
3. Form of Affidavit of Release of Liens: City of Owensboro, "Affidavit of Contractor for Partial Release of Liens and Claims for Progress Payment."
5. Form of Affidavit of Release of Liens: City of Owensboro, "Affidavit of Subcontractor or Vendor for Partial Release of Lien for Progress Payment."

END OF SECTION 006000
**Performance Bond**

**CONTRACTOR:**
(Name, legal status and address)
« »
« »

**SURETY:**
(Name, legal status and principal place of business)
« »
« »

**OWNER:**
(Name, legal status and address)
« » «City of Owensboro»
«101 East 4th Street, City Hall
Owensboro, KY 42302-9003»

**CONSTRUCTION CONTRACT**
Date: « »
Amount: $ « »
Description:
(Short Name and location)
«Owensboro Parking Structure»
«414 West 2nd Street
Owensboro, KY 42301»

**BOND**
Date: (Not earlier than Construction Contract Date)
« »
Amount: $ « »
Modifications to this Bond: « » None « » See Section 16

**CONTRACTOR AS PRINCIPAL**
Company:
(Corporate Seal)

**SURETY**
Company:
(Corporate Seal)

Signature:
Name and Title:
« » « »

Signature:
Name and Title:
« » « »

(Any additional signatures appear on the last page of this Performance Bond.)

**AGENT or BROKER:**
« » « »

**OWNER’S REPRESENTATIVE:**
(Architect, Engineer or other party:)
« » « »

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User Notes:
§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety’s obligation under this Bond shall arise after

1. the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor’s performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner’s notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety’s receipt of the Owner’s notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner’s right, if any, subsequently to declare a Contractor Default;

2. the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3. the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety’s obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety’s expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner’s concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

2. Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor’s Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety’s liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

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§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

<table>
<thead>
<tr>
<th>CONTRACTOR AS PRINCIPAL</th>
<th>SURETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company:</td>
<td>Company:</td>
</tr>
<tr>
<td>(Corporate Seal)</td>
<td>(Corporate Seal)</td>
</tr>
</tbody>
</table>

Signature: 
Name and Title: 
Address: 

Signature: 
Name and Title: 
Address: 

User Notes: (910453108)
Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date: «  »
Amount: $ «  »
Description:
(Name and location)
«Owensboro Parking Structure»
«414 West 2nd Street
Owensboro, KY 42303»

BOND
Date: «  »
Amount: $ «  »
Modifications to this Bond: «  » «  » None «  » «  » See Section 18

CONTRACTOR AS PRINCIPAL
Company: «  »
(Corporate Seal)
Signature: «  »
Name and Title: «  » «  »

SURETY
Company: «  »
(Corporate Seal)
Signature: «  »
Name and Title: «  » «  »

AGENT or BROKER:
«  » «  » «  » «  » «  » «  »

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)
«  » «  » «  » «  » «  » «  »

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.

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.
§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety’s obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner’s property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety’s expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety’s obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

2. have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant’s obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety’s expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety’s failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney’s fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety’s total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney’s fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner’s priority to use the funds for the completion of the work.
§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions
§ 16.1 Claim. A written statement by the Claimant including at a minimum:

.1 the name of the Claimant;
.2 the name of the person for whom the labor was done, or materials or equipment furnished;
.3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
.4 a brief description of the labor, materials or equipment furnished;
.5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
.6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
.7 the total amount of previous payments received by the Claimant; and
.8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms “labor, materials or equipment” that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL
Company: (Corporate Seal)
Signature: « »
Name and Title: « »
Address: « »

SURETY
Company: (Corporate Seal)
Signature: « »
Name and Title: « »
Address: « »
# Application and Certificate for Payment

**TO OWNER:**
City of Owensboro  
101 East 4th Street, City Hall  
Owensboro, KY 42302-9003

**PROJECT:**
Owensboro Parking Structure  
414 West 2nd Street  
Owensboro, KY 42301

**FROM:**
CONTRACTOR:  
integrity/Architecture, PLLC  
2414 Palumbo Drive, Ste. 125  
Lexington, KY 40509

**VIA:**
ARCHITECT:

**APPLICATION NO:**
001

**PERIOD TO:**
General Construction

**CONTRACT FOR:**

**CONTRACT DATE:**

**PROJECT NOS:**
/
/

## CONTRACTOR’S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. **ORIGINAL CONTRACT SUM**
   
<table>
<thead>
<tr>
<th></th>
<th>$0.00</th>
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2. **NET CHANGE BY CHANGE ORDERS**
   
<table>
<thead>
<tr>
<th></th>
<th>$0.00</th>
</tr>
</thead>
</table>

3. **CONTRACT SUM TO DATE (Line 1 ± 2)**
   
<table>
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<tr>
<th></th>
<th>$0.00</th>
</tr>
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</table>

4. **TOTAL COMPLETED & STORED TO DATE (Line G on G703)**
   
<table>
<thead>
<tr>
<th></th>
<th>$0.00</th>
</tr>
</thead>
</table>

5. **RETAINAGE**

   a. **0 % of Completed Work**
      
      | | $0.00 |
      |---|---|

   b. **0 % of Stored Material**
      
      | | $0.00 |
      |---|---|

   Total Retainage (Lines 5a + 5b or Total in Column I of G703)

<table>
<thead>
<tr>
<th></th>
<th>$0.00</th>
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6. **TOTAL EARNED LESS RETAINAGE**

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<th>$0.00</th>
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7. **LESS PREVIOUS CERTIFICATES FOR PAYMENT**

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<th>$0.00</th>
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8. **CURRENT PAYMENT DUE**

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<th>$0.00</th>
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9. **BALANCE TO FINISH, INCLUDING RETAINAGE**

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<th></th>
<th>$0.00</th>
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</table>

### CHANGE ORDER SUMMARY

<table>
<thead>
<tr>
<th>CHANGE ORDER SUMMARY</th>
<th>ADDITIONS</th>
<th>DEDUCTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total changes approved in previous months by Owner</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Total approved this Month</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$0.00</strong></td>
<td><strong>$0.00</strong></td>
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</tbody>
</table>

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor to the Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

**CONTRACTOR:**

By: [Signature]

Date: [Date]

State of: [State]

County of: [County]

Subscribed and sworn to before me this day of [Day], [Month] [Year]

Notary Public:

My Commission expires:

### ARCHITECT’S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

**AMOUNT CERTIFIED**

<table>
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<th>$0.00</th>
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(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

**ARCHITECT:**

By: [Signature]

Date: [Date]

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.
SECTION 006276.13 – PURCHASE ORDER FORM

CITY OF OWENSBORO
101 EAST 4TH STREET, CITY HALL
OWENSBORO, KY 42302-9003

BILL TO:
CITY OF OWENSBORO
c/o: ED RAY
101 EAST 4TH STREET
OWENSBORO, KY 42302

KENTUCKY SALES TAX
EXEMPTION NUMBER: [number]

DATE OF ORDER: ____________________________

VENDOR: ________________________________
STREET ADDRESS

PO NUMBER: ______________________________

BID DIVISION NUMBER: _____________________

VENDOR PHONE: ( )

PURCHASER: CITY OF OWENSBORO
AUTHORIZED SIGNATURE: __________________________
(Approved by Vendor)

SHIP TO:
(STREET ADDRESS)
OWENSBORO, KENTUCKY
ATTN: (GC)

QUANTITY/DESCRIPTION TOTAL PRICE
Base Bid: ________________________________ $ ____________

Furnish the necessary materials to complete the following bid in its entirety. All materials to be in
cordance with the requirements of the Contract Documents prepared by integrity / Architecture, pllc.

The following attachment is hereby acknowledged and made a part of this order:
1. Terms and Conditions of Purchase Order.

Note: Notify the following no less than 48 hours prior to delivery at project jobsite:

[GC Project Superintendent]
[Phone Number]

END OF SECTION 006276.13
PROCEDURES FOR DIRECT PURCHASE OF GOODS AND MATERIALS FOR TAX EXEMPTION

The City of Owensboro reserves the right to purchase any materials for any project directly less any sales tax. Once the City has notified the Contractor that materials will be purchased directly, the Contractor shall be responsible for completing and submitting purchase requisition forms. The City shall prepare purchase orders for equipment, materials and/or supplies for which the City chooses to purchase directly. Vendors/suppliers shall invoice the City directly. Contractor shall be responsible for receiving and verifying materials as specified. Any issues with warranties, defects and etc. shall be the responsibility of the Contractor as if purchased directly by the Contractor. The Contractor shall be responsible for the secure storage of all materials received. The City shall purchase and maintain insurance sufficient to protect against loss or damage to City furnished materials. Such insurance shall cover the replacement cost of any City furnished materials not yet incorporated into the project. Contractor shall insure all materials that are City furnished once incorporated into the project.

The City shall in no way be liable for any interruption or delay in the project, for any defects or other problems with the project, or for any additional costs resulting from the delay in the delivery of, or defects in, City furnished materials.

All unused items purchased directly by the City shall become the property of the City. The Contractor shall notify the City of any items that could be returned to the vendor for credit. At the time of notification of surplus, the City shall request Contractor to deliver the surplus to Public Works Building, 1410 West 5th Street, Owensboro, KY 42301. If the remaining amount has no value (scrap/trash), then the City will require the Contractor to remove from the site.

Any incorrect orders shall be the responsibility of the Contractor. The Contractor shall be responsible for any restocking fees or other fees that are incurred for incorrect orders.

Nothing herein contained shall create or be construed as creating a partnership between the City and the Contractor or to constitute the Contractor as an agent of the City.
I. General Contractor’s responsibilities

A. Provide a schedule of values (list of materials shall include sales tax)
B. Provide signed change order(s) on form provided by the City to assigned project manager identifying the direct purchase item totals to be deducted from the contract including sales tax. A change order must be completed on the first of each month for all items purchased direct for the prior month.
C. Complete a purchase order requisition on form provided by the City and attach a copy of the quote from the supplier of the materials. Detail bonds or letter of credit to be provided by the vendor if included in their proposal (if applicable)
D. Provide the City with a completed W-9 form from each supplier.
E. Provide ordering information timely.
F. Coordinate material orders to meet schedule. Supply delivery information to include delivery area/loading and unloading instructions, delivery schedule, delivery method AND acceptable delivery days and times.
G. Receive materials to include inspecting and accepting materials at time of delivery to ensure correct materials and quantities are received
H. Approve vendor’s invoice for delivered material and forwarding to City Rep. for approval and payment processing
I. Obtain all applicable warranties and guarantees
J. Promptly resolve/correct all discrepancies, defects or non-conformities with the suppliers and notify the project manager of any issues

II. Purchasing Department responsibilities

A. Determine the materials that will be direct purchased
B. Upon receipt of a proper requisition (including appropriate backup material(s), the Purchasing Department shall issue a purchase order for the material required. Each purchase order shall contain a purchase exemption certificate with the City’s exemption number listed.
C. Process and enter change orders against purchase order
D. Complete credit applications for the suppliers when necessary.
E. Create spreadsheet to record purchase orders and sales tax saved.

III. Project Manager/Owners Rep. responsibilities

A. Determine the materials that will be direct purchased
B. Reviews invoices for approval to pay
C. Submits invoices to General Contractor for approval to pay
D. Processes invoices for payment
E. Review change orders for approval and send to the Purchasing Dept. for processing
F. Track all change orders, purchase orders and payments
CITY OF OWENSBORO
KENTUCKY

APPROVAL OF CHANGE ORDER

Project Description

Bid Number & Original Purchase Order Number

Amount of Original Contract

Change Order Number for this Project

Total Dollar Amount of previous change orders to date for this project

Account to be charged

Amount of this Change Order

Vendor Name

Reason for requested change order

APPROVALS:

Department Head

Date:

Purchasing Manager

Date:

Finance Director

Date:

City Manager

Date:

Authorized Contract Representative

Date:
AFFIDAVIT OF
CONTRACTOR FOR PARTIAL
RELEASE OF LIENS AND CLAIMS FOR PROGRESS PAYMENT

__________________ (“Contractor”), in connection with the construction of the ___________________________ located in Owensboro, Kentucky (“Project”), and under Contract with the City of Owensboro (“Owner”), has performed Work and/or furnished Materials, Equipment, and/or machinery for the Project, during the period from __________ to __________, as set forth in Progress Payment Application No. _____ in the amount of $________.

Upon receipt of the sum of $___________ (“Progress Payment”), the Contractor waives, releases, and satisfies any and all liens or claims it has upon the foregoing described property through the date of ________________ (“Current Date”), except for retainage.

Exceptions as follows:  None.
(If no exception or “none” is entered above, undersigned shall be deemed not to have reserved any rights or liens.)

Contractor further affirms, warrants, and represents (a) that subcontractors, suppliers, and vendors have been paid in full for all work performed and all materials, equipment, labor, or services supplied to the Contractor for use at the Project through and including ________________ (date of Contractor’s last prior application for payment), and (b) that the Contractor is not indebted to any person or entity for labor, equipment, services, or materials used in connection with or as a part of such Project in any amount whatsoever through and including the date hereof, except as noted below:

<table>
<thead>
<tr>
<th>NAME</th>
<th>SCOPE</th>
<th>CONTRACT PRICE</th>
<th>BALANCE DUE</th>
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<tr>
<td>TOTAL LABOR, EQUIPMENT, SERVICES, AND MATERIAL TO COMPLETE</td>
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</tbody>
</table>

Contractor agrees that this waiver and release form is in compliance with applicable law. The undersigned hereby warrants that it has not and will not assert or assign any lien or claim of lien waived herein.

Contractor further agrees that in consideration of the Progress Payment, Contractor waives, releases, and discharges the Owner, and each of Owner’s insurers, parents, subsidiaries, related entities, affiliates, members, past and present officers, directors, heirs, and administrators (collectively the “Indemnitees”), from any and all suits, debts, demands, torts, charges, interest, penalties, fees, causes of action and claims, whether known or unknown, including, but not limited to claims for payment, change orders, extra work, delay, disruptions, acceleration, stacking of trades, interferences, impact claims, claims under state municipal or federal laws, claims relating to payment bonds, and prompt payment statutes through the date of ___________ (“Current Date”), except for retainage.

Exceptions as follows:  None.
(If no exception or “none” is entered above, Contractor shall be deemed not to have reserved any claim.)

The Undersigned certifies, warrants, and guarantees that all work it has performed on the Project has been performed in accordance with its contract documents on the Project, that it has complied with all federal, state, and local tax and employment laws, including but not limited to Social Security, unemployment, wage and hour, and workers’ compensation laws, applicable to its Subcontract and Work on the Project through the date hereof.

Contractor further affirms, warrants, and represents that there are no outstanding claims of any nature, contractual or otherwise, or for any personal injury, death or property damage, arising from or associated with the performance of the Contractor’s work through and including the date hereof which might be the basis of any claim, suit, lien, or demand that could be asserted against either the Owner, the Project, or any property, real and personal, related to the Project.

CONTRACTOR AGREES TO DEFEND, INDEMNIFY, AND HOLD OWNER AND INDEMNITEES, AND EACH
OF THEIR AGENTS, EMPLOYEES, DIRECTORS, OFFICERS, SUCCESSORS, AND ASSIGNS HARMLESS FROM AND AGAINST ANY AND ALL LOSS, COST, AND EXPENSES, INCLUDING REASONABLE ATTORNEY’S FEES, COURT COSTS, WITNESS FEES (INCLUDING EXPERTS AND CONSULTANTS), OR OTHER DISPUTE RESOLUTION COSTS, ON ACCOUNT OF LIENS, CLAIMS OF LIEN, ENCUMBRANCE, DEBT, OR OBLIGATIONS ASSERTED BY, OR ON BEHALF OF, ANY PERSON WHATSOEVER IN CONNECTION WITH CONTRACTOR FOR ANY LABOR PERFORMED OR MATERIALS SUPPLIED BY OR THROUGH CONTRACTOR TO THE PROJECT PRIOR TO AND INCLUDING THE DATE SPECIFIED IN THE SECOND PARAGRAPH ABOVE.

___________________________________
Contractor

___________________________________
Signature/Title

___________________________________
Printed Name/Title

___________________________________
Date

COMMONWEALTH OF KENTUCKY  
COUNTY OF _______________________  

The foregoing instrument was subscribed, sworn to and acknowledged before me this _____ day of _________, 20_____, by _____________________.

My commission expires:  

___________________________________

NOTARY PUBLIC, State at Large
AFFIDAVIT OF CONTRACTOR OF FINAL RELEASE AND WAIVER OF LIENS AND CLAIMS

__________________ ("Contractor"), in connection with the construction of the ________________________ located in Owensboro, Kentucky ("Project"), and under Contract with the City of Owensboro ("Owner").

Upon receipt of the sum of $______________("Final Payment"), Contractor waives and releases any and all liens or claims of liens, any right against any labor, material, or payment bond it has upon the foregoing described property. Contractor agrees that this waiver and release form is in compliance with applicable law.

Upon receipt of the Final Payment, Contractor waives, releases, and discharges the Owner and each of Owner’s insurers, parents, subsidiaries, related entities, affiliates, members, past and present officers, directors, heirs, and administrators (collectively the “Indemnitees”), from any and all suits, debts, demands, torts, charges, interest, penalties, fees, causes of action and claims, whether known or unknown, including, but not limited to claims for payment, change orders, extra work, delay, disruption, acceleration, stacking of trades, disruptions, interferences, impact claims, claims under municipal, state, or federal law, and claims relating to payment bonds, and prompt payment statutes.

The Undersigned certifies, warrants, and guarantees that all work it performed on the Project has been performed in accordance with the contract documents on the Project, that it has complied with all federal, state, and local tax and employment laws, including but not limited to Social Security, unemployment, wage and hour, and workers’ compensation laws, applicable to its Contract and Work on the Project.

Contractor further affirms, warrants, and represents that there are no outstanding claims of any nature, contractual or otherwise, or for any personal injury, death or property damage, arising from or associated with the performance of the Contractor’s work through and including the date hereof which might be the basis of any claim, suit, lien, or demand that could be asserted against either Owner, the Project, or any property, real and personal, related to the Project.

CONTRACTOR AGREES TO DEFEND, INDEMNIFY, AND HOLD OWNER AND INDEMNITEES, AND EACH OF THEIR AGENTS, EMPLOYEES, DIRECTORS, OFFICERS, SUCCESSORS, AND ASSIGNS HARMLESS FROM AND AGAINST ANY AND ALL LOSS, COST AND EXPENSES, INCLUDING REASONABLE ATTORNEY’S FEES, COURT COSTS, WITNESS FEES (INCLUDING EXPERTS AND CONSULTANTS), OR OTHER DISPUTE RESOLUTION COSTS, ON ACCOUNT OF LIENS, CLAIMS OF LIEN, ENCUMBRANCE, DEBT, OR OBLIGATIONS ASSERTED BY, OR ON BEHALF OF, ANY PERSON WHATSOEVER IN CONNECTION WITH CONTRACTOR FOR ANY LABOR PERFORMED OR MATERIALS SUPPLIED BY OR THROUGH CONTRACTOR TO THE PROJECT PRIOR TO THE EXECUTION OF THIS FINAL RELEASE.

Dated: ________________________________

(Individual name or name of Contractor)

By: ________________________________

(Authorized Signature)

Title: ________________________________

COMMONWEALTH OF KENTUCKY

) ) SS

COUNTY OF ______________________

) )

The foregoing instrument was subscribed, sworn to and acknowledged before me this _____ day of _________, 20___, by ________________________________

My commission expires: ________________________________

NOTARY PUBLIC, State at Large
AFFIDAVIT OF SUBCONTRACTOR OR VENDOR FOR PARTIAL RELEASE OF LIEN FOR PROGRESS PAYMENT

The undersigned is under Subcontract with _____________________ ("Contractor"), of which Contractor is under Contract with the City of Owensboro ("Owner"), to furnish labor and/or Materials for the ________________________ located in Owensboro, Kentucky ("Project").

The undersigned acknowledges receipt of the previous Progress Payment Number _______, in the month of ____________, for the amount of $_____________, which brings the total payment received to date $________________________.

The undersigned is submitting herewith a request for the Progress Payment in the amount of $____________________ for the month of ____________________ to Contractor for payment.

The undersigned, as consideration and inducement to Contractor to make future progress payments, hereby waives, releases, and discharges the Owner and each of Owner’s insurers, parents, subsidiaries, related entities, affiliates, members, past and present officers, directors, heirs, and administrators (collectively the “Indemnitees”), and Contractor from any and all suits, debts, demands, torts, charges, interest, penalties, fees, causes of action and claims, whether known or unknown, including, but not limited to: claims for payment, change orders, extra work, delay, disruption, acceleration, stacking of trades, disruptions, interferences, impact claims, claims under statutes, municipal, state, or federal government, and claims relating to payment bonds, and prompt payment statutes through ______________ (insert date) for payments received totaling $_________________.

__________________________________________
(Printed Name of sole proprietorship, corporation or partnership)

__________________________________________
(Signature of Authorized Representative)

Title:______________________________________

COMMONWEALTH OF KENTUCKY )
) SS
COUNTY OF ____________________ )

The foregoing instrument was subscribed, sworn to and acknowledged before me this __ day of ____________, 20____, by ____________________.

My commission expires:________________________

NOTARY PUBLIC, State at Large
AFFIDAVIT OF
SUBCONTRACTOR OF FINAL
RELEASE AND WAIVER OF LIENS AND CLAIMS

The undersigned is under Subcontract with _____________________ (“Contractor”), of which Contractor is under Contract with the City of Owensboro (“Owner”), to furnish labor and/or Materials for the _____________________ located in Owensboro, Kentucky (“Project”). The undersigned, in consideration of the sum of ____________________ (“Final Payment”), the receipt of which is hereby acknowledged, does hereby:

1. Acknowledge such sum as final payment and hereby waives, releases, and discharges the Owner and each of Owner’s insurers, parents, subsidiaries, related entities, affiliates, members, past and present officers, directors, heirs, and administrators (collectively the “Indemnitees”), and Contractor from any and all suits, debts, demands, torts, charges, interest, penalties, fees, causes of action and claims, whether known or unknown, including, but not limited to: claims for payment, change orders, extra work, delay, disruption, acceleration, stacking of trades, disruptions, interferences, impact claims, claims under statutes, municipal, state, or federal government, and claims relating to payment bonds, and prompt payment statutes;

2. Waive all claims, liabilities, damages, causes of action, and/or rights of any kind, including the right to file mechanics liens against the premises and/or Project funds related to the furnishing of and/or supplying of Work, Materials, machinery, fuel, and/or labor to the same; and

3. Guarantee and warrant that all its Subcontractors, materialmen, and laborers involved in this Project have been paid in full.

Dated: ____________________________

(Individual name or name of Subcontractor)

By: ______________________________

(Authorized Signature)

Title: ______________________________

COMMONWEALTH OF KENTUCKY )
 ) SS
COUNTY OF _________________ )

The foregoing instrument was subscribed, sworn to and acknowledged before me this _____ day of _________, 20___, by _________________________.

My commission expires: ________________________________

NOTARY PUBLIC, State at Large
for the following PROJECT:
(Name and location or address)
Owensboro Parking Garage

THE OWNER:
(Name and address)
City of Owensboro
101 E. 4th City Hall
P.O. Box 10003
Owensboro, KY 42302-9003

THE ARCHITECT:
(Name and address)
INTEGRITY / ARCHITECTURE, PLLC
2414 PALUMBO DRIVE
SUITE 125
LEXINGTON, KY 40509

TABLE OF ARTICLES
1 GENERAL PROVISIONS
2 OWNER
3 CONTRACTOR
4 ARCHITECT
5 SUBCONTRACTORS
6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7 CHANGES IN THE WORK
8 TIME
9 PAYMENTS AND COMPLETION
10 PROTECTION OF PERSONS AND PROPERTY
11 INSURANCE AND BONDS
12 UNCOVERING AND CORRECTION OF WORK
13 MISCELLANEOUS PROVISIONS

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.

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ARTICLE 1  GENERAL PROVISIONS  

§ 1.1 BASIC DEFINITIONS
(Paragraphs deleted)

§ 1.1.1 THE CONTRACT DOCUMENTS
The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor’s bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT
The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification signed by the parties. Except as otherwise expressly provided in this Agreement, the Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect’s consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect’s consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect’s duties.

§ 1.1.3 THE WORK
The term “Work” means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor’s obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT
The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS
The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS
The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE
Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect’s consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER
The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.1.9 When the words "approved," "satisfactory," "proper," or "as directed" are used by the Architect, those words shall mean approved by the Architect.
§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. In the event of inconsistencies within or between parts of the Contract Documents, or between Documents and applicable standards, codes and ordinances, the Contractor shall (1) provide a better quality or greater quantity of Work or (2) comply with the more stringent requirements, either or both in accordance with the Architect’s interpretation.

§ 1.2.1.1 On the Drawings, given dimensions shall take precedence over scaled measurements, and large scale drawings over small scale drawings.

§ 1.2.1.2 Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify measurements at the Project site and shall be responsible for the correctness of such measurements. No extra charge or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference which may be found shall be submitted to the Architect for resolution before proceeding with the Work.

§ 1.2.1.3 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such departure for the approval by the Architect before making the change.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

(Paragraphs deleted)

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect’s consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights as identified in the AIA Document B101-2007 Standard Form of Agreement between the Owner and Architect. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect’s or Architect’s consultants’ reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect’s consultants.

(Paragraphs deleted)

§ 1.5.3 Nothing in Article 1.5 shall modify the terms of AIA Document B101-2007, Standard Form of Agreement between Owner and Architect.
§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM
If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER
§ 2.1 GENERAL
§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner’s approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term “Owner” means the Owner or the Owner’s authorized representative. The Owner shall not be deemed to be obligated to furnish any services or incur obligations hereunder other than as explicitly set forth in the Contract Documents.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic’s lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner’s interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER
§ 2.2.1 [INTENTIONALLY DELETED]

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner’s control and relevant to the Contractor’s performance of the Work with reasonable promptness after receiving the Contractor’s written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 OWNER’S RIGHT TO STOP THE WORK
If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

(Paragraphs deleted)

§ 2.4 OWNER’S RIGHT TO CARRY OUT THE WORK
If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a five-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the actual cost of correcting such deficiencies, including Owner’s expenses and compensation for the Architect’s additional services and expenses made necessary by such default,
neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term “Contractor” means the Contractor or the Contractor’s authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents in a thorough and workmanlike manner and to the Owner’s reasonable satisfaction. The Owner has provided the Contractor with access to documentation as to the location of past, current and future construction adjacent to, and connecting with, the Work in order for the Contractor to conduct investigations and examinations which the Contractor deems necessary to determine the condition of the existing site and facilities, and which may impact the Contractor’s Work under the Contract Documents. Further, the Owner has provided Contractor with opportunities to obtain information to enable the Contractor to confirm that the above-grade condition of the existing site, as determined by the Contractor, is adequately and accurately set forth in the Contract Documents, and therefore, the Contractor agrees to perform all of the Work required under the Contract Documents for the Contract Sum and the Contract Time.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect’s administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. Contractor acknowledges that Owner has provided Contractor with all information that Contractor has deemed necessary to perform the Work and that Contractor is fully aware of the purpose of the Work.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take and be responsible for all field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor’s review is made in the Contractor’s capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. The Contractor’s failure to report, in writing, to the Architect and Owner, errors, omissions or inconsistencies in the Contract Documents within ten (10) days of the Contractor’s discovery of same shall operate as a waiver of any claim or defense by the Contractor arising from those errors, omissions or inconsistencies. When the Contractor discovers and properly reports such errors, omissions or inconsistencies to the Architect and Owner, the Contractor shall await instructions before proceeding with the Work. Contractor’s commencement or proceeding with the Work without written change orders (or construction change directives issued by the Owner or Architect) shall be construed as acceptance and approval of the Contract Documents and the premises conditions (including any underground conditions) and limitations applicable to the Work.

§ 3.2.2.1 Contractor shall provide, without extra charge, all incidental items required as a part of the Work. If Contractor objects to methods or materials specified, Contractor shall notify Owner in writing and have written adjustments to the Contract Documents made and executed before proceeding with the Work.
§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities unless such laws, statutes, ordinances and codes bear on the performance of the Work, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor’s notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor’s best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor’s employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor’s employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.4.4 The Contractor and its subcontractors and suppliers shall only employ labor on the Project or in connection with the Work capable of working harmoniously with all trades, crafts and any other individuals associated with the Project. The Contractor shall also use its best efforts to minimize the likelihood of any strike, work stoppage or other labor disturbance.
§ 3.4.4.1 If the Work is to be performed by trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage or cost to the Owner and without recourse to the Architect or the Owner any conflict between the Contract Documents and any agreements or regulations of any kind in force among members or councils which regulate or distinguish what activities shall not be included in the work of any particular trade.

§ 3.4.4.2 In case the progress of the Work is affected by any undue delay in furnishing or installing any items or materials or equipment required under the Contract Documents because of such conflict involving any such labor agreement or regulation, the Owner may require that other material or equipment of equal kind and quality be provided pursuant to a Change Order or Construction Change Directive.

§ 3.4.5 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.

§ 3.4.6 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directly by the manufacturer.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit and that Work, materials and equipment are free and clear of liens, taxes, charges or encumbrances. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor’s warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.1 The Contractor agrees to assign to the Owner at the time of final completion of the Work, any and all manufacturer’s warranties relating to materials and labor used in the Work and further agrees to perform the Work in such manner so as to preserve any and all such manufacturer’s warranties.

§ 3.5.2 The Contractor shall collect, assign and deliver to the Owner any specific written warranties provided by others. The Contractor shall cause each subcontractor of any tier to execute and shall countersign, secure and furnish directly to Owner all required, written warranties and guarantees, which shall extend to the Owner all rights, claims, benefits and interests that the Contractor may have under express or implied warranties or guarantees against subcontractors of any tier for defective or non-conforming Work. Prior to furnishing Owner with executed guarantees and warranties, Contractor shall provide copies to the Owner for review and approval. These warranties are in addition to the Warranty in this Section 3.5 and shall in no manner diminish that Warranty.

(Paragraphs deleted)

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes (income, occupational, gross receipt, excise, transaction, privilege or other taxes) for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

The Owner intends to purchase certain materials for this project as they are tax exempt. Contractor shall work with Owner to identify which materials need to be purchased directly by the Owner, the cost of those materials, and assist the Owner with the purchase of those materials. Contractor shall work with its subcontractors to facilitate this process.

§ 3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

§ 3.7.1 Except as set forth in Paragraph 2.2.2, the Contractor shall secure, pay for, and as soon as practicable, furnish the Owner with copies or certificates of all permits and fees, licenses and inspections necessary for the proper execution and completion of the Work, including, without limitation, all building and operational permits. All connection charges, assessments or inspection fees as may be imposed by any municipal agency or utility company are included in the Contract Sum and shall be the Contractor’s responsibility.
§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders and other requirements of public authorities (including environmental laws and requirements) bearing on performance of the Work. Contractor shall specifically advise Owner of any variances between the Contract Documents and any applicable laws, ordinances, codes, rules and regulations.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

(Paragraphs deleted)

§ 3.7.3.1 If any of the Work is condemned or fails to satisfy applicable building codes, Contractor shall remove the condemned work and related goods and materials within a reasonable time, to be set by written notice. If Contractor does not complete such removal within the stated time, Owner may complete the removal and store the material, at Contractor’s expense. If Contractor does not pay Owner the removal and storage expenses within ten days after receiving Owner’s demand, Owner may, without waiving or limiting its other rights and remedies, sell the materials, upon ten days’ additional written notice to Contractor. Owner shall deliver to Contractor any net proceeds of the sale that remain after deducting Owner’s damages, the costs of sale, and all other costs and expenses that Contractor should have borne.

§ 3.7.4 Concealed or Unknown Conditions. Subject to the provisions in Section 17.1, if the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, and are not conditions which could have been reasonably discovered during Contractor’s site investigation, prior to the commencement of the Work, then the Contractor shall give notice to the Owner promptly before conditions are disturbed and in no event later than ten (10) business days after first observance of the conditions. The Owner may investigate such conditions and, if they differ materially, and the Owner determines that the conditions cause an increase or decrease in the Contractor’s cost of, or time required for, performance of any part of the Work, then the Owner shall either negotiate with the Contractor an equitable adjustment in the Contract Sum or Contract Time, or both, or elect to terminate the Contract. If the Owner determines that the conditions at the site are not materially different from those indicated in the Contract Documents, and that no change in the terms of the Contract is justified, the Owner shall so notify the Contractor in writing, stating the reasons. Claims by the Contractor in opposition to such determination must be made within ten business days after the Owner has given notice of the decision. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, then the parties shall proceed pursuant to Section 15.2. No adjustment in the Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or which reasonably should have been disclosed by the Contractor’s prior inspections, tests, and reviews which the Contractor had the opportunity to make or should have performed in connection with the Project.

§ 3.7.5 [INTENTIONALLY DELETED]

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

1. allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

2. Contractor’s costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor’s costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner the name and qualifications of a proposed superintendent. The Owner may reply within 14 days to the Contractor in writing stating (1) whether the Owner has reasonable objection to the proposed superintendent or (2) that the Owner requires additional time to review. Failure of the Owner to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner’s consent, which shall not unreasonably be withheld or delayed. Owner may, in its discretion, require Contractor to dismiss from the Work any personnel of Contractor or any of its subcontractors for any reason, effective upon written notice from Owner of such dismissal. Contractor agrees to ensure the continuity of personnel assigned to perform the Work. Any removal or reassignment of personnel assigned to perform the Work will be with replacements who will have substantially equivalent or better qualifications than the persons replaced. There will be no charge to Owner while the replacements acquire the necessary training and familiarity with the Work.

§ 3.10 CONTRACTOR’S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract, and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule for the Architect’s and Owner’s approval. The Architect’s and Owner’s approval shall not unreasonably be delayed or withheld. The submittal schedule shall: (1) be coordinated with the Contractor’s construction schedule and (2) allow the Architect reasonable time, but not less than ten business days, to review submittals. If the Contractor fails to submit a submittal schedule as provided in this Section, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.2 The Schedule shall contain start and completion dates for all phases of the Work including, but not limited to, major Work items by floor level, rough-in dates and equipment and material delivery dates. The Schedule prepared by the Contractor, and revisions thereof, shall become effective only upon approval by the Owner and the Architect.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.10.4 The construction schedule shall be created using Microsoft Project, in a format satisfactory to the Owner and the Architect which shall also: (1) provide a graphic representation of all activities and events that will occur during performance of the work; (2) identify each phase of construction and occupancy; and (3) set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as “Milestone Dates”). Upon review and acceptance by the Owner and the Architect of the Milestone Dates, the construction schedule shall be deemed part of the Contract Documents and attached to the Agreement. If not accepted, the construction schedule shall be promptly revised by the Contractor in accordance with the recommendations of the Owner and the Architect and resubmitted for acceptance. The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedule and shall promptly advise the Owner of any delays or potential delays. The accepted construction schedule shall be updated to reflect actual conditions (sometimes referred to as progress reports) or if requested by either the Owner or the Architect. In the event that Contractor is aware of any delays, the Contractor shall notify the Owner and propose an affirmative plan and recovery schedule, which is agreeable to the Owner, to correct the delays.
delay, including overtime and/or additional labor, if necessary. In no event shall any progress report constitute an adjustment in the Contract Time, any Milestone Date or the Contract Sum unless any such adjustment is agreed to by the Owner and authorized pursuant to Change Order.

§ 3.10.5 In the event Owner determines that the performance of the Work, as of a Milestone Date, has not progressed or reached the level of completion required by the Contract Documents, the Owner shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation, (1) working additional shifts or overtime; (2) supplying additional manpower, equipment, and facilities and (3) other similar measures (hereinafter referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures shall continue until the progress of the Work complies with the stage of completion required by the Contract Documents. The Owner’s right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor’s compliance with the construction schedule.

.1 The contractor shall not be entitled to an adjustment in the Contract Sum in connection with Extraordinary Measures required by the Owner under or pursuant to this Paragraph 3.10.5.

.2 The Owner may exercise the rights furnished the Owner under or pursuant to this Paragraph 3.10.5 as frequently as the Owner deems necessary to ensure that the Contractor’s performance of the Work will comply with any Milestone Date or completion date set forth in the Contract Documents.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE
The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect’s approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect’s approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect’s approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor’s responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional’s written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

(Paragraphs deleted)

§ 3.12.11 When professional certification of performance criteria of materials, systems, or equipment is required by the Contract Documents, the Contractor shall provide the person or party providing the certification with full information on the relevant performance requirements and on the materials, systems, or equipment that are expected to operate at the Project site. The certification shall be based on performance under the operating conditions generally prevailing or expected at the Project site. The Owner and Architect shall be entitled to rely upon the accuracy and completeness of such certificates.

§ 3.13 USE OF SITE
The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING
§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by...
exca... other alteration of such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor’s consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor’s tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

(Paragraphs deleted)

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located. Contractor shall provide proper facilities for access and shall make all Work and materials visible and available for inspection at Owner’s request.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect’s consultants, and agents and employees of any of them ("Indemnites") from and against claims, damages, losses and expenses, including but not limited to attorneys’ fees, arising out of or resulting from performance of the Work, but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.18. The Contractor’s indemnity obligations under this paragraph shall include, but not be limited to claims pertaining to personal injury, property damage, payment disputes, mechanics’ and materialmen’s liens (conditioned upon Owner’s payment of undisputed sums due and owing), breach of contract, tort or any other type of claim asserted against Owner or Architect by Subcontractors, Suppliers, employees or other third parties arising from the Work.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers’ compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.
§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner’s representative during construction until the date the Architect issues the final Certificate For Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor’s rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor’s failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect’s consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect’s evaluations of the Contractor’s Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor’s submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect’s action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect’s professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as
required by the Contract Documents. The Architect’s review of the Contractor’s submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect’s review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect’s approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner’s review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect’s responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning Plans and Specifications on written request of either the Owner or Contractor. The Architect’s response to such requests will be made in writing within ten days of receipt of a written request.

§ 4.2.12 [INTENTIONALLY DELETED]

§ 4.2.13 The Owner’s decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect’s response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14 day period shall constitute notice of no reasonable objection.
§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor’s Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

(Paragraphs deleted)

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor’s Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor’s rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor’s compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER’S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner’s own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.
§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term “Contractor” in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner’s own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 [INTENTIONALLY DELETED]

§ 6.2 MUTUAL RESPONSIBILITY
§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor’s construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor’s Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner’s or separate contractor’s completed or partially completed construction is fit and proper to receive the Contractor’s Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor’s delays, improperly timed activities or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

(Paragraphs deleted)

§ 6.3 OWNER’S RIGHT TO CLEAN UP
If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those who the Owner determines are responsible.

ARTICLE 7  CHANGES IN THE WORK
§ 7.1 GENERAL
§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work. Except as permitted in Paragraph 7.3, a change in the Contract Sum or the Contract Time shall be accomplished only by Change Order. Accordingly, no course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that the Owner has been unjustly enriched by any alteration or addition to the Work, whether or not there is, in fact, any
unjust enrichment to the Work, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents.

§ 7.2 CHANGE ORDERS
§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

1. The change in the Work;
2. The amount of the adjustment, if any, in the Contract Sum; and
3. The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES
§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If a Change Order or a Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be in accordance with the following:

Any adjustment to the Contract Sum shall be determined on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, supported by actual cost documentation. In case of an increase in the Contract Sum, the cost shall include an allowance for fees as set forth in 7.5 below, which shall address all costs for on-site supervision, general conditions, extended general conditions, home office costs and overhead, engineering/estimating, shop drawings, overhead, profit and any subcontractor mark-up as well as all other mark-up. No other mark-up shall be allowed on Changes. In such case, the Contractor shall keep and present an itemized accounting together with appropriate supporting data for inclusion in a Change Order. Unless otherwise provided in the Contract Documents, costs for these purposes shall be limited to the following:

(i) costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers’ compensation insurance;
(ii) costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
(iii) rental costs of machinery and equipment exclusive of hand tools, whether rented from the Contractor or others;
(iv) costs of premiums for all bonds and insurance permit fees, and applicable taxes, if any;
(v) additional costs of supervision and field office personnel directly attributable to the change; and fees paid to the Architect, engineers and other professionals.

Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. When the Owner and the Contractor agree upon the adjustments in the Contract Sum and Contract Time, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

§ 7.3.4 (Paragraphs deleted)

All Change Orders submitted by the Contractor must be accompanied by the Contractor’s written evaluation and analysis of the claim. If the Change Order is a pass through claim of a Subcontractor, the Contractor shall include written and sworn certification, under oath and notarized, that the Contractor has reviewed the claim of the
Subcontractor that it is accurate in all respects, and that Contractor warrants the accuracy of the Subcontractor’s claim for a Change Order.

§ 7.3.5 No action, conduct, omission, prior failure, or course of dealing by the Owner shall act to waive, modify, change, or alter the requirement that Change Orders and Construction Change Directives must be in writing and signed as provided herein. Such written Change Orders or Directives are the exclusive methods for effecting any change to the Contract Sum or Contract Time. The Contractor understands and agrees that the Contract Sum and Contract Time cannot be changed by implication, oral agreements, actions, inactions, course of conduct or constructive change order.

§ 7.3.6 [INTENTIONALLY DELETED]

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

1. Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers’ compensation insurance;
2. Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
3. Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
4. Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
5. Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.7.1 Alternatively to 7.3.7, Contractor agrees that if Owner is not satisfied with the price quoted by Contractor on any change, then Owner may, at Owner’s sole option, engage other persons or contractors to make said change, and Contractor agrees to cooperate fully with the Owner and the other contractor engaged by the Owner to perform the Change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work not in dispute under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect’s professional judgment, to be reasonably justified. The Architect’s interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK
The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.
§ 7.5 AGREED OVERHEAD AND PROFIT RATES
§ 7.5.1 For any adjustments to the Contract Sum which are based on other than the unit prices method, the Contractor agrees to charge, and accept, as full payment for overhead and profit, the following percentages of costs attributable to the change in Work:

.1 Ten percent (10%) for Work by the Contractor not involving Subcontractors;
.2 Ten percent (10%) for Work by Subcontractors with Contractor only adding Five percent (5%) to that amount;
.3 When both additions and credits are involved in any one change, the allowance for overhead and profit shall be figured on the basis of net increase, if any.

§ 7.5.2 Overtime, when specifically authorized by the Owner and not as an Extraordinary Measure, shall be paid for by the Owner on the basis of premium payment only, plus the cost of insurance and taxes, if any, based on the premium payment period. Overhead and profit will not be paid by the Owner for overtime.

§ 7.5.3 Owner reserves the right to audit and object to the cost or scope of any Change Orders or Construction Change Directives, including, without limitation, any changes to the Contract Time or Contract Sum.

§ 7.5.4 CHANGE ORDERS. The execution of a Change Order shall constitute a waiver of Claims by the Contractor arising out of the Work to be performed or deleted pursuant to the Change Order, except as specifically described in the Change Order. Reservations of rights will be deemed waived and are void unless the reserved rights are specifically described in detail to the satisfaction of the Owner and are initialed by the Owner.

ARTICLE 8 TIME
§ 8.1 DEFINITIONS
§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION
§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work. The Contractor acknowledges and understands that failure of the Contractor to complete the Work in accordance with the Construction Schedule will cause significant damage to the Owner.

§ 8.2.2 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.2.3 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.3 DELAYS AND EXTENSIONS OF TIME
§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor’s control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine. Contractor shall provide a critical path analysis of such delay claim which clearly identifies the effect of such delay on any critical path activities. Such extension of
Contract Time shall be net of any delays caused by or a result of the fault or negligence of Contractor or which are otherwise the responsibility of Contractor or its agents or Subcontractors or Suppliers. Owner may, at its option, authorize extra Work in order to accelerate the Project Schedule and minimize or eliminate the impact of the delay. Whenever Contractor knows or reasonably suspects that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the Work, Contractor shall immediately give written notice thereof, including all relevant information with respect thereto, to the Architect and the Owner. As used herein, the term "critical path" shall mean causing a delay to activities showing no float based on the Contractor’s updated and accepted Project Schedule.

§ 8.3.2 No extension of time will be granted for any of the causes for which extensions are granted unless the Contractor demonstrates to the reasonable satisfaction of the Architect that the Contractor has made every reasonable effort to complete all Work under the Contract not later than the date prescribed, or as soon as possible thereafter, notwithstanding delay in the Work due to any such cause.

§ 8.3.3 Notwithstanding anything to the contrary in the Contract Documents, an extension in the Contract Time, to the extent permitted under Paragraph 8.3.1, shall be the sole remedy of the Contractor for any (1) delay in the commencement, prosecution or completion of the Work, (2) hindrance or obstruction in the performance of the Work, (3) loss of productivity, or (4) acceleration, stacking of trades, home office overhead, expectant underrun, season change, extended overhead, impact damages, profit upon damages for delay (5) other similar claims (collectively referred to in Paragraph 8.3.3 as "Delays") whether or not such Delays are foreseeable, unless a Delay is caused by changes in the Work under Article 7 hereof, acts of the Owner constituting material interference with the Contractor’s performance of the Work, of the Architect’s professional negligence, and only to the extent such acts continue against the Contractor furnishes the Owner with notice of such interference or delay. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity costs, impact damages or other similar remuneration. The Owner’s exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work), regardless of the extent or frequency of the Owner’s exercise of such rights or remedies, shall not be construed as material interference with the Contractor’s performance of the Work.

§ 8.3.4 Any failure or omission by Owner or Contractor in performance of its obligation shall not be deemed a breach or create any liability for damages or other relief (other than additional time) if it arises from any cause beyond the reasonable control of such party, including, without limitation, acts of God, floods, fire, explosions, storms, earthquakes, acts of public enemy, war, terrorism, rebellion, insurrection, riot, sabotage, invasion, epidemic, quarantine, strikes, lockouts, labor disputes or other industrial disturbances, or any order or action by any governmental agency, or causes of similar nature.

§ 8.3.4 The Contractor shall assure that all of its Subcontractors and Suppliers are bound to a contractual provision providing that they are entitled to no additional compensation or damages on account of delays arising from any cause, other than Owner-Caused Delay, and shall indemnify Owner from any claims arising from its failure to do so.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

(Paragraphs deleted)

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Owner and the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor’s Applications for Payment.
§9.2.2 The Contractor and each Subcontractor shall prepare a trade payment breakdown for the Work for which each is responsible, such breakdown being submitted on a uniform standardized form approved by the architect and Owner. The form shall be divided in detail sufficient to demonstrate a breakdown of areas and/or sections of the Work and shall be updated to reflect (1) description of Work (listing labor and material separately) (2) total value, (3) percent of Work completed to date, (4) value of Work completed to date, (5) percent of previous amount billed, (6) previous amount billed, (7) current percent completed, and (8) value of Work completed to date. Any trade breakdown that fails to include sufficient detail shall be rejected. If trade breakdown had been initially approved and subsequently used but later was found improper for any reason, sufficient funds shall be withheld from future Applications for Payment to ensure an adequate reserve (exclusive of retainage) to complete the Work.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2., for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor’s right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 Each Application for Payment shall be accompanied by the following, all in form and substance satisfactory to the Owner;

.1 a current Contractor’s lien waiver and duly executed and acknowledged sworn statement showing all Subcontractors and materialmen with whom the Contractor has entered into subcontracts, the amount of each such subcontract, the amount requested for any Subcontractor and materialmen in the requested progress payment and the amount to be paid to the Contractor from such progress payment, together with similar sworn statements from all such Subcontractors and materialmen;

.2 duly executed waiver of mechanics’ and materialmen’s liens from all Subcontractors and, when appropriate, from materialmen and lower tier Subcontractors establishing payment or satisfaction of payment of all amounts requested by the Contractor on behalf of such entities or persons in any previous Application for Payment;

.3 all information and materials required to comply with the requirements of the Contract Documents or reasonably requested by the Owner or the Architect. If required by the Owner’s title insurer, if any, the Contractor shall execute a personal gap undertaking in form and substance satisfactory to such title insurer.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner’s title to such materials and equipment or otherwise protect the Owner’s interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor’s knowledge, information and belief, be free and clear of liens, claims,
security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT
§ 9.4.1 The Architect will, within seven days after receipt of the Contractor’s Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect’s reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect’s evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect’s knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor’s right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION
§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect’s opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect’s opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a separate contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

(Paragraph deleted)
§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than ten days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor’s portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. If the Subcontractor has not been paid, the Owner has the right, but not the obligation, to pay the Subcontractor directly and deduct the cost from the Owner or issue joint checks. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

(Paragraph deleted)

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor’s Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days’ written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor’s reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 “Substantial Completion” is the stage in the progress of the Work when the Work, and every portion thereof, is installed, operational in accordance with the Contract Documents, and complete in accordance with the Contract Documents, so that the Owner can install and test any Owner-furnished process equipment systems, (which are not included in the definition of “Work”), and legally and physically occupy and utilize the Work for its intended purpose. All electrical, plumbing, life safety, mechanical, ventilation, air conditioning and other systems included within the definition of “Work,” and identified in the Contract Documents, shall be installed and operational in accordance with the Contract Documents, and the manufacturer’s specifications and warranties, except for minor punch list items and minor adjustments of a system’s performance. The Work shall be in compliance with all applicable laws, statutes, codes, rules and regulations prior to Certification of Substantial Completion. Contractor must have a Temporary Occupancy Permit or its equivalent prior to the Certification of Substantial Completion.
All warranties related to the Work shall commence on the date the factually correct Certificate of Substantial Completion is received by the Owner.

§ 9.8.2 When the Contractor considers that the Work is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor’s list, the Architect will make an inspection to determine whether the Work is substantially complete. If the Architect’s inspection discloses any item, whether or not included on the Contractor’s list, which is not in accordance with requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate which will identify all non-conforming, defective and incomplete Work and establish the date of commencement of warranties in connection with any such Work. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor’s written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect’s knowledge, information and belief, and on the basis of the Architect’s observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect’s final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor’s being entitled to final payment have been fulfilled. The final Certificate for Payment will not be issued by the Architect until all warranties and guarantees have been received and accepted by the Owner.
§ 9.10.2 Subject to other provision in the Contract Documents, final payment shall not become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner’s property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days’ prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, and (4), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner, and (5) delivery of as-built drawings and operating manuals. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys’ fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

1. liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
2. failure of the Work to comply with the requirements of the Contract Documents; or
3. terms of special warranties required by the Contract Documents; or
4. any pending or asserted claim.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

(Paragraphs deleted)

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS
The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

1. employees on the Work and other persons who may be affected thereby;
2. the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor’s Subcontractors or Sub-subcontractors; and
3. other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.1.1 Contractor will take all precautions necessary for the prevention of accidents, fire, theft, vandalism, injury or other damage on and to Owner property.
§ 10.2.1.2 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor’s obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor’s organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor’s superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

(Paragraphs deleted)

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 “Hazardous Materials” means any substance, including solid, liquid, or gaseous material, which is defined by any federal, state or local statute, regulation, or ordinance as hazardous, toxic, or dangerous. Hazardous Substances include, but are not limited to, substances listed or defined as “hazardous” in the Comprehensive Environmental Response, Compensation and Liability Act (“CERCLA”), 42 U.S.C. § 9601 et seq. or regulations promulgated pursuant thereto; KRS 224.1-400; petroleum, including crude oil or any fraction thereof, natural gas, natural gas liquids, liquefied natural gas; oil and oil waste and those terms are defined in the Clean Water Act, 33 U.S.C. 1251 et seq. or regulations promulgated pursuant thereto; asbestos, polychlorinated biphenyls (PCB), any hazardous waste defined by the Resource Conservation and Recovery Act (“RCRA”), 42 U.S.C. § 6901 et seq. or regulations promulgated pursuant thereto; and source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, 42 U.S.C. 3011 et seq. or regulations promulgated pursuant thereto. The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.
§ 10.3.2 The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if, in fact, a Hazardous Substance. The Work in the affected area shall be resumed in the absence of a Hazardous Substances or when the Hazardous Substance has been rendered harmless and documented by written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor’s reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, to the extent of the Owner’s negligence, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect’s consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys’ fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 Contractor will not bring onto Owner’s property any hazardous substance or solid waste unless required by the Contract Documents or unless the Owner gives prior written consent. Contractor will not permit any lien relating to hazardous substances to attach to Owner’s property. Contractor shall be solely responsible for removing, and shall properly and lawfully dispose of, any waste generated by Contractor during the course of performing the Work. At Owner’s sole discretion, Owner may elect, (by written notice to Contractor), to oversee the proper disposal of waste that Contractor generates, but Owner shall have no responsibility for such disposal otherwise. The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor’s fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify and hold harmless the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner’s fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.3.7 The Contractor shall be responsible for the safe and lawful performance of the Work, and the Contractor shall defend, indemnify, and hold harmless the Owner, its agents and employees from and against all claims, damages, losses and expenses of any type whatsoever, including but not limited to, attorney’s fees which arise out of or result from, or are alleged to arise out of or result from, the exposure of persons or property to any Hazardous Materials occurring as a result of the Contractor’s performance of the Work. This paragraph shall be in addition to and not in limitation of other indemnification provisions of this Agreement.

(Paragraphs deleted)

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor’s discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR’S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor’s operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by
a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers’ compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor’s employees;
.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor’s employees;
.4 Claims for damages insured by usual personal injury liability coverage;
.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
.7 Claims for bodily injury or property damage arising out of completed operations; and
.8 Claims involving contractual liability insurance applicable to the Contractor’s obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor’s completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 The Contractor hereby agrees to deliver to the Owner, within ten (10) days of the date of the Owner-Contractor Agreement and prior to any equipment or personnel being brought onto the site of the Work or the Project site, Certificates of Insurance in form and substance satisfactory to the Owner evidencing the required coverages, with limits not less than those specified herein. To the fullest extent permitted law, the Contractor shall cause the commercial liability coverage required by the Contract Documents to include the Owner as an additional insured, using forms CG20 10 07 04 and CG 10 37 70 04 or their equivalent and the Owner shall be designated as an additional insured for claims caused by the Contractor’s covered acts or omissions during the Contractor’s completed operations period. The coverage afforded under any insurance policy obtained under or pursuant to this Paragraph 11.1 shall be primary to any valid and collectible insurance carried separately by the Owner or any of the Indemnitees. Further, each certificate of insurance evidencing insurance required herein will further stipulate "Should any of the above-described policies be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provision."

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the owner, the Architect and the Architect’s Consultants as additional insureds for claims caused in whole or in part by the Contractor’s negligent acts or omissions during the Contractor’s operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor’s negligent acts or omissions during the Contractor’s completed operations.

(Paragraphs deleted)

§ 11.2 OWNER’S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner’s usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder’s risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, and
whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect’s and Contractor’s services and expenses required as a result of such insured loss.

§ 11.3.1.2 [INTENTIONALLY DELETED]
§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE
The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

(Paragraphs deleted)

§ 11.3.3 LOSS OF USE INSURANCE
The Owner, at the Owner’s option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner’s property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner’s property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days’ prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION
The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect’s consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees,
for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect’s consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner’s property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner’s duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner’s exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND
§ 11.4.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK
§ 12.1 UNCOVERING OF WORK
§ 12.1.1 If a portion of the Work is covered contrary to the Architect’s request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect’s examination and be replaced at the Contractor’s expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner’s expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor’s expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.
§ 12.2 CORRECTION OF WORK
§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION
The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect’s services and expenses made necessary thereby, shall be at the Contractor’s expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION
§ 12.2.2.1 In addition to the Contractor’s obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor’s correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor’s liability with respect to the Contractor’s obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK
If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCORRELLENEOUS PROVISIONS
§ 13.1 GOVERNING LAW
The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS
§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the
other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner’s rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE
Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

(Paragraphs deleted)
§ 13.4 RIGHTS AND REMEDIES
§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

(Paragraphs deleted)
§ 13.5 TESTS AND INSPECTIONS
§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner’s expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect’s services and expenses shall be at the Contractor’s expense. The Contractor also agrees that the cost of testing services required for the convenience of Contractor in its scheduling and performance of the Work, and the cost of testing services related to remedial operations performed to correct deficiencies in the Work shall be borne by the Contractor.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.
§ 13.6 INTEREST
Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 TIME LIMITS ON CLAIMS
The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

§ 13.8 COMPLIANCE WITH IMMIGRATION LAWS
Contractor agrees that Contractor shall be obligated to comply with all requirements imposed on employers under IRCA with regard to every Contractor employee ("Contract Worker") who will perform services for Contractor, where such service is provided in connection with Contractor’s performance of this Agreement. Contractor further agrees that Contractor is the "employer" as that term is defined at 8 C.F.R. Section 274a 1(g), and that Owner is not the "employer” as so defined, with regard to such Contract Workers. Owner agrees that Contractor is not the "employer” of persons who are employed directly by subcontractors and independent contractors of Contractor. In furtherance of its duties as employer under IRCA of Contract Workers directly employed by Contractor, Contractor agrees to do the following:

§ 13.8.1 Complete USCIS Form 1-9 for all Contract Workers. Contractor agrees that it has sole responsibility for completing Form 1-9 for all Contract Workers who provide services as an employee of Contractor as part of Contractor’s performance of this Agreement and that it will do so and will further update such Form to the extent required by law. Contractor further warrants that it has taken all necessary steps to comply with IRCA and that Contractor believes all Contract Workers directly employed by Contractor are authorized to work in the United States.

§ 13.8.2 Contractor’s Warranty of Employment Authorization for all Contract Workers. Contractor hereby warrants that no Contract Worker directly employed by Contractor will provide services pursuant to this Agreement until Contractor has completed Form 1-9 for such Contract Worker in the manner required by IRCA. Contractor further warrants that it has taken all necessary steps to comply with IRCA and that Contractor believes all Contract Workers directly employed by Contractor are authorized to work in the United States.

§ 13.8.3 Indemnification and Hold Harmless. Contractor agrees that in any event any government agency determines that any Contract Worker directly employed by Contractor to perform duties under this Agreement is not authorized for employment in the United States, Contractor shall indemnify and hold harmless Owner and any of Owner’s agents, employees, officers, directors, trustees or other persons acting on Owner’s behalf, from any liability incurred by Owner as a result of such determination. Such indemnification shall include, by way of example but not in any way limited to, any civil or criminal fines or penalties, assessed or alleged, and any costs incurred in responding to or participating in any government investigation, finding, recommendation, hearing, appeal or any other proceeding, including attorney’s fees and costs.

§ 13.8.4 Liability for Subcontractors. Contractor shall require all subcontractors to comply with these immigration provisions. The Contractor shall indemnify the Owner and any of the Owner’s agents, employees, officers, directors, trustees or other persons acting on the Owner’s behalf, from any liability incurred by the Owner as a result of a determination that a subcontractor’s worker hired to perform duties under this Agreement is not authorized for employment in the United States. Such indemnification shall include, by way of example but not in any way limited to, any civil or criminal fines or penalties, assessed or alleged, and any costs incurred in responding to or participating in any government investigation, finding, recommendation, hearing, appeal or any other proceeding, including attorney’s fees and costs.
ARTICLE 14  TERMINATION OR SUSPENSION OF THE CONTRACT
§ 14.1 TERMINATION BY THE CONTRACTOR
§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor’s request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days’ written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, reasonable costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner’s obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days’ written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE
(Paragraphs deleted)
§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents;

.5 breaches any warranty made by the Contractor under or pursuant to the Contract Documents;

.6 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor’s ability to complete the Work in compliance with all the requirements of the Contract Documents;

.7 has a voluntary or involuntary bankruptcy case, assignment assigned for the benefit of creditors, receivership or other state, federal or foreign insolvency proceeding commenced with respect to Contractor or its properties;

.8 becomes insolvent, is generally not paying its debts as they become due, discontinues business, dies or ceases to exist or liquidate itself;

.9 current owner(s) or Contractor transfer a substantial portion of the property of or ownership interest in Contractor;

.10 work for any reason leave the Work before its completion or disregard Owner’s instructions;

.11 work is impeded by strike or labor disruption by Contractor’s employees, agents or servants; or

.12 violates the provisions of the Federal Occupational Safety and Health Act of 1970.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify
such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor’s surety, if any, seven days’ written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

1. Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
2. Accept assignment of subcontracts pursuant to Section 5.4; and
3. Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect’s services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 If the Construction Phase has commenced, the Contractor’s Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

1. that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
2. that an equitable adjustment is made or denied under another provision of the Contract; or
3. the Construction Phase has not yet commenced.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract, or portions of the Project, for the Owner’s convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner’s convenience, the Contractor shall

1. cease operations as directed by the Owner in the notice;
2. take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
3. except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner’s convenience, the Contractor shall be entitled to receive payment for Work executed, and reasonable costs incurred by reason of such termination. Contractor waives all other claims to overhead and profit on the Work not executed.

§ 14.4.4 In the event that a termination for cause by Owner is later determined to have been without cause, such termination will be treated as a termination for convenience.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

(Paragraphs deleted)
§ 15.1.1 DEFINITION
A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term “Claim” also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS
Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Failure to provide Notice of claims as required by this Paragraph constitutes a waiver of such claims.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE
Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

(Paragraphs deleted)

§ 15.1.4 CLAIMS FOR ADDITIONAL COST
If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME
§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor’s Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES
The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party’s termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

(Paragraphs deleted)

§ 15.2 INITIAL DECISION
§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.
§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker’s sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner’s expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor’s default, the Owner may, but is not obligated to, notify the surety and request the surety’s assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic’s lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.
§ 15.3.3 The parties shall share the mediator’s fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

(Paragraph deleted)

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. The arbitration shall be held in Owensboro, Kentucky.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§15.4.3.1 Without limiting the foregoing but for greater clarity, if any matter is held to be non-arbitrable by a court of competent jurisdiction resulting in dispute resolution in a court, to the extent permitted by the law, the parties hereto waive their right to a trial by jury in any action, proceeding, or counterclaim brought by the other party on any matters arising out of or connected with this Agreement or any claim of damage resulting from any act or omission of any of the parties connected with this Agreement.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.
SECTION 007300 - SUPPLEMENTAL CONDITIONS TO THE GENERAL CONDITIONS

The following Supplementary Conditions modify, change, delete from or add to the AIA A201-2007 GENERAL CONDITIONS which are bound into the Project Manual. Where an Article of the General Conditions is modified or a Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

ARTICLE NO. 1
GENERAL PROVISIONS

GENERAL PROVISIONS

Add the following definition:

1.1.10 A Material Supplier (Supplier) is a person or organization who has a direct Purchase Order responsibility to the Owner. A Material Supplier cannot be an installing contractor.

ARTICLE NO. 2
OWNER

OWNER

Add the following subparagraph 2.2.5.1:

2.2.5.1: The Owner will provide the copies of plans and specifications returned by unsuccessful bidders to the Contractor free of charge. The owner will not be providing additional copies of the plans and specifications free of charge to the Contractor. The Contractor will be responsible for providing all copies of plans and specifications necessary to complete work on the project.

ARTICLE NO. 3
CONTRACTOR

LABOR AND MATERIALS

Add the following subparagraph:

3.4.7 “In instances of existing conditions where the drawings or specifications require salvage of materials and/or equipment, all such materials and/or equipment shall be carefully removed and stored as directed by the Owner/Architect.”

3.4.8 Material Supplier assumes all responsibility for materials until delivery is accepted by the Contractor. The designated Contractor or Subcontractor responsible for installation of product shall meet all of the requirements of the detail or specifications. Therefore, the cost of deviations, extensions or adjustments required for the low Bidder’s product must be included in the General Contractor’s bid. No additional cost will be considered. Material supplier is to supervise and accept delivery, unload, handle store layout and install the items.

3.4.8.1 Upon delivery, the designated Contractor is to verify product suitability, quantity, quality and condition as soon as it can be ascertained and shall accept care, custody and control responsibility as if it were his own purchase. Any damage or loss after delivery will be the responsibility of the responsible Contractor or Subcontractor.

WARRANTY

Integrity / Architecture
Project No. 1637
Add the following Subparagraph:

3.5.3 Material Supplier will guarantee all materials furnished under a purchase order to be in accordance with the requirements of the contract documents. This guarantee shall extend through the construction period and one (1) year from the date of Substantial Completion upon final acceptance by the Owner. The Contractor shall also guarantee and warrant to the Owner all materials purchased directly by the Owner by Purchase Order shall fully conform to the requirements of the Contract Documents.

3.5.4 The Owner expects that all building materials to be incorporated into the completed work shall be in 100% new condition and shall be clean of moisture, dirt and contaminants that may facilitate the growth of mold in the future. A clean and orderly jobsite is required.

- Materials stored on the site shall be sorted and stored to protect from damage due to construction activities. Damaged materials shall not be installed in any assembly, but shall be replaced with a new item of equal specifications.
- Materials shall be stored on pallets or other devices to prevent direct ground contact. Mud and other foreign matter shall be completely removed from each component (including concealed surfaces) prior to installation.
- The manufacturer’s recommendations regarding the allowable temperature and humidity for storage and installation of materials shall be strictly observed.

TAXES

Add the following subparagraphs:

3.6.1 As provided by KRS 139.310 and Kentucky Administrative Regulation 103 KAR 26:070 (Contract Construction), each contractor is responsible for Kentucky Sales and Use tax on all materials purchased and installed by the contractor or a third party hired by the contractor.

PERMITS, FEES AND NOTICES

Add the following Subparagraphs:

3.7.5 All Contractors must be qualified, and meet all requirements provided and/or required under any local and/or state statute, code, ordinances, or rule, governing the performance of the type of work of which he submits a bid, and be able to submit proof thereof upon request.”

CONTRACTOR’S CONSTRUCTION SCHEDULE

Add the following subparagraphs:

3.10.4.1 The actual sequence of the work shall suit the storage and installation requirements of the materials being used throughout the project and the schedule shall accurately describe that sequence.

3.10.4.2 The Contractor’s schedule shall identify intervals in the sequence of the work when space is ready for Owner furnished and installed fixtures. The schedule shall allow time for coordination of the work of the General Contractor’s subcontractors with others working directly for the Owner.

ARTICLE NO. 6
CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

Add the following subparagraphs:
6.1.4 As stated in other provisions of the specifications the Owner intends to fulfill other project needs through contracts with forces working directly for the Owner. Among those direct construction-phase contracts are included:

6.1.4.1 Special Inspections, Testing & Balancing and Water Treatment services; and miscellaneous casework, fixtures and furniture installations.

6.1.4.2 Upon declaration of final completion the Owner intends to utilize separate outside contractors for HVAC filter changes and turf development.

6.1.4.3 The General Contractor’s cooperation and assistance is required by the Owner to coordinate the activities of these separate contractors and to facilitate a smooth transition between work activities.

ARTICLE NO. 7
CHANGES IN THE WORK

CHANGE ORDERS

Add the following subparagraphs:

7.2.2 The Contractor’s proposals for work to be covered by a change order shall contain a detailed breakdown of all costs. Separate amounts shall be shown for each material item labor and profit. If sufficient documentation is not provided the Owner has the right to direct the Contractor to resubmit with additional information.

7.2.3 The Contractor and Subcontractors shall use the same rates for calculating labor costs for either increases or decreases in the scope of work.

7.2.4 No restocking charges shall apply to commodity materials such as lumber, piping, wire, gypsum board, etc., unless such materials have been delivered to the job site, in which case restocking shall be limited to the actual cost of return shipping and handling.

ARTICLE NO. 9
PAYMENTS AND COMPLETION

APPLICATION FOR PAYMENT

Add the following Subparagraphs:

9.3.1.4 The Contractor and Subcontractor shall submit with each Application for Payment a Purchase Order Payment Authorization, authorizing the Owner to make payment for materials being supplied via a Purchase Order. The Contractor and/or Subcontractors shall assemble and attach to the Purchase Order Payment Authorization original invoices for materials that are to be incorporated in the work. Invoiced materials must either be at the job site at the time of invoice, or, if properly executed certificate of insurance as required by Article 11.4.1.4 of the General Conditions. Each invoice must indicate the purchase order number and include items such as tools, sales tax, finance charges, deposits, etc. will be rejected and returned to the Contractor. Invoices submitted directly to the Owner will be rejected and returned to the Contractor.

9.3.1.4.1 Interest/Finance charges by a Material Supplier, due to the Contractor approval of a partial payment of a submitted invoice shall be the responsibility of the Contractor.

9.3.1.4.2 In the event that at the completion of the Work the contractor has not submitted invoices totaling the value of any individual purchase order, that purchase order shall be considered
complete and closed. NO ADJUSTMENT WILL BE MADE TO THE CONTRACTOR’S CONTRACT.

9.3.1.5 Applications for Payment shall be made with AIA Document G702, Application and Certificate for Payment, and AIA Document G703 Continuation Sheet for G702.

9.3.1.6 No retainage will be withheld from approved payments to Material Suppliers.

9.3.2.1 Request for Payment for stored material or equipment must include:
1.) List of materials consigned to the project, copies of invoices with project I.D. and storage location. (Materials must be stored in a location that is accessible for viewing by the Architect or Engineer during regular business hours to be listed on pay application)
2) Certification that all items have been tagged for the project and no other purpose.
3) A letter from the bonding company indicating agreement to the arrangement.
4) Evidence of adequate insurance with the Owner as insured.
5) Evidence that the A/E has viewed the items. If the above conditions are met, the Owner will pay 80% of the invoiced value for materials suitably stored off site.

ARTICLE NO. 11
INSURANCE AND BONDS

PERFORMANCE BOND AND PAYMENT BOND

Add the following Subparagraphs:

11.4.3 “Contractor shall also furnish such other bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by the bidding documents or Supplementary Conditions. All Bonds shall be in the forms prescribed by the bidding documents or Supplementary Conditions and be executed by such sureties as are named in the current list of “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds as Acceptable Reinsuring Companies” as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to ace. The Surety shall be acceptable to the Owner. All Bonds shall remain in effect at least until one year after the date of final payment, except as otherwise provided by law.

11.4.4 If the surety on any Bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in the state of the point of delivery or the surety ceases to meet the requirements stated in the above paragraph, Contractor shall within five days thereafter substitute another Bond and surety, both of which must be acceptable to Owner at no additional cost to Owner.”

11.4.5 Performance and Payment Bond amounts are to include both contract sum and purchase order amounts as included in bid sum.

ARTICLE NO. 13
MISCELLANEOUS PROVISIONS

TESTS AND INSPECTIONS

Add the following Subparagraph:

13.5.7 Special Inspections and Testing shall be performed by independent third party inspectors hired by the Owner, as required by Chapter 17 of the Kentucky Building Code.

Add the following section:
13.9 NON-DISCRIMINATION

13.9.1 During the performance of this Contract, the Contractor agrees as follows:

13.9.1.1 The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, promotion or transfer; recruitment of employees; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this non-discrimination clause.

1. The Contractor will, in all solicitation or advertisement for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color or national origin.

1. The contractor will send each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers’ representatives of the Contractor’s commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency sanctions for non-compliance.

13.10 AFFIDAVIT OF ASSURANCES

13.10.1 Prior to execution of the Contract, the Owners will require of the Contractor a completed and notarized AFFIDAVIT OF ASSURANCES PURSUANT TO KRS 198B.060(10).

ARTICLE NO. 15
ADMINISTRATION OF THE CONTRACT

Add to the end of Sub-paragraph 15.1.5.2 the following:

“TIME EXTENSIONS FOR ADVISER WEATHER - The following schedule of monthly anticipated adverse weather delays is based on the National Oceanic Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor’s progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.”

| MONTHLY ANTICIPATED ADVERSE WEATHER DELAY |
| WORK DAYS BASED ON (5) DAY WORK WEEK |
| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
| (11) | (08) | (06) | (06) | (05) | (04) | (05) | (04) | (04) | (04) | (06) |

END OF SECTION 007300
SECTION 007400 - SPECIAL CONDITIONS

DEFINITIONS:

1a. The term "OWNER" as used throughout these documents means the: The City of Owensboro.

1b. The term "ARCHITECT" as used throughout these documents means integrity / Architecture, pllc.

1c. The terms "PLANS" and "DRAWINGS" are used interchangeably and are construed to have the same meaning.

GENERAL:

2a. These specifications and drawings accompanying them describe the work to be done and the materials to be furnished for the construction of the project titled:

Owensboro Parking Structure

2b. The drawings and specifications are intended to be fully explanatory and supplementary. However, should anything be shown, indicated or specified on one and not the other, it shall be done the same as if shown, indicated or specified in both.

2c. Should any error or inconsistency appear in the Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Architect for proper adjustment and in no case proceed with the work in uncertainty or with insufficient drawings.

2d. Items N.I.C. (not in contract) on the drawings are not included under this contract.

2e. The Contractor and each subcontractor shall be responsible for verification of all measurements at the site before ordering any materials or doing any work. Any such discrepancy in dimension which may be found shall be submitted to the Architect for his consideration before Contractor proceeds with the work in the affected areas.

2f. Contractors shall follow sizes in specifications or figures on drawings, in reference to scale measurements and follow detail drawings in reference to general drawings.

2g. Where it is obvious that a drawing illustrates only a part of a given work or of a number of items, the remainder shall be deemed repetitious and so constructed.

2h. Bidders, before submitting proposals, shall visit and examine the site to satisfy themselves as to the nature and scope of construction and any difficulties attending the execution. The submission of a proposal will be construed as evidence that a visit and examination have been made. Later claims for labor, equipment, or materials required or difficulties encountered which could have been foreseen had such an examination been made will not be recognized.

ARCHITECT'S STATUS:

3a. The Architect is the agent of the Owner during construction and until final payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument which will be shown to the Contractor.

ARCHITECT'S WORK PRODUCT:
4a. The Architect's work product is prepared and produced for the sole and exclusive benefit of the Owner. Any real or inferred benefits to third parties is hereby expressly disclaimed.

ADMINISTRATION OF THE CONTRACT:

5a. The Architect will perform certain administrative functions of the construction contract. Nothing contained in these contract documents, not any other oral or written agreements, memoranda, or communications shall create any express or implied contractual relationship between the Architect and the Contractor.

5b. The Architect may make periodic visits to the work site in accordance with the conditions of his contract with the Owner. The purpose of these visits and observations is to endeavor to guard against defects and deficiencies. The Architect's visits are not to supervise the Contractor's work and he/she is not responsible for undetected deviations in the Contractor's work.

5c. The Architect makes no express or implied representations of guaranteeing the Contractor's work to the extent that it is fully code compliant or in complete accordance with the scope of work illustrated in the contract documents.

5d. The Architect is not a specialist in construction methods, techniques, sequences or procedures and therefore assumes no responsibility for the construction operations and safety program.

SECTION 6 (Not Used)

SECTION 7 (Not Used)

WORKMANSHIP:

8a. The Workmanship shall be of the highest quality, in every respect, as usually recognized in the building industry. Poor or inferior workmanship (as determined by the Architect, Engineers, or inspecting authorities) is to be removed and replaced to conform to the highest quality standards of the trades concerned, or otherwise corrected.

DRAWINGS AND SPECIFICATIONS:

9a. The drawing dimensions shall have precedence over scaled measurements and details over general drawings. The requirement drawings rule over the specifications.

9b. Figured dimensions on the drawings are reasonably accurate and should govern in setting out the work. However, should the Contractor discover discrepancies or inaccuracies, it shall be the Contractor's responsibility to bring them to the attention of the Architect before making any changes. Changes shall be made only with approval of the Architect.

DIVISION OF SPECIFICATIONS:

10a. Division of Specifications into sections is done for convenience of reference and is not intended to control contractors in dividing work among subcontractors or to limit scope of work performed by any trade under any given section.

DISPUTES:

11a. Contractor is hereby put on notice that it is his contractual obligation to adjust and settle differences between his subcontractors. Attempts to have the Architect and/or Owner settle disputes between Prime Contractor and subcontractors, or between subcontractors, will not be given consideration.

ARTICLE 12 (NOT USED)
ALLOCATION OF WORK:

13a. Where certain materials are specified to be installed under various headings, it shall be the responsibility of the General Contractor to re-allocate such work under the proper subcontractor if the specification is in conflict with local jurisdiction.

OWNER'S RIGHT TO STOP THE WORK:

14a. If the Contractor fails to correct defective work or persistently fails to supply materials or equipment in accordance with the Contract Documents, the Owner may order the Contractor to stop the work, or any portion thereof, until the cause for such order has been eliminated.

ARTICLE 15 (NOT USED)

CODES AND ORDINANCES:

16a. To the extent within the Contractor’s Scope of Work, all branches of the work shown on the plans or specified, whether specifically mentioned or not, shall be executed in strict compliance with all local or state regulations and codes, and shall be in compliance with all National Codes, when same have jurisdiction. Where conflicts exist between the National Codes and the drawings it is the Contractor’s obligation to bring the conflict to the attention of the Architect and await direction as to how best to address the inconsistency. The Architect is not liable to verifying code compliance on regularly scheduled site visits. Architect’s site visits are not to be misinterpreted as contractor work inspections. Only officials having the authority and jurisdiction to inspect work shall be grant code required approvals. Contactor is not responsible for the Building Code conformance of the design documents prepared by the Architect.

ARTICLE 17 (NOT USED)

ARTICLE 18 (NOT USED)

SUBSTANTIAL COMPLETION, FINAL COMPLETION & SUBSEQUENT INSPECTIONS:

19a. In as much as all parties with and intend to prosecute the work in a diligent and good faith manner, and to complete the work in a timely fashion, the Contractor shall notify the Architect when the Contractor believes he has attained Substantial Completion. Notification shall be made at least five (5) calendar days prior to the date set to the Substantial Completion inspection. The Contractor shall comply with the prerequisite requirements for Substantial Completion as set forth in Section 01770 - Project Closeout.

19b. Review Procedures. Upon receipt of the Contractor's request, the Architect will either proceed with review or advise Contractor of prerequisites not fulfilled. Following initial review, the Architect will either prepare a certificate of substantial completion, or advise the Contractor of work which must be performed prior to issuance of the certificate of substantial completion. The Architect will repeat the review when requested and assure that the Work has been substantially completed. Results of the completed review will form the initial "punch list" for final acceptance.

19c. The Architect will re-review the work upon the receipt of the Contractor's notice that he believes in good faith that, except for those items whose completion has been delayed due to circumstances that are acceptable to the Architect, the work has been completed, including punch list items from earlier reviews. Upon completion of re-review, the Architect will either recommend final acceptance and final payment, or will advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance by issuance of another punch list.
19d. The Contractor, upon completion of all outstanding items set forth on the punch list, shall notify the Architect of the completion of the work. The Architect shall verify completion of the work by an on-site review.

19e. In the event that the work should still require re-reviews after initial post final re-review, unless through no fault of the Contractor, the Contractor shall authorize the Owner to deduct from the remaining available construction funds those monies which represent the Architect's normal hourly compensation rates and normal expenses for any additional time and expense expended on this project by the Architect. Hourly rates and expense reimbursement rates will be governed by those rates stipulated in the agreement between the Owner and the Architect. The disbursement of available construction funds by the Owner to the Architect in this situation, described herein, shall represent only actual charges associated with the expenditure of the Architect's time and expense and in no way represent a penalty assessed to the Contractor.

ORDERING MATERIALS

20a. Immediately following award of contract for this work, Contractor shall determine source of supply for all materials and length of time required for their delivery, including materials of subcontractors, and order shall be placed for such materials promptly.

20b. If, for any reason, any item specified will not be available when needed and Contractor can show that he has made a reasonable persistent effort to obtain item in question, the Architect is to be notified in writing within fifteen (15) days after the Contract is signed, and he will either determine source of supply or arrange with Owner for appropriate substitution within terms of Contract; otherwise, the Contractor will not be excused for delays in securing material specified and will be held accountable if completion of building is thereby delayed.

STORAGE OF MATERIALS:

21a. Each Contractor providing materials and equipment shall be responsible for the proper and adequate storage of his materials and equipment, and for the removal of same upon completion of his work. Storage of materials at the site shall be confined to areas within the Contract Limits, and the Contractor's designated parking area if necessary, where designated by the Owner.

LAYOUT OF BUILDING:

22a. The General Contractor shall lay out the work and be responsible for all lines, levels and measurements of all work executed under this Contract; he shall verify the figures before laying out the work and will be held responsible for any error resulting from his failure to do so.

22b. The General Contractor shall be prepared to guarantee each of his subcontractors the dimensions which they may require for the layout and fitting of their work to the surrounding work.

DAMAGED FACILITIES:

23a. The General Contractor shall repair and/or replace, at no expense to the Owner, any sections of existing roads, drives, streets, sidewalks, curbs, utilities, buildings and other structures damaged by reason of work performed under this Contract or incidental thereto, whether by his own forces or by his subcontractors or by his material suppliers.

INTERRUPTION OF UTILITIES:

24a. When applicable and when involving construction to or around existing utility services to existing facilities shall not be interrupted unless absolutely necessary. Interruptions shall be of minimum duration and shall be scheduled to cause the least possible inconvenience. In all cases, the Owner shall be notified a minimum of two (2) days in advance of any anticipated interruptions of
utilities. The Contractor shall notify all utilities for facility locations of proposed construction at least two (2) days prior to beginning construction and not more than fourteen (14) days prior.

CONTRACTOR COORDINATION:

25a. The General Contractor and all subcontractors and other on-site contractors shall cooperate and coordinate their work to expedite the progress of the project. All subcontractors shall review and refer to the drawings and specifications of other trades involved with their particular work before proceeding. Any work installed which conflicts with another trade and had not been brought to the attention of the Architect prior to installation shall be removed at no additional expense to the Owner.

GENERAL CONTRACTOR'S RESPONSIBILITY FOR DEVIATIONS:

26a. Plans and specifications for this project shown and specified are civil, structural, architectural, mechanical, plumbing and electrical entities, diagrams and devices for each item. The mention of acceptable bidder does not necessarily imply that their particular "standard" product is totally adaptable to details shown. Therefore, the cost of deviations, extensions or adjustments required for the low Bidder's product must be included in the General Contractor's bid. No additional cost will be considered.

UNIT PRICES:

28a. The Unit Price for each of the items set forth in the Form of Proposal shall become a part of the Contract.

28b. All Unit Prices are subject to review by the Owner and Architect prior to being accepted for contract purposes.

28c. All subcontractors shall be bound by the Unit Prices of the General Contractor.

28d. It is mutually understood and agreed that such Unit Prices include all items of cost, overhead and profit for the Contractor and any subcontractor(s) involved, and that they shall be used uniformly without modification for either additions or deductions.

28e. The Rules of Measurement, as specified in this specification shall apply in the use of Unit Prices.

28e1. Each Unit Price involving earthwork shall cover, among other things, engineering (surveying) costs and all costs of keeping excavations dry.

RULES OF MEASUREMENT:

29a. The following Rules of Measurement shall apply in the use of Unit Prices:

29a1. Except as provision is made hereinafter for arbitrary measurements, the quantity of excavation shall be its in-place volume before removal.

29a2. No allowance will be made for excavating additional material of any nature taken out for the convenience of the Contractor, beyond the quantity computed under these Rules of Measurement.

29a3. The quantities of excavation shall be computed from instrument readings in vertical cross sections located at such intervals as will assure accuracy.

29a4. General excavation for buildings and sections of buildings, bases for equipment, sump pits, etc., involving an area of 200 or more square feet, shall be classified as “Mass Excavation”.

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29a5. Excavation for pipes, wall footings, grade beams, column footings, and sections of buildings such as bases for equipment, sump pits, etc., involving an area of 200 square feet, shall be classified as “Mass Excavation”.

29a6. “Mass Excavation” shall arbitrarily be assumed to extend to vertical planes two (2) feet outside wall lines, and to the elevation of plan subgrade.

29a7. “Trench Excavation” for walls, grade beams, and sections of building, such as bases for equipment, sump pits, etc., involving an area less than 200 square feet shall be arbitrarily assumed to extend 2 feet wider than wall and grade beam thicknesses and outside walls of sections of buildings such as bases for equipment, sump pit, etc., but in no case less than three (3) feet wide sides vertical.

29a8. “Trench Excavation” for pipes shall arbitrarily be assumed to be two (2) feet wider than the outsider diameter of the pipe barrel and with sides vertical.

29a9. “Trench Excavation” for wall footings and column footings shall be computed as vertical shafts, each with a horizontal cross section identical in shape and size with the plan of the footing.

29a10. The quantities of form work will be the area of forms in contact with concrete.

29a11. Concrete quantities shall be computed from plan size or if there are no drawings, from actual measurement of the work ordered and placed, waste excluded.

PRE-CONSTRUCTION SURVEY

30a. Contractor is responsible for producing a pre-construction survey of the project site and related adjacent site structure (GRITS Garage, 222 St. Elizabeth St.) per the following requirements:

30a1. Document the existing site conditions through observations, actual measurements, plan sketches, digital photographs, and any other data the preparer may deem appropriate.

30a2. Documentation shall include but is not limited to general site conditions, relevant observations not indicated on the Contract Documents, GRITS Garage west wall & general observations, adjacent areas between the property line and public streets. Special attention shall be paid to the GRITS Garage to document any existing structural damage, settlement, cracks, variations from Contract Documents, cosmetic damage, and other similar items.

30a3. Contractor is responsible for gaining legal access to the GRITS Garage for documentation.

30a4. Digital photographs shall use titles / captions / keys to note location, date, and subject of photograph. This information may be provided in supplemental documents submitted with the photographs.

30b. Pre-construction survey submittals:

30b1. Survey shall be provided to Owner and Architect for review no later than the pre-construction meeting. Owner has the right to request additional survey documentation from the Contractor.

30b2. Survey shall be submitted in a single digital PDF format file and one (1) printed hard copy to each party. The survey may be organized as the preparer may deem appropriate but at a minimum separate divisions shall be included for the project site, GRITS Garage, and adjacent areas between the property line and public streets.

END OF SECTION 007400
SECTION 007463 – SECURITY CLAUSE

In accordance with KRS 61.932, any party that contracts with the City of Owensboro and has access to, possesses, or maintains “personal information,” as a part of that contract, shall implement, maintain, and update security and breach investigation procedures and practices that are appropriate to the nature of the information disclosed. Such procedures and practices shall be designed to protect the personal information from unauthorized access, use, modification, disclosure, manipulation, or destruction and shall be at least as stringent as the security and breach investigation procedures and practices established by the Kentucky Department for Local Government in Protection of Personal Information, Security and Incident Investigation Procedures and Practices for Local Governmental Units, Fall 2014 edition.

A Contractor that is provided access to personal information by the City of Owensboro, or that collects and maintains personal information on behalf of the City as a part of this contract shall notify the City in the most expedient time possible and without unreasonable delay but within seventy-two (72) hours of determination of a security breach relating to the personal information in the possession of the Contractor. The notice to the City shall include all information the Contractor has with regard to the security breach at the time of notification. The cost of the notification and investigation of a security breach required by KRS 61.933 shall be borne by the Contractor.

The term "personal information" means an individual's first name or first initial and last name; personal mark; or unique biometric or genetic print or image, in combination with one (1) or more of the following data elements:
(a) An account number, credit card number, or debit card number that, in combination with any required security code, access code, or password, would permit access to an account;
(b) A Social Security number;
(c) A taxpayer identification number that incorporates a Social Security number;
(d) A driver's license number, state identification card number, or other individual identification number issued by any agency;
(e) A passport number or other identification number issued by the United States government; or
(f) Individually identifiable health information as defined in 45 C.F.R. sec. 160.103 except for education records covered by the Family Educational Rights and Privacy Act, as amended, 20 U.S.C. sec. 1232g.

**A copy of the Protection of Personal Information Security and Incident Investigation Procedures and Practices for Local Government Units can be viewed at ftp://ftp.owensboro.org/. Open the purchasing file folder and inside will be the document named Information Security Policies and Procedures v.6 docx.**

END OF SECTION 007463
SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. General Construction and Phasing
4. Owner-furnished products.
5. Owner-furnished Contractor-installed products.
6. Access to site.
7. Work restrictions.
8. Specification and drawing conventions.

1.3 PROJECT INFORMATION

A. Project Identification: Owensboro Parking Structure
   1. Project Location: 414 West 2nd Street, Owensboro, KY 42301

B. Owner: City of Owensboro
   1. Owner's Representative: Ed Ray

C. Architect: integrity / Architecture, 2414 Palumbo Drive, Ste. 125, Lexington, KY 40509, (859) 368-9712

D. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:
   1. Civil Engineer: Bryant Engineering Inc., 1535 Frederica Street, Owensboro, KY 42304, (270) 685-2811.
   3. MPE Engineer: Marcum Engineering, LLC, 500 South 17th Street (P.O. Box 120 mailing address), Paducah, KY 42002-0120, (270) 444-9274.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:
1. Construction of a 166,536 S.F. four-tier open parking garage comprised of the following as noted in the Drawings and Specifications:

   A. Site drainage system.
   B. Site utility connections.
   C. Site sidewalk and road (parking lane) work - including asphalt paving, concrete & brick pavers.
   D. Poured concrete slab-on-grade, topping slabs, and grade beam / pile cap / augercast pile foundations.
   E. Precast concrete columns, floor, stair, landing, wall, and roof structures.
   F. Exterior screen wall.
   G. Steel stud framing
   H. Fully adhered single ply TPO roofing.
   I. Thin brick veneer as part of pre-cast concrete structures.
   J. Hollow metal frames with doors and glazing.
   K. HVAC systems.
   L. Plumbing system and fixtures.
   M. Electrical system, data, low-voltage systems, and light fixtures.

B. Type of Contract:

   1. Project will be constructed under a single prime contract.

1.5 GENERAL CONSTRUCTION AND PHASING

   A. The work shall be conducted in one single and continuous phase of construction.

   B. Construction shall be coordinated with Owner and Architect. The Contractor shall notify the Architect, with 15 days of notice to proceed, if any problems concerning specified construction schedule.

   C. The Contractor shall submit a detailed construction schedule in order to complete work

   D. Liquidated Damages as defined in the Agreement Between Owner and Contractor will apply to any work not complete per the approved construction schedule for Substantial and Final Completion.

1.6 OWNER-FURNISHED PRODUCTS

   A. Owner will furnish and install products indicated on drawings as “OFI” (Owner Furnished and Installed). The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products.

   B. Owner-Furnished Products:

      1. As noted on drawings.

1.7 OWNER-FURNISHED CONTRACTOR-INSTALLED PRODUCTS

   A. Owner will furnish products indicated on drawings as “OFCI” (Owner Furnished Contractor Installed). The Contractor will unload, handle, store, protect, and install Owner-furnished Contractor-Installed products.
B. Owner-Furnished Contractor-Installed Products:
   1. As noted on drawings.

1.8 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1.9 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.
   1. Comply with limitations on use of public ways, all applicable local ordinances, and with other requirements of authorities having jurisdiction.
      a. Coordinate closures of public ways in advance with authorities having jurisdiction.

B. On-Site Work Hours: Limit work to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise requested and approved by the Owner.
   1. The contractor may ask for Owner approval to work weekends to make up for weather days.

C. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

D. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

E. No firearms or other considered weapons allowed on site or in vehicles on site.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
   1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

END OF SECTION 011000
SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

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 handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK
A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on “Architect's Supplemental Instructions (ASI)” form by Architect.

1.4 PROPOSAL REQUESTS
A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within 10 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
   a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   c. Include costs of labor and supervision directly attributable to the change.
   d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Architect.

1. Include a statement outlining 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 the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.


1.5 CHANGE ORDER PROCEDURES


1.6 CONSTRUCTION CHANGE DIRECTIVE


1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION 012600
SECTION 012900 - PAYMENT PROCEDURES

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 necessary to prepare and
   process Applications for Payment.

B. Related Sections include the following:
   1. Division 1 Section "Contract Modification Procedures" for administrative procedures for
      handling changes to the Contract.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of
   Contractor's Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative forms
      and schedules, including the following:
      a. Application for Payment forms with Continuation Sheets.
      b. Submittals Schedule.
      c. Contractor's Construction Schedule.
   2. Submit the Schedule of Values to Architect at earliest possible date but no later than
      seven days before the date scheduled for submittal of initial Applications for Payment.
   3. No payments will be made to the contractor until the schedule of values is approved.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items
   for the Schedule of Values. Provide at least one line item for each Specification Section.
   1. Identification: Include the following Project identification on the Schedule of Values:
      a. Project name and location.
      b. Name of Architect.
      c. Contractor's name and address.
      d. Date of submittal.
   2. Submit draft of AIA Document G702 and G703 Continuation Sheets.
   3. Arrange the Schedule of Values in tabular form with separate columns to indicate the
      following for each item listed:
      a. Related Specification Section or Division.
      b. Description of the Work.
c. Name of subcontractor.
d. Change Orders (numbers) that affect value.
e. Dollar value.

1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum.

5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.

7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

8. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. 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 G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit 5 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Certificates of insurance and insurance policies.
5. Performance and payment bonds.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. City of Owensboro form "Affidavit of Subcontractor of Final Release and Waiver of Liens and Claims", as applicable.
END OF SECTION 012900
SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

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 provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.

B. Related Sections include the following:
1. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

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

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Pre-installation conferences.
6. Startup and adjustment of systems.
7. Project closeout activities.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
   a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
   b. Indicate required installation sequences.
   c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 30 by 42 inches.
3. Number of Copies: Submit Four copies of each submittal unless the Architect approves the use of digital submittals. Architect will return Two copies and/or digital submittal.
   a. Submit five copies where Coordination Drawings are required for operation and maintenance manuals. Architect will retain two copies; remainder will be returned. Mark up and retain one returned copy as a Project Record Drawing.

4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.

2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, in a timely manner following the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent. Major subcontractors; suppliers; and other concerned parties may attend the conference if necessary. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:

   a. Tentative construction schedule.
   b. Phasing (if applicable).
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Procedures for processing field decisions and Change Orders.
   f. Procedures for requests for interpretations (RFIs).
   g. Procedures for testing and inspecting.
   h. Procedures for processing Applications for Payment.
   i. Submittal procedures.
   j. Preparation of Record Documents.
   k. Use of the premises and existing building (if applicable)
   l. Owner's occupancy requirements (if applicable).
   m. Responsibility for temporary facilities and controls.
   n. Construction waste management and recycling (if recycling is required).
   o. Parking availability.
   p. Equipment deliveries and priorities.
   q. Security.
   r. Progress cleaning.

3. Minutes: Architect will record and distribute meeting minutes.

C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates so he/she can attend if necessary.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

   b. Options.
   c. Related requests for interpretations (RFIs).
   d. Related Change Orders.
   e. Deliveries.
   f. Submittals.
g. Possible conflicts.
h. Compatibility problems.
i. Time schedules.
j. Weather limitations.
k. Manufacturer's written recommendations.
l. Warranty requirements.
m. Compatibility of materials.
n. Acceptability of substrates.
o. Testing and inspecting requirements.
p. Installation procedures.
q. Coordination with other work.
r. Required performance results.
s. Protection of adjacent work.
t. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Arrange progress meetings at monthly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Status of submittals.
2) Deliveries.
3) Off-site fabrication.
4) Access.
5) Site utilization.
6) Temporary facilities and controls.
7) Progress cleaning.
8) Quality and work standards.
9) Status of correction of deficient items.
10) Field observations.
11) Requests for interpretations (RFIs).
12) Status of proposal requests.
13) Pending changes.
14) Status of Change Orders.
15) Documentation of information for payment requests.

3. Minutes: Architect will record and distribute to Owner, Contractor and Architect’s consultants the meeting minutes in a timely manner following monthly progress meetings. G.C shall distribute minutes to all subcontractors and other as deemed necessary.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

5. Schedule Updating: Contractor shall prepare and present type written report of past 30 day progress and proposed next 30 day work schedule. Report shall note any items that may affect work schedule. This report will be attached to the meeting minutes.

END OF SECTION 013100
SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

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 documenting the progress of construction during performance of the Work, including the following:

1. Preliminary Construction Schedule.
2. Contractor's Construction Schedule.
4. Daily construction reports.
5. Field condition reports.

B. Related Sections include the following:
1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 SUBMITTALS

A. Submittals Schedule: Submit three hard copies or one digital copy of schedule. Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Architect's final release or approval.

B. Contractor's Construction Schedule: Submit two hard copies or one digital copy of initial schedule, large enough to show entire schedule for entire construction period.

C. Daily Construction Reports: Submit two hard copies or one digital copy at weekly intervals.

D. Field Condition Reports: Submit two copies or one digital copy at time of discovery of differing conditions.
1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

   1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
   2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

      a. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.

   3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

B. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial and Final Completion.

   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:

   1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
   2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in
schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

3. Submittal Review Time: Include review and re-submittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.

4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase (if applicable).
   2. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

   a. Permanent space enclosure.
   b. Substantial Completion.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

2.3 PRELIMINARY CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. Approximate count of personnel at Project site.
2. Material deliveries.
3. High and low temperatures and general weather conditions.
4. Accidents.
5. Meetings and significant decisions.
6. Unusual events (refer to special reports).
7. Stoppages, delays, shortages, and losses.
8. Partial Completions and occupancies.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200
SECTION 013300 - SUBMITTAL PROCEDURES

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 submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Quality Requirements" for submitting test and inspection reports.
5. Division 1 Section "Closeout Procedures" for submitting warranties.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals unless requested and proper documentation is signed and provided by the Contractor to release the Architect of any inconsistencies that could be created through the transmittal of digital files. Sharing digital files is only to assist the Contractor and is not grounds for creating change orders and/or additional scope. If inconsistencies are found in digital files shared by Architect it is the Contractor/Subcontractor's responsibility to bring this to the Architect's attention so that clarification can be properly addressed.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

   a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow additional time for initial review of each submittal.

E. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information on 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. Submittal number or other unique identifier, including revision identifier.

   1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).

   i. Number and title of appropriate Specification Section.

F. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
2. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.

1. Transmittal Form: Use AIA Document G810 or alternate form approved by Architect.
2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.

I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked "approved" or "approved as noted."

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

K. Use for Construction: Use only final submittals with mark indicating "approved" or "approved as noted" taken by Architect.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

   a. Manufacturer's written recommendations.
   b. Manufacturer's product specifications.
   c. Manufacturer's installation instructions.
   d. Standard color charts.
   e. Manufacturer's catalog cuts.
   f. Printed performance curves.
   g. Operational range diagrams.
   h. Mill reports.
   i. Standard product operation and maintenance manuals.
   j. Compliance with specified referenced standards.
k. Testing by recognized testing agency.
l. Application of testing agency labels and seals.
m. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit three hard copies or one digital copy of Product Data, unless otherwise indicated. Architect will return two hard copies or one digital copy. Mark up and retain one returned copy as a Project Record Document.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Architect's CAD Drawings are otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Dimensions.
   b. Identification of products.
   c. Fabrication and installation drawings.
   d. Roughing-in and setting diagrams.
   e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
   f. Shopwork manufacturing instructions.
   g. Templates and patterns.
   h. Schedules.
   i. Design calculations.
   j. Compliance with specified standards.
   k. Notation of coordination requirements.
   l. Notation of dimensions established by field measurement.
   m. Relationship to adjoining construction clearly indicated.
   n. Seal and signature of professional engineer if specified.
   o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.
3. Number of Copies: Submit four hard copies or one digital copy of each submittal, unless copies are required for operation and maintenance manuals. Submit five copies where copies are required for operation and maintenance manuals. Architect will retain two hard copies or one digital copy; remainder will be returned. Mark up and retain one returned copy as a Project Record Drawing.

D. Samples: Submit minimum of three of each sample for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples not incorporated into the Work, or otherwise designated as Owner’s property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

   1. Type of product. Include unique identifier for each product.
   2. Number and name of room or space.
   3. Location within room or space.
   4. Number of Copies: Submit three hard copies or one digital copy of product schedule or list, unless otherwise indicated. Architect will return two hard copies or one digital copy.
      a. Mark up and retain one returned copy as a Project Record Document.

F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Number of Copies: Submit three hard copies or one digital copy of subcontractor list, unless otherwise indicated. Architect will return two hard copies or one digital copy.
   a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two hard copies or one digital copy of each submittal, unless otherwise indicated. Architect will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Contractor’s Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer’s letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer’s letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer’s letterhead certifying that material complies with requirements in the Contract Documents.

I. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
J. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

K. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
   1. Preparation of substrates.
   2. Required substrate tolerances.
   3. Sequence of installation or erection.
   4. Required installation tolerances.
   5. Required adjustments.
   6. Recommendations for cleaning and protection.

L. Construction Photographs: Comply with requirements specified in Division 1 Section "Photographic Documentation."

M. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect, except as required in "Action Submittals" Article.
   1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW
   A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

   B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION
   A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

   B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

   C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
D. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300
SECTION 014000 - QUALITY REQUIREMENTS

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 quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

D. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
E. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

F. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

G. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

H. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. 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. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according
QUALITY REQUIREMENTS

Project No. 1637

to ASTM E 548; and with additional qualifications specified in individual Sections; and where
required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST’s National Voluntary Laboratory
   Accreditation Program.

F. Factory-Authorized Service Representative Qualifications: An authorized representative of
   manufacturer who is trained and approved by manufacturer to inspect installation of
   manufacturer's products that are similar in material, design, and extent to those indicated for
   this Project.

1.6 QUALITY CONTROL

A. Special Inspections required to be paid by Owner. Contractor to pay on all other testing required
   during construction.

B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service
   representative to inspect field-assembled components and equipment installation, including
   service connections. Report results in writing as specified in Division 1 Section “Submittal
   Procedures.”

C. Retesting / Reinspecting: Regardless of whether original tests or inspections were Contractor's
   responsibility, provide quality-control services, including retesting and reinspecting, for
   construction that replaced Work that failed to comply with the Contract Documents.

D. Associated Services: Cooperate with agencies performing required tests, inspections, and
   similar quality-control services, and provide reasonable auxiliary services as requested. Notify
   agency sufficiently in advance of operations to permit assignment of personnel. Provide the
   following:

   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and
      inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies.
   6. Preliminary design mix proposed for use for material mixes that require control by testing
      agency.
   7. Security and protection for samples and for testing and inspecting equipment at Project
      site.

E. Coordination: Coordinate sequence of activities to accommodate required quality-assurance
   and -control services with a minimum of delay and to avoid necessity of removing and replacing
   construction to accommodate testing and inspecting.

   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.7 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect’s reference during normal working hours.

1.8 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor’s responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000
SECTION 014100 – SPECIAL INSPECTIONS

PART 1 – GENERAL

1.1 SUMMARY

A. Special Inspections shall be performed according to state and local building codes.

B. Refer to Statement of Special Inspections provided.
Statement of Special Inspections

Project: Owensboro Parking Structure
Location: 414 West 2nd Street, Owensboro, Kentucky 42301
Owner: City of Owensboro

Design Professional in Responsible Charge: Ted E. Lolley

This Statement of Special Inspections is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspection Coordinator and the identity of other approved agencies to be retained for conducting these inspections and tests. This Statement of Special Inspections encompasses the following disciplines:

- [x] Structural
- [ ] Mechanical/Electrical/Plumbing
- [ ] Architectural
- [ ] Other: _______________________________________________________________________

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge.

A Final Report of Special Inspections documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: Weekly

Prepared by:

Ted E Lolley
(type or print name)

Signature 9/22/17

Owner's Authorization: Building Official's Acceptance:

Signature Date Signature Date

CASE Form 101 • Statement of Special Inspections • ©CASE 2004
Schedule of Inspection and Testing Agencies

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- Soils and Foundations
- Cast-in-Place Concrete
- Precast Concrete
- Masonry
- Structural Steel
- Cold-Formed Steel Framing

- Spray Fire Resistant Material
- Wood Construction
- Exterior Insulation and Finish System
- Mechanical & Electrical Systems
- Architectural Systems
- Special Cases

<table>
<thead>
<tr>
<th>Special Inspection Agencies</th>
<th>Firm</th>
<th>Address, Telephone, e-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Special Inspection</td>
<td>To Be Determined</td>
<td></td>
</tr>
<tr>
<td>Coordinator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Inspector</td>
<td>To Be Determined</td>
<td></td>
</tr>
<tr>
<td>3. Testing Agency</td>
<td>To Be Determined</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
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</tbody>
</table>

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.
Quality Assurance Plan

Quality Assurance for Seismic Resistance

Seismic Design Category  
Quality Assurance Plan Required (Y/N)  

Description of seismic force resisting system and designated seismic systems:

*Bearing Wall System – Intermediate Precast Shear Walls*

Quality Assurance for Wind Requirements

Basic Wind Speed (3 second gust)  
Wind Exposure Category  
Quality Assurance Plan Required (Y/N)  

Description of wind force resisting system and designated wind resisting components:

Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated above must submit a Statement of Responsibility.
Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the Agency Number on the Schedule.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE/SE</td>
<td>Structural Engineer – a licensed SE or PE specializing in the design of building structures</td>
</tr>
<tr>
<td>PE/GE</td>
<td>Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations</td>
</tr>
<tr>
<td>EIT</td>
<td>Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination</td>
</tr>
</tbody>
</table>

**American Concrete Institute (ACI) Certification**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACI-CFTT</td>
<td>Concrete Field Testing Technician – Grade 1</td>
</tr>
<tr>
<td>ACI-CCI</td>
<td>Concrete Construction Inspector</td>
</tr>
<tr>
<td>ACI-LTT</td>
<td>Laboratory Testing Technician – Grade 1&amp;2</td>
</tr>
<tr>
<td>ACI-STT</td>
<td>Strength Testing Technician</td>
</tr>
</tbody>
</table>

**American Welding Society (AWS) Certification**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWS-CWI</td>
<td>Certified Welding Inspector</td>
</tr>
<tr>
<td>AWS/AISC-SSI</td>
<td>Certified Structural Steel Inspector</td>
</tr>
</tbody>
</table>

**American Society of Non-Destructive Testing (ASNT) Certification**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASNT</td>
<td>Non-Destructive Testing Technician – Level II or III.</td>
</tr>
</tbody>
</table>

**International Code Council (ICC) Certification**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICC-SMSI</td>
<td>Structural Masonry Special Inspector</td>
</tr>
<tr>
<td>ICC-SWSI</td>
<td>Structural Steel and Welding Special Inspector</td>
</tr>
<tr>
<td>ICC-SFSI</td>
<td>Spray-Applied Fireproofing Special Inspector</td>
</tr>
<tr>
<td>ICC-PCSI</td>
<td>Prestressed Concrete Special Inspector</td>
</tr>
<tr>
<td>ICC-RCSI</td>
<td>Reinforced Concrete Special Inspector</td>
</tr>
</tbody>
</table>

**National Institute for Certification in Engineering Technologies (NICET)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NICET-CT</td>
<td>Concrete Technician – Levels I, II, III &amp; IV</td>
</tr>
<tr>
<td>NICET-ST</td>
<td>Soils Technician - Levels I, II, III &amp; IV</td>
</tr>
<tr>
<td>NICET-GET</td>
<td>Geotechnical Engineering Technician - Levels I, II, III &amp; IV</td>
</tr>
</tbody>
</table>

**Exterior Design Institute (EDI) Certification**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDI-EIFS</td>
<td>EIFS Third Party Inspector</td>
</tr>
</tbody>
</table>

**Other**

- Statement of Special Inspections
<table>
<thead>
<tr>
<th>Item</th>
<th>Agency # (Qualif.)</th>
<th>Scope (C=continuous, P=periodic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shallow Foundations</td>
<td>2, 3 (NCIET-GET)</td>
<td>Verify materials below footings are adequate to achieve the design bearing capacity. <em>(P)</em></td>
</tr>
<tr>
<td></td>
<td>2, 3 (NCIET-GET)</td>
<td>Verify excavations are extended to proper depth and have reached proper material. <em>(P)</em></td>
</tr>
<tr>
<td>2. Controlled Structural Fill</td>
<td>2, 3 (NCIET-GET)</td>
<td>Perform classification and testing of controlled fill materials. <em>(P)</em></td>
</tr>
<tr>
<td></td>
<td>2, 3 (NCIET-GET)</td>
<td>Verify use of proper materials, densities and lift thicknesses during placement and compaction of controlled fill. <em>(C)</em></td>
</tr>
<tr>
<td></td>
<td>2, 3 (NCIET-GET)</td>
<td>Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly. <em>(P)</em></td>
</tr>
<tr>
<td>3. Deep Foundations</td>
<td>2, 3# (NCIET-GET)</td>
<td>Verify pile materials, sizes and lengths comply with the requirements. <em>(C)</em></td>
</tr>
<tr>
<td></td>
<td>2, 3 (PE/GE)</td>
<td>Determine capacities of test piles and conduct additional load tests, as required. <em>(C)</em></td>
</tr>
<tr>
<td></td>
<td>2, 3 (NCIET-GET)</td>
<td>Observe driving operations and maintain complete and accurate records for each pile. <em>(C)</em></td>
</tr>
<tr>
<td></td>
<td>2, 3 (NCIET-GET)</td>
<td>Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any pile damage. <em>(C)</em></td>
</tr>
<tr>
<td>4. Load Testing</td>
<td>2, 3 (PE/GE)</td>
<td>Observe and document load test. Load test shall be conducted in accordance with KBC and ASTM D1143. Use the “Quick Load Test Method”. <em>(C)</em></td>
</tr>
<tr>
<td>Item</td>
<td>Agency # (Qualif.)</td>
<td>Scope (C=continuous, P=periodic)</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>1. Mix Design</td>
<td>2,3 (ACI-CCI ICC-RCSI)</td>
<td>Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design. (P)</td>
</tr>
<tr>
<td>2. Reinforcement Installation</td>
<td>2 (ACI-CCI ICC-RCSI)</td>
<td>Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters. (P)</td>
</tr>
<tr>
<td>3. Anchor Rods</td>
<td>2 (ACI-CCI ICC-RCSI)</td>
<td>Inspect size, positioning and embedment of anchor rods. Inspect concrete placement and consolidation around anchors. (C)</td>
</tr>
<tr>
<td>4. Concrete Placement</td>
<td>2 (ACI-CCI ICC-RCSI)</td>
<td>Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated. (C)</td>
</tr>
<tr>
<td>5. Sampling and Testing of Concrete</td>
<td>2,3 (ACI-CFTT ACI-STT)</td>
<td>Test concrete compressive strength (ASTM C31 &amp; C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064). (C)</td>
</tr>
<tr>
<td>6. Curing and Protection</td>
<td>2 (ACI-CCI ICC-RCSI)</td>
<td>Inspect curing, cold weather protection and hot weather protection procedures. (P)</td>
</tr>
<tr>
<td>7. Formwork</td>
<td>2 (ACI-CCI ICC-RCSI)</td>
<td>Inspect formwork for shape, location and dimensions of the concrete member being formed. (P)</td>
</tr>
<tr>
<td>Item</td>
<td>Agency # (Qualif.)</td>
<td>Scope</td>
</tr>
<tr>
<td>------</td>
<td>-------------------</td>
<td>-------</td>
</tr>
</tbody>
</table>
| 1. Plant Certification / Quality Control Procedures  
  ☑ Fabricator Exempt | 1 | Fabricator shall be ACI – PCI certified. |
| 2. Erected Precast Elements | 2 (PE/SE) | Inspect erection of precast concrete including member configuration, connections, welding and grouting. (P) |

- Statement of Special Inspections
SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

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 requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 DEFINITIONS
   A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weather tight; exterior walls are insulated and weather tight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES
   A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

1.5 SUBMITTALS
   A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.6 QUALITY ASSURANCE
   A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
   B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS
   A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. 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: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide temporary toilet facilities.

B. Parking: Use areas on site for construction personnel.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

B. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

C. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been 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 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 Contractor. Owner reserves right to take possession of Project identification signs.

2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 015000
SECTION 016000 - PRODUCT REQUIREMENTS

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 selection of products for use in Project; product delivery, storage, and handling; manufacturers’ standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:
   1. Division 1 Section “Closeout Procedures” for submitting warranties for Contract closeout.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term “product” includes the terms “material,” “equipment,” “system,” and terms of similar intent.

   1. Named Products: Items identified by manufacturer’s product name, including make or model number or other designation shown or listed in manufacturer’s published product literature that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.4 SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

   1. Substitution Request Form: Use CSI Form 1.5C during bidding, Use CSI Form 13.1A after bidding.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

      a. Statement indicating why specified material or product cannot be provided.
      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
g. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
h. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
2. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:

1. Store materials in a manner that will not endanger Project structure.
2. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
3. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

1.7 PRODUCT WARRANTIES
A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Refer to Divisions 2 through 48 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 15 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution is compatible with other portions of the Work.
7. Requested substitution has been coordinated with other portions of the Work.
8. Requested substitution provides specified warranty.

END OF SECTION 016000
SECTION 017000 - EXECUTION REQUIREMENTS

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 general procedural requirements governing execution of the Work including, but not limited to, the following:

1. General installation of products.
2. Progress cleaning.
3. Starting and adjusting.
4. Protection of installed construction.
5. Correction of the Work.

B. Related Sections include the following:

1. Division 1 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
2. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.


3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.6 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION 017000
SECTION 017329 - CUTTING AND PATCHING

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 procedural requirements for cutting and patching.

1.3 DEFINITIONS
   A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
   B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE
   A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
   B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
   C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
   D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Owner's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS
   A. General: Comply with requirements specified in other Sections.
B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer’s written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   a. Restore damaged pipe covering to its original condition.

3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017329
SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT

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 administrative and procedural requirements for the following:

1. Disposing of non-hazardous demolition and construction waste.

B. Related Sections include the following:

1. Division 1 Section "Temporary Facilities and Controls" for environmental-protection measures during construction, and location of waste containers at Project site.
2. Division 1 Section "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 IMPLEMENTATION
A. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 1 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419
SECTION 017700 - CLOSEOUT PROCEDURES

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 contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
5. Divisions 2 through 48 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
4. Complete final cleaning requirements, including touchup painting.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for Final Completion.

### 1.4 FINAL COMPLETION

#### A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."

2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

4. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.

#### B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

### 1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

#### A. Preparation: Submit three hard copies or one digital copy of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

3. Include the following information at the top of each page:
   
   a. Project name.
   b. Date.
   c. Name of Architect.
   d. Name of Contractor.
   e. Page number.

### 1.6 WARRANTIES
CLOSEOUT PROCEDURES

A. All warranties start at Substantial Completion Date.

B. Prior to final payment organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer’s written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Remove tools, construction equipment, machinery, and surplus material from Project site.
   d. Remove snow and ice to provide safe access to building.
   e. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner’s property. Do not discharge volatile, harmful, or dangerous
materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700
SECTION 017823 - OPERATION AND MAINTENANCE DATA

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 preparing operation and maintenance manuals, including the following:
      1. Maintenance manuals for the care and maintenance of products, materials, and finishes.
   B. Related Sections include the following:
      1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
      2. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
      3. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
      4. Divisions 2 through 48 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS
   A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
   B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS
   A. Initial Submittal: Submit 2 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.
   B. Final Submittal: Submit one copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.
      1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.5 COORDINATION
A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
   a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
   b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 PRODUCT MAINTENANCE MANUAL
A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
C. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   5. Reordering information for specially manufactured products.
D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.
E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION
A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
B. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

C. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

D. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823
SECTION 017839 - PROJECT RECORD DOCUMENTS

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 "Closeout Procedures" for general closeout procedures.
2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Divisions 2 through 48 Sections for specific requirements for Project Record Documents of the Work 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.

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 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. Revisions to details shown on Drawings.
   b. Changes made by Change Order or Construction Change Directive.
   c. Changes made following Architect's written orders.
   d. Details not on the original Contract Drawings.
   e. Field records for variable and concealed conditions.

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 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 Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected record drawings 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. Print the Contract Drawings and Shop Drawings for use as Record drawings. Architect will make the Contract Drawings for the Owner.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

   1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   2. 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.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
4. 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 Product Data, and Record Drawings 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 Specifications, and Record Drawings where applicable.

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 017839
SECTION 024650 – AUGER CAST PILES

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 drilled, cast-in-place reinforced concrete friction auger cast piles and testing of same.

B. Extent of auger cast piles is shown on drawings, including locations, diameters of shafts, bottom elevations, top elevations, and details of construction.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 3 Section "Cast-in-Place Concrete" for requirements related to this section.
2. Division 22 and 26 drawings for coordinating auger cast pile locations with new and existing utilities.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.


2. Concrete Materials Test Reports as proposed for use in concrete mixes.

3. Certified Auger Cast Piles Report for each auger cast pile recording actual elevation at bottom and top, final centerline location at top, variation of shaft from plumb, results of tests performed, seepage of water, any unusual conditions, dates of starting excavation, completion of excavation, inspection, testing, and placement of concrete (include any delays in concreting and location of construction joints in shafts).

4. Concrete Design Mix Reports listing mixes required and their respective test results.

5. Concrete Test Reports, recording pertinent information and certification of compliance with Project requirements.

6. Pile Test Reports, recording pertinent information and certification of compliance with Project requirements.
1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of American Concrete Institute ACI 336.3R “Design and Construction Procedures for Pier Foundations” and as herein specified. Where provisions of above standard conflict with building regulations in effect for this Project, building regulations will govern, but only to establish minimum requirements.

B. Auger Cast Piles Installer Qualifications: Not less than three successfully completed contracts with similar soil conditions, shaft sizes, depths, and volumes of Work contained in this Project.

C. Survey Work: Engage a registered surveyor to perform surveys, layouts, and measurements for auger cast pile work. Conduct layout work for each auger cast pile to lines and levels required before excavation, and actual measurements of each auger cast pile’s location, shaft diameter, bottom and top elevations, deviations from specified tolerances, and other data as required.

D. Record and maintain information pertinent to each auger cast pile and cooperate with other testing and inspection personnel to provide data for required reports.

E. Concrete Testing Service: Employ testing laboratory to perform material evaluation tests and to design concrete mixes.

F. Materials and installed work may require testing and retesting at any time during progress of Work. Allow free access to material stockpiles and facilities. Tests not specifically indicated to be done at Owner’s expense, including retesting of rejected materials and installed work, are Contractor’s responsibility.

1.5 JOB CONDITIONS

A. Site Information: Data on indicated subsurface conditions is not intended as representations or warranties of continuity of such conditions. It is expressly understood that Owner will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data are made available for convenience of Contractor and are not guaranteed to represent conditions that may be encountered.

B. Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.

C. Auger Cast Pile Contractor shall inspect the site and related conditions prior to commencing his portion of the work.

D. Existing Utilities: Locate existing underground utilities before starting auger cast pile excavation operations. If utilities are to remain in place, provide protection from damage during auger cast pile operations.

E. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult Architect immediately for directions as to procedure. Cooperate with Owner and utility companies in keeping services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

F. Do not interrupt existing utilities except when permitted in writing by Owner and after acceptable temporary utility services have been provided.
2.1 CONCRETE AND RELATED MATERIALS

A. General:

1. High Strength Mortar: The cement based non-shrinkage mortar used to fill the augered holes shall consist of a mixture of Portland cement, fluidifier, sand and water so proportioned and mixed as to provide a mortar capable of maintaining the solids in suspension without appreciable water gain, yet which may be placed without difficulty, and which will laterally penetrate and fill any voids in the foundation material. The materials shall be so proportioned as to provide a hardened mortar having an ultimate compressive strength of 4000 psi at 28 days.

2. Portland Cement: Portland cement shall conform to Federal Specifications SS-C0192 or current ASTM standards, Designated C150, Type I or Type II, as required.

3. Fluidifier: Fluidifier shall be a compound possessing characteristics which will increase the fluidity of the mixture, reduce bleeding, assist in the dispersal of cement grains, and neutralize the setting shrinkage of the high-strength cement mortar.

4. Water: Water shall be fresh, clean, and free from sewage, oil, acid, alkali, salts, and organic matter.

5. Fine Aggregate: Sand shall meet the requirements of current ASTM standards, Designation C33.
   a. The sand shall consist of hard, dense, durable, uncoated rock particles and be free from injurious amounts of silt, loam, lumps, soft or flaky particles, shale, alkali, organic matter, mica, and other deleterious substances. If washed, the washing method shall be such as will not remove desirable fines, and the sand shall subsequently be permitted to drain until the residual-free moisture is reasonably uniform and stable. The sand shall be well-graded from fine to coarse, with a fineness modulus between 1.4 and 3.4. The fineness modulus is defined as the total divided by 100 of the cumulative percentages retained on U.S. Standard sieve Nos. 16, 20, 50, and 100.

6. Fly Ash: ASTM C 618, Type C or F.


8. Water-Reducing Admixture: ASTM C 494, Type A, containing no set-accelerating or set-retarding compounds, chlorides, fluorides, or nitrates.

9. High-Range Water-Reducing Admixture: ASTM C 494, Type F or Type G.

10. Reinforcing Bars and Dowels: ASTM A 615, Grade 60.


2.2 CONCRETE MIX DESIGN

A. General: Use independent testing facility for preparing and reporting proposed mix designs and placement methods. Testing facility shall not be same as used for field quality control testing.
B. Design mix to produce concrete for auger cast piles with minimum 28-day compressive strength of 4000 psi, limit fly ash to 15% of cement content.

C. Proportion mixes by either laboratory trail batch or field experience methods using materials and placement methods to be employed on Project for each class of concrete required, complying with ACI 211.1.

D. Submit written reports to Architect of proposed mix for concrete at least 15 days prior to start of work. Do not begin concrete production until mix design has been reviewed by Architect.

E. Adjustment to Concrete Mixes: Mix design adjustments may be required by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be accepted by Architect before using in Work.

F. Admixtures: Use air-entraining admixture in concrete, unless otherwise directed. Add air-entraining admixture at manufacturer’s prescribed rate to ensure in concrete at point of placement having 4 percent to 6 percent air content.

G. Use water-reducing admixtures in strict compliance with manufacturer’s directions. Admixtures to increase cement dispersion, or provide increased workability for low-slump concrete, may be sued at Contractor’s option.

H. Use amounts of admixtures as recommended by manufacturer for climatic conditions prevailing at time of placing concrete. Adjust quantities of admixtures as required to maintain quality control.

I. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement of not less than 3 inches and not more than 6 inches.

2.3 CONCRETE MIXING

A. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.

1. Delete references for allowing additional water to be added to batch for material with insufficient slump. Addition of water to batch will be permitted only with the written approval of the concrete batch plant.

B. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

A. Provide auger cast piles by rotating a continuous flight hollow shaft auger into the ground to a predetermined pile depth. High strength mortar shall be pumped with sufficient pressure as the auger is withdrawn to fill the augered hole preventing hole collapse and to cause the lateral...
penetration of the mortar into soft or porous zones of the surrounding soil. A head of at least 10 feet (20 feet below water table) of mortar above the injection point shall be carried around the perimeter of the auger flighting at all times during the raising of the auger so that the high-strength mortar has a displacing action removing any loose material from the hole. The auger withdrawal rate shall not exceed 10 feet per minute. This method of placement shall be used at all times and not be dependent on whether the hole is sufficiently stable to retain its shape without support from the earth-filled auger. The reinforcement cage shall be placed while the mortar is fluid.

3.2 AUGER CAST PILE EXCAVATION

A. General: Excavate holes for auger cast piles to elevations shown on drawings. Excavate holes for closely spaced auger cast piles, and those occurring in fragile or sand strata, only after adjacent holes are filled with concrete and allowed to set.

B. Construction tolerances: Locate centerline of auger cast piles within the following tolerances:

1. Maximum permissible variation of location not more than 1/12th of shaft diameter or 3 inches, whichever is less.
2. Shafts out of plumb not more than 1.5 percent of length nor exceeding 12.5 percent of shaft diameter or 15 percent, whichever is less.
3. Concrete cut-off elevation, plus 1 inch to minus 3 inches.
4. If above tolerances are exceeded, provide corrective construction to compensate for excessive eccentricity. Submit proposed corrective construction methods to Architect for review before proceeding.

C. Obstructions: The Work of this Section includes demolition and removal of rock boulders, concrete, masonry, and other subsurface obstructions whether or not clearly indicated by Contract Documents, or by available subsurface exploration data, and will not be considered a change in Work.

1. Remove such obstructions by hand labor using air-powered tools or by other methods recognized in construction industry.

D. Dewatering: Provide and maintain pumping equipment to keep excavations free of water before placing concrete. If excessive water is encountered and drilling operations must be halted, consult with Architect before using alternate methods of construction.

1. Conduct water to general site run-off ditches and disposal areas with discharge lines. Provide ditching as required to conduct water to site drainage facilities.

E. Overexcavation: No payment will be made for extra length, when auger cast pile shafts are excavated to a greater depth than required or authorized by Architect, due to overdrilling by Contractor. Complete auger cast pile and fill extra depth with concrete if other conditions are satisfactory. Overexcavated shafts will be measured and paid for to original design or authorized depth.

F. Excavated Material: remove excavated material and legally dispose off site.

3.3 REINFORCING STEEL AND DOWELS

A. Before placing, clean reinforcing steel and dowels of loose rust, scale, dirt, grease, and other material which could reduce or destroy bond.
B. Fabricate and erect reinforcing cages in shafts as one continuous unit using inner ring resteel. Place reinforcement accurately and symmetrically about axis of hole and hold securely in position during concrete placement.

C. Use template to set anchor bolts, leveling plates, and other accessories furnished under work of other sections. Provide blocking and holding devices to maintain required position during concrete placement.

D. Protect exposed ends of extended reinforcing, dowels, or anchor bolts from mechanical damage and exposure to weather.

3.4 CONCRETE PLACEMENT

A. General: Only approved pumping, continuous mixing and agitating equipment shall be used in the preparation and handling of the mortar. All oil and other rust inhibitors shall be removed from mixing drums and mortar pumps. If ready-mix mortar is used, an agitator of sufficient size shall be used between the ready-mix truck and the mortar pump to ensure a homogeneous mix and continuity in the pumping operations. All materials shall be such as to produce a homogeneous mortar of the desired consistency. If there is a lapse in the operation, the mortar shall be recirculated through the pump. The mortar pump shall be a positive displacement piston type pump capable of developing displacing pressures at the pump up to 350 psi. The minimum volume of mortar placed in the hole shall at least equal 140 percent of the volume of the augered hole. A pressure gage shall be located on the grout pump so that the grouting pressure may be checked by the operator and/or Engineer.

Fill auger cast piles with concrete immediately after completing auger operation. Use protection sheets (cut out to receive concrete) over excavation openings, extending at least 12 inches beyond edge.

Where the pile cutoff is near the surface or above the bottom of the excavation, metal sleeves or casing of the proper diameter and at least 18 inches in length shall be placed around the pile tops. (Special conditions may require metal sleeves of additional length).

Place concrete continuously and in a smooth flow without segregating. Provide mechanical vibration for consolidation of at least top 25 feet of each shaft.

Place concrete in-the-dry; placing concrete under water is not acceptable. If water occurs, and it is impracticable to dewater auger cast pile excavation, and reasonable attempts to seal off water flow have failed, allow water level to attain its normal level and place concrete by tremie method. Control placement operations to ensure that tremie is not broken during continuous placing from bottom to top. Other methods of depositing concrete under water may be used, if acceptable to Architect.

Maintain a sufficient head of concrete to prevent reduction in diameter of auger cast pile shaft by earth pressure and to prevent extraneous material from mixing with fresh concrete. Coordinate withdrawal of temporary casings with concrete placement operations to maintain a head of concrete approximately 10 feet (20 feet below water table) above casing bottom.

Stop concrete placement at cut-off elevation shown, screed level, and apply a scoured, rough finish. Where cut-off 3elevation is above ground elevation, form top section above grade and extend shaft to required elevation.
B. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures in compliance with ACI 306 and as herein specified.

When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C) uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C), and not more than 80 deg F (27 deg C) at point of placement.

Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Do not use calcium chloride, salt, or other mineral containing antifreeze agents or chemical accelerators.

C. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32deg C). Mixing water may be chilled, or chopped ice may be used to control concrete temperature, provided water equivalent of ice is calculated into total amount of mixing water.

D. Place concrete immediately upon delivery. Keep exposed concrete surfaces and formed shaft extensions moist be fog sprays, wet burlap, or other effective means.

E. Do not use retarding admixtures without acceptance of Architect.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

1. The Contractor shall be responsible for contacting the testing and inspection agency and making sure they are there at the appropriate times before the work to be tested starts. The contractor is also responsible to compensate the special tests and inspection testing agency if they request them to be present for testing and then the work to be tested does not proceed as scheduled or is not ready to be tested.

B. Quality Control Testing During Construction: Sample and test concrete for quality control during placement as follows:

1. The mortar mix shall be tested by making two sets of 2" cubes for each day during which the augered piles are placed. A set of cubes shall consist of 2 cubes to be tested at 7 days, and 3 cubes to be tested at 28 days. Test cubes shall be made and tested in accordance with ASTM C109, with the exception that the mortar shall be restrained from expansion by a top plate.

   a. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
   b. Slump: ASTM C 143; one test for each concrete load at point of discharge, and one for each set of compressive strength test specimens.
   c. Air Content: ASTM C 231, pressure method; one test for each set of compressive strength test specimens.
   d. Compression Test Specimens: ASTM C 31; one set of five standard cubes for each compressive strength test, unless otherwise directed. Mold and store cubes
for laboratory-cured test specimens except when field-cured test specimens are required.

e. Concrete Temperature: Test when air temperature is 40 deg F (4 deg C) and below, and when 80 deg F (27 deg C) and above, and each time a set of compression test specimens made.

Report test results, in writing to Architect and Contractor on same day tests are made. Include in reports Project identification name and number, date of concrete placement, name of contractor, name of concrete supplier and truck number, name of concrete testing service, concrete type, location of auger cast pile, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength and type of break for both 7-day test and 28-day test.

C. Additional Concrete Tests: Testing service may take core samples of in-place concrete when test results indicate such that there is reasonable doubt that specified concrete strengths have not been attained.

1. Continuous coring of auger cast piles may be required, at Contractor’s expense, when time for removal of temporary casings exceeds specified limits, or where observations of placement operations indicate suspicion of quality of concrete, presence of voids, segregation, or other possible defects.

D. Pile Testing:

1. Install and load test piles in order to verify design pile lengths and loads. Provide complete testing materials and equipment as required, and perform tests only in the presence of the Contractor’s inspection agency.

2. Test piles, furnished and augered by pile Contractor to determine lengths of piles, may be located, cut off, and become part of the foundation system, provided they conform to the specifications, drawings and pass the test requirements. If the test pile fails to meet test requirements, it shall be cut off as stated herein in Damaged or Misdriven Piles paragraph.

3. Loading, testing and recording data shall be performed be an independent testing laboratory employed and paid by the Owner. A representative of the Architect shall be present during testing operations and shall be given 24 hours notice before start of test.

4. Test Piles Required:
   a. The Pile Contractor shall be responsible for all costs incurred if additional test piles are required due to required test piles failing load tests.
   b. Provide 1 single test pile.

E. Augering Test Piles

1. Use test piles of the same size and design as required to be used for project foundations, and auger with the appropriate pile augering equipment.

2. Auger test piles at the locations indicated to a point elevation below final cutoff elevation equal to the pile length specified as the basis of bids.

F. Pile Design Loads

1. The design working (unfactored) load per pile is shown on the drawings.

G. Test Loads

1. Provide load test equipment in accordance with the requirements of ASTM D-1143 with a capacity equal to or greater than 200% of the design working load and having means of
determining the applied load within 5% and measuring the settlement to the nearest 0.001”.

2. Permit and assist the independent testing laboratory to record measurements necessary for determination of the performance of the piles. Provide 48 hours notice to the inspection agency prior to testing.

H. Pile Load Testing

1. Load and test piles in which concrete has attained the required 28-day compressive strength to determine the load settlement relationship of the test piles under a vertical axial load, complying with ASTM D-1143.

2. Apply test loads either by the use of hydraulic jacks or by static loading. Use certified, calibrated jacks to develop the required test loads, maintain them, and release them in continuous operations. Auger anchor piles not closer than 5’ from any test pile unless otherwise permitted by the Architect.

3. Measure and record the settlement immediately before and after each increment of the test load is applied and immediately before and 24 hours after the total load is removed.

4. Apply the loading to the load test pile in 25% increments of the total load up to 200% but not sooner than 7 days after installation.

5. For each increment after 100% of the design load has been applied, allow the test load to remain in place until there is less than 0.01” of settlement in a 2-hour period.

6. Maintain the full test load as follows: Provided the pile has not failed, allow the test load to remain on the pile for 48 hours, except in the event that the average rate of settlement is not greater than 0.01”/hour, when the total load may be removed after 24 hours.

7. Remove the test load in increments of 25% of the total load at intervals of one hour.

8. Apply the load in increments of 10 to 15% of the proposed design load with a constant time interval between increments of 2 minutes or as otherwise specified. Add load increments until continuous jacking is required to maintain the test load or until the specified capacity of the loading apparatus is reached, whichever occurs first, at which time stop the jacking. After a 4-hour interval or as otherwise specified, remove the full load from the pile.

9. The test pile will be considered acceptable for the stipulated bearing capacity of the total net settlement after deducting the rebound, if it does not exceed 0.01” per ton of test load.

10. Cut off the test pile at the elevation shown if it is to be incorporated in the structure.

11. If tested to failure or not incorporated in the structure, cut off so the top of the pile is at a minimum of 3’ below the finished grade or not less than 3’ below the bottom of any structure.

12. The procedures for measurement of pile movement shall be in accordance with ASTM D-1143, Section 5.2, “Standard Measuring Procedures”.

I. Test Reports

1. Prepare reports for each test pile, to include the following: Date of augering, test pile location, grade designation and dimensions of pile, total penetration, and starting and finishing times.

2. Record all tabulation of loads, settlement, rebound, graphic representation, and similar items. The report of the pile test shall be prepared in accordance with ASTM D-1143, Section 6. This report shall be submitted to the Architect for his review.

J. Inspection

1. An independent testing laboratory acceptable to the Architect and employed and paid by the Owner shall be at the site at all times during the installation of the piles. The
inspector shall make and submit complete daily records and reports of the installation to the Architect.

2. The Contractor shall be responsible for contacting the testing and inspection agency and making sure they are there at the appropriate times before the work to be tested starts. The contractor is also responsible to compensate the special tests and inspection testing agency if they request them to be present for testing and then the work to be tested does not proceed as scheduled or is not ready to be tested.

### 3.6 MEASUREMENT AND PAYMENT

A. The bid shall be for a lump sum amount based on the number of auger cast piles, length and the total footage as shown in the plans and/or specifications. Prices quoted shall include full compensation for labor, materials, tools, equipment, and incidentals required for complete auger cast piles installation according to good construction practices and the contract documents.

B. Unit prices for the following items, as set forth in the Contract conditions, will apply in event additions to or deductions from Work are required and authorized by written order from Architect to Contractor.

1. A unit price, per linear foot, for greater or lesser linear footage than shown on the base quantity.

C. There will be no additional compensation for excavation, concrete fill, reinforcing, casings, or other costs due to unauthorized overexcavating of shafts. No payment will be made for misplaced, faulty or otherwise unacceptable auger cast piles caused by the negligence of the contractor.

END OF SECTION 024650
SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

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

1.2 SUMMARY
   A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
      1. Footings.
      2. Foundation walls.
      3. Slabs-on-grade.
   B. Related Sections include:
      1. Section 312000 "Earth Moving" for drainage fill under slabs-on-grade.
      2. Section 321313 "Concrete Paving" for concrete pavement and walks.

1.3 DEFINITIONS
   A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 ACTION SUBMITTALS
   A. Product Data: For each type of product indicated.
   B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
      1. Indicate amounts of mixing water to be withheld for later addition at Project site.
   C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
   D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
      1. Location of construction joints is subject to approval of the Architect.
1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, manufacturer, testing agency.

B. Material Certificates: For each of the following, signed by manufacturers:
   1. Cementitious materials.
   2. Admixtures.
   3. Form materials and form-release agents.
   4. Steel reinforcement and accessories.
   5. Fiber reinforcement.
   6. Waterstops.
   7. Curing compounds.
   8. Floor and slab treatments.
  10. Adhesives.
  11. Vapor retarders.
  12. Semirigid joint filler.

C. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
   1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

D. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
   1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
   1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
   2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. 
E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."

F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
   1. Plywood, metal, or other approved panel materials.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.

D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
   1. Furnish units that will leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
   2. Furnish ties that, when removed, will leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.
   3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
B. Steel Bar Mats: ASTM A 184/A 184M, fabricated from ASTM A 615/A 615M, Grade 60
(Grade 420) deformed bars, assembled with clips.

C. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

D. Deformed-Steel Wire: ASTM A 496/A 496M.

E. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.4 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I gray
   a. Fly Ash: ASTM C 618, Class F or C.

B. Normal-Weight Aggregates: ASTM C 33, Class 3M, Class3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1 inch (25 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.


2.5 ADMIXTURES


B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

C. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Axim Italcementi Group, Inc.; CATEXOL CN-CI.
   b. BASF Construction Chemicals - Building Systems; Rheocrete CNI.
   c. Euclid Chemical Company (The), an RPM company.
   d. Grace Construction Products, W. R. Grace & Co.; DCI.
   e. Sika Corporation; Sika CNI.

D. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. BASF Construction Chemicals - Building Systems; Rheocrete 222+.
   b. Cortec Corporation.
   c. Grace Construction Products, W. R. Grace & Co.; DCI-S.
   d. Sika Corporation; FerroGard 901.

2.6 WATERSTOPS

A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch (19 by 25 mm).

2.7 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class C not less than 10 mils (0.25mm) thick. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.

1. Products:
   a. Fortifiber Building Systems Group; Moistop Plus.
   b. Raven Industries Inc.; Vapor Block 6.
   c. Reef Industries, Inc.
   d. Stego Industries, LLC; Stego Wrap, 10 mil Class C.

2.8 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

2.9 RELATED MATERIALS


B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, according to ASTM D 2240.

C. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types I and II, non-load bearing Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

E. Reglets: Fabricate reglets of not less than 0.022-inch- (0.55-mm-) thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

2.10 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6.4 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.11 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 20 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer’s written instructions.

1. Use water-reducing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.50.
3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch (25-mm) and 3/4-inch (19-mm) nominal maximum aggregate size.

B. Foundation Walls: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.50.
3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch (25-mm) and 3/4-inch (19-mm) nominal maximum aggregate size.

C. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch (25-mm) and 3/4-inch (19-mm) nominal maximum aggregate size.
5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
2.13 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.14 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

   1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.
   2. Class B, 1/4 inch (6 mm) for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

   1. Install keyways, reglets, recesses, and the like, for easy removal.
   2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.

2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 VAPOR RETARDERS

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.
3.5 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.

2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.

3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete.
When cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Dowelled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7 WATERSTOPS

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer’s written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of
concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.9 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
1. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated to receive trowel finish.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

a. Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15.

D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

3.12 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer’s written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.13 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer’s written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.14 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect’s approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete. Limit cut depth to 3/4 inch (19 mm). Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete’s durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.15 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

1. The Contractor shall be responsible for contacting the testing and inspection agency and making sure they are there at the appropriate times before the work to be tested starts. The Contractor is also responsible to compensate the testing and inspection agency if they request them to be present for testing and then the work to be tested does not proceed as scheduled or is not ready to be tested.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.

2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mixture placed each day.
   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.

6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

7. Compression Test Specimens: ASTM C 31/C 31M.
   a. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

8. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
   a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
   b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.

14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

D. Measure floor and slab flatness and levelness according to ASTM E 1155 (ASTM E 1155M) within 24 hours of finishing.

END OF SECTION 033000
SECTION 034100 - PRECAST STRUCTURAL CONCRETE

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: All labor, material, equipment, special tools and services required to complete all precast, prestressed structural concrete components for the Parking Structure, as herein specified, and as indicated on the Drawings, including but not limited to:

1. All precast and precast, prestressed concrete components, including structural design, fabrication, delivery and erection.
2. Erection drawings and Production drawings.
4. Fabrication of specified precast concrete components.
5. Handling, storage and protection of precast concrete components.
6. Transportation of precast concrete components to erection site.
7. Design and provide bearing pads, base plates, inserts, grout, clamps, nuts, bolts, storage, protection and other necessary appurtenances, and other hardware items for connections between cast-in-place concrete and precast components and tolerances for the placement of these components.
8. Shop and field welding, including repair of galvanized coatings.
9. Column anchor bolts, including their installation.
10. Compressible filler material between precast components to prevent leakage.
11. Site Cast or Tilt-Up Brick Faced Concrete Panels.
12. Shop/Plant Cast Brick Faced Concrete Panels.

B. Related Sections:

1. Section 033000 "Cast-in-Place Concrete" for placing connection anchors in concrete.
2. Section 055000 "Metal Fabrications" for kickers and other miscellaneous steel shapes.
3. Section 076200 "Sheet Metal Flashing and Trim" for flashing receivers and reglets.
5. Section 079200 "Joint Sealants" for elastomeric joint sealants and sealant backings.
6. Section 081113 "Hollow Metal Doors and Frames" for windows set into architectural precast concrete units.

1.3 DEFINITION

1.4 PERFORMANCE REQUIREMENTS

A. General
1. Precast Components: The manufacturer shall complete the design, including calculations and detailing, for all precast components specified on the Contract Documents. Design shall be based on design criteria and conditions provided on the Drawings and in the Specifications. The manufacturer shall perform the complete design assuring that the manufacturing, transportation, and erection process are compatible with the Contract Documents and Specifications.
2. Erection: The manufacturer's designer shall consider erection of the precast components including calculations and details for guy ing, staying, and shoring all precast components to assure structural stability during the construction stage and before all permanent structural connections are completed. Provide in the erection plan for removal replacement, and relocation of guy ing, bracing, and shoring before all permanent precast structural connections are completed. The manufacturer's registered professional engineer shall retain responsibility for the erection design.
3. Design of precast components and connections shall be prepared under the direct supervision of the manufacturer's professional engineer.

B. Structural Performance: Precast structural concrete units and connections shall withstand design loads indicated within limits and under conditions indicated and in compliance with prevailing building codes
1. Dead Loads: Self Weight + 5 psf over floor area, unless noted otherwise on plans
2. Live Loads: As indicated below, unless noted otherwise on plans.
   a. 50 psf uniform load over parking areas.
   b. 100 psf at stair towers.
5. Vehicular Barrier Load: Per 2013 Kentucky Building Code (applied to perimeter spandrels).
7. Initial handling and erection stress limits.

C. All precast components and connections to non-precast elements shall be designed in accordance with the PCI Design Handbook.

D. All precast components shall have minimum reinforcing in accordance with ACI 318. Analysis of prestressed components shall include a check of the shear reinforcing requirements at 0.1L, 0.2L, 0.25L, and 0.3L, where L is the components length.

E. Modifications: All proposed modifications to the drawings and specifications shall be submitted to the Architect and Engineer with complete design calculations and drawings.

F. Lifting devices shall be designed and cast into the components to ensure safe and efficient handling. Lifting devices shall be so arranged that they do not have to be removed; or, if they must be removed, they shall be arranged so that they are readily removed and any planned depressions in the concrete can be readily filled.

G. Lift loops and erection inserts shall be located so they are not objectionable in the completed structure with a minimum concrete or grout cover as specified in ACI 318 and the PCI Design Handbook. Inserts located in areas exposed to view shall be recessed and patched with non-shrink, non-staining grout to match surrounding concrete, or cover and protect in an approved manner.
1.5 SUBMITTALS

A. Submit Shop Drawings for review prior to manufacture of components. Shop Drawings shall bear the seal of the Professional Engineer responsible for the design of the structural precast concrete components and connections. Indicate the following on the Shop Drawings:
   1. Layout, dimensions, and identification of each member corresponding with the sequence and procedure for erection and installation.
   2. Location, type, and sequence of connections. Indicate all welds with AWS Standard Welding Symbols.
   3. Approximate camber.
   4. Approximate deflection due to dead load of unit.
   5. Approximate deflection due to applied dead loads, live loads, and creep due to total dead load.
   6. Indicate welded connections by AWS standard symbols. Detail loose and cast-in hardware and connections.
   7. Indicate locations, tolerances, and details of anchorage devices to be embedded in or attached to structure or other construction.
   8. Indicate locations and details of brick units, including corner units and special shapes, and joint treatment.

B. Submit manufacturer’s Product Data including:
   1. Mix Designs.
   2. Specified certifications.
   3. Laboratory test reports described below.
   5. For each type of brick indicated.

C. Submit for record design calculations bearing the seal of the Professional Engineer responsible for the design of the structural precast concrete components and connections.

D. Submit Welder Certifications for Shop and Field Welders.

E. Submit qualification data for manufacturer 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.

F. Within two weeks of notice to proceed submit final column and wall loadings (dead, live, wind, seismic) for verification of foundation design.

G. Submit samples of each type of finish indicated on exposed surfaces to illustrate quality of finishes, colors, and textures. Samples to be approximately 12x12x2 inches.
   1. When other faces of precast concrete unit are exposed, include Samples illustrating workmanship, color, and texture of backup concrete as well as facing concrete.
   2. Samples for each brick unit required, showing full range of color and texture expected. Include Sample showing color and texture of joint treatment.
      a. Grout Samples for Initial Selection: Color charts consisting of actual sections of grout showing manufacturer's full range of colors.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed precast structural concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
B. Fabricator Qualifications: A firm that complies with the following requirements and is experienced in manufacturing precast structural concrete units similar to those indicated for the Project and with a record of successful in-service performance and minimum five years documented experience.
   1. Assumes responsibility for engineering precast structural units to comply with performance requirements. This responsibility includes preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
   2. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of precast structural concrete that are similar to those indicated for this Project in material, design, and extent.
   3. Participated in PCI’s Plant Certification program and is designated a PCI certified plant.
   4. Has sufficient production capacity to produce required units without delaying the work.

C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

D. Design Standards: Comply with ACI 318 (ACI 318M) and design recommendations of PCI MNL 120, “PCI Design Handbook - Precast and Prestressed Concrete,” applicable to types of architectural precast concrete units indicated.

E. Quality-Control Standard: For manufacturing procedures and testing requirements, quality-control recommendations, and dimensional tolerances for types of units required, comply with PCI MNL 117, "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products."


G. Regulatory requirements:
   2. Comply with all applicable design standards.

H. Design responsibility:
   1. The responsibility for the design, detailing, erection, and performance of the structural precast concrete parking deck is solely that of the fabricator/erector herein referred to as the Precast Contractor.
   2. The design shall satisfy the performance requirements noted in previously and all other requirements shown on the Drawings, including indicated fire ratings.
   3. The Precast Contractor shall be responsible for the design and inclusion of all required reinforcement, anchorage devices, inserts and connections necessary to meet the performance requirements for handling, erections and final performance of the structure.

I. Product Options: Drawings indicate size, profiles, and dimensional requirements of precast concrete units and are based on the specific types of units indicated. Other fabricators’ precast concrete units complying with requirements may be considered. Refer to Division 1 Section “Substitutions”.

J. Mockups: Before production of architectural precast concrete units, construct full-sized mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup in areas designated by Architect including hollow metal framing, glass, sealants, and architectural precast concrete complete with anchors, connections, flashings, and joint fillers.
a. Do not proceed with remaining work until workmanship and color are approved by Architect.
b. Rebuild mock-up as required to produce acceptable work.
c. Accepted mock-up shall be comparison standard for remaining Work

2. Approved mockups may become part of the completed Work if undamaged at time of Substantial Completion.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents unless such deviations are specifically approved by Architect in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver precast structural concrete units to Project site in such quantities and at such times to ensure continuity of installation. Store units at Project site to prevent cracking, distorting, warping, staining, or other physical damage, and so markings are visible.

B. Store form liner in manufacturer's unopened packaging until ready for installation. Form liner should not have prolonged exposure to direct sunlight that may damage the liner product. Avoid top loading or crushing liners in their packages.

C. Store thin brick in manufacturer's unopened packaging until ready for installation. Protect the brick from extreme heat, over 120 degrees F, until it is installed and cast. Do not expose brick to excessive dust and dirt which may affect the brick's ability to bond to the concrete properly. Keep brick dry, covered and protected from the sun and rain prior to its installation.

D. Blocking and Lateral Support During Erection: Clean and non-staining, without causing harm to exposed surfaces.

E. Protect panels from staining, chipping, or spalling.

F. Lift and support units only at designated lifting and supporting points shown on Shop Drawings.

G. 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.

1.8 SEQUENCING

A. Furnish anchorage items to be embedded in other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.

1.9 COORDINATION

A. Furnish loose connection hardware and anchorage items to be embedded in or attached to other construction before starting that Work. Provide locations, setting diagrams, templates, instructions, and directions, as required, for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fabricators: Subject to compliance with requirements.
2.2 MOLD MATERIALS

A. Molds: Rigid, dimensionally stable, non-absorptive material, warp and buckle free, that will provide continuous and true precast concrete surfaces within fabrication tolerances indicated; nonreactive with concrete and suitable for producing required finishes.

1. Mold-Release Agent: Commercially produced liquid-release agent that will not bond with, stain or adversely affect precast concrete surfaces and will not impair subsequent surface or joint treatments of precast concrete.

B. Form Liners: Units of face design, texture, arrangement, and configuration indicated to match those used for precast concrete design reference sample. Furnish with manufacturer's recommended liquid-release agent that will not bond with, stain, or adversely affect precast concrete surfaces and will not impair subsequent surface or joint treatments of precast concrete.

2.3 REINFORCING MATERIALS

A. Prestressing tendons: Uncoated seven-wire strand in accordance with ASTM A 416, Grade 250 or 270.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

C. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

D. Epoxy-Coated Reinforcing Bars: ASTM A 706, deformed

E. Welded Wire Fabric: ASTM A 185

F. Epoxy-Coated Welded Wire Fabric: ASTM A 884

G. Steel Wire: ASTM A 82.

H. Supports: Suspend reinforcement from back of mold or use bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place according to PCI MNL 116.

2.4 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type III, gray, unless otherwise indicated.

B. Aggregates: Normal weight ASTM C 33.

C. Water: Potable and complying with chemical limits of PCI MNL 116.

D. Chemical Admixtures: Comply with ASTM C494. Calcium chloride, thiocyanates or admixtures which contain more than 0.1 percent chloride ions are not permitted. Chloride content of concrete shall not exceed maximum specified in ACI 318.

E. Plasticizing Admixture: ASTM C 1017

F. Fly Ash: ASTM C 618, Class C or F.
2.5 STEEL CONNECTION MATERIALS

A. Carbon-Steel Shapes and Plates: ASTM A 36/A 36M.

B. Carbon-Steel-Headed Studs: ASTM A 108, AISI 1018 through AISI 1020, cold finished, AWS D1.1/D1.1M, Type A or B, with arc shields and with minimum mechanical properties of PCI MNL 116.

C. Carbon-Steel Plate: ASTM A 283/A 283M.

D. Malleable-Iron Castings: ASTM A 47/A 47M.

E. Carbon-Steel Castings: ASTM A 27/A 27M, Grade 60-30 (Grade 415-205).

F. High-Strength, Low-Alloy Structural Steel: ASTM A 572/A 572M.

G. Carbon-Steel Structural Tubing: ASTM A 500, Grade B.

H. Wrought Carbon-Steel Bars: ASTM A 675/A 675M, Grade 65 (Grade 450).

I. Deformed-Steel Wire or Bar Anchors: ASTM A 496 or ASTM A 706/A 706M.

J. Carbon-Steel Bolts and Studs: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); carbon-steel, hex-head bolts and studs; carbon-steel nuts, ASTM A 563 (ASTM A 563M); and flat, unhardened steel washers, ASTM F 844.

K. High-Strength Bolts and Nuts: ASTM A 325 (ASTM A 325M) or ASTM A 490 (ASTM A 490M), Type 1, heavy hex steel structural bolts; heavy hex carbon-steel nuts, ASTM A 563 (ASTM A 563M); and hardened carbon-steel washers, ASTM F 436 (ASTM F 436M).

L. Zinc-Coated Finish: For exterior steel items, steel in exterior walls, and items indicated for galvanizing, apply zinc coating by hot-dip process according to ASTM A 123/A 123M or ASTM A 153/A 153M electrodeposition according to ASTM B 633, SC 3, Types 1 and 2.

1. For steel shapes, plates, and tubing to be galvanized, limit silicon content of steel to less than 0.03 percent or to between 0.15 and 0.25 percent or limit sum of silicon and 2.5 times phosphorous content to 0.09 percent.

2. Galvanizing Repair Paint: High-zinc-dust-content paint with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035B or SSPC-Paint 20.

M. Welding Electrodes: Comply with AWS standards.

N. Precast Accessories: Provide clips, hangers, plastic or steel shims, and other accessories required to install precast structural concrete units.

2.6 STAINLESS-STEEL CONNECTION MATERIALS

A. Stainless-Steel Plate: ASTM A 666, Type 304, of grade suitable for application.

B. Stainless-Steel Bolts and Studs: ASTM F 593, Alloy 304 or 316, hex-head bolts and studs; stainless-steel nuts; and flat, stainless-steel washers. Lubricate threaded parts of stainless-steel bolts with an antiseize thread lubricant during assembly.
2.7 BEARING PADS

A. Provide one of the following bearing pads for precast structural concrete units as recommended by precast fabricator for application:

1. Elastomeric Pads: AASHTO M 251, plain, vulcanized, 100 percent polychloroprene (neoprene) elastomer, molded to size or cut from a molded sheet, 50 to 70 Shore, Type A durometer hardness, ASTM D 2240; minimum tensile strength \(2250 \text{ psi (15.5 MPa)}\), ASTM D 412.

2. Random-Oriented, Fiber-Reinforced Elastomeric Pads: Preformed, randomly oriented synthetic fibers set in elastomer. 70 to 90 Shore, Type A durometer hardness, ASTM D 2240; capable of supporting a compressive stress of \(3000 \text{ psi (20.7 MPa)}\) with no cracking, splitting, or delaminating in the internal portions of pad. Test 1 specimen for every 200 pads used in Project.

3. Cotton-Duck-Fabric-Reinforced Elastomeric Pads: Preformed, horizontally layered cotton-duck fabric bonded to an elastomer; 80 to 100 Shore, Type A durometer hardness, ASTM D 2240; complying with AASHTO's "AASHTO Load and Resistance Factor Design (LRFD) Bridge Specifications," Division II, Section 18.10.2; or with MIL-C-882E.


2.8 GROUT MATERIALS

A. Sand-Cement Grout: Portland cement, ASTM C 150, Type I, and clean, natural sand, ASTM C 144 or ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, Grade A for drypack and Grades B and C for flowable grout and of consistency suitable for application within a 30-minute working time. (8000 psi minimum)

C. Epoxy-Resin Grout: Two-component, mineral-filled epoxy resin; ASTM C 881/C 881M, of type, grade, and class to suit requirements.

2.9 THIN-BRICK UNITS AND ACCESSORIES

A. Thin-Brick Units: ASTM C 1088, Grade Exterior, Type TBX, and as follows:

1. Acceptable Manufacturer: Innovative Brick Systems, LLC, 11625 Reed Ct., Broomfield, CO 80020. ASD. Telephone Toll Free: (800) 413-4588. Phone: (720) 890-6032. Fax: (720) 890-6038. Web Site: www.mbrick.com. E-mail: info@mbrick.com or approved equal.

2. Face Color and Texture: Where indicated to "match existing," provide thin brick matching color, texture, and face size of existing brick work at GRITS Garage, 222 St Elizabeth St, Owensboro, KY 42301.
a. Metro Thin Brick (Canton, OH), #365 Schoolhouse Red Flashed Smooth – color and texture to be verified by Architect.

3. Face Size: 2-1/4 inches (57 mm) high by 7 5/8 inches (194 mm) long.

4. Special Shapes: Include corners, edge corners, and end edge corners.

5. Trim Units: Matching thin brick.


7. Dimensional Tolerances: measure in accordance with ASTM C67
   a. 1. Thickness: Plus 0 in., minus 1/16 in. (+0, -1.6mm)
   b. 2. Face size: Plus 0 in., minus 1/16 in. for dimensions 8 in. (200mm) or less
   c. Plus 0 in., minus 3/32 in. (+0, -2.4mm) for dimensions greater than
   d. 8 in. (200mm)
   e. 3. Warpage: not more than 1/16 in. (1.6mm) either concave or convex from a
   f. consistent plane
   g. 4. Out of square: Plus or minus 1/16 in. (±1.6mm)
   h. 5. Shape angle: Plus or minus 1 degree from specified angle

8. Properties
   a. Breaking strength: Not less than 250 psi (1.7 MPa) tested in accordance with
      ASTM C67
   b. Cold water absorption: Maximum 6% at 24 hours tested in accordance with ASTM
      C67
   c. Efflorescence: Rated “not effloresced” when tested in accordance with ASTM C67
   d. Freeze thaw resistance:
      1) Uncoated brick: No detectable deterioration (spalling, cracking, or breaking) after 300 cycles tested in accordance with ASTM C666, Method A or B on assembled specimens
      2) Surface coloring: No observable difference in the applied finish when viewed at a distance of 20 ft (6m) after 50 cycles tested in accordance with ASTM C67. In addition, the brick shall undergo ASTM C666 test described above.
   e. Pull-out strength: Not less than 150 psi (1.0 MPa) from base concrete before and after freeze thaw testing tested in accordance with specified modification to ASTM E488.
   f. Chemical resistance: Rated “not affected” when tested with a 10% hydrochloric acid solution in accordance with ASTM C650.

B. Sand-Cement Mortar: Portland cement, ASTM C 150, Type I, and clean, natural sand, ASTM C 144. Mix at ratio of 1 part cement to 4 parts sand, by volume, with minimum water required for placement.

C. Latex-Portland Cement Pointing Grout: ANSI A118.6 and as follows:

   1. Dry-grout mixture, factory prepared, of portland cement, graded aggregate, and dry, redispersible, ethylene-vinyl-acetate additive for mixing with water; uniformly colored.
   2. Commercial portland cement grout, factory prepared, with liquid styrene-butadiene rubber or acrylic-resin latex additive; uniformly colored.
   3. Colors: As selected by Architect from manufacturer's full range.

D. Brick Form Liner Sheets: Versa Liner single use form liner sheets or approved equal with a seamless joint design that provides a realistic coved joint and fully embeds the thin brick into concrete walls for superior bonding, durability and weatherproofing. Each liner is designed with an indexing feature that makes setting up the panel easy and fast. Versa Liner is a thermo form high impact polystyrene recyclable material number 6 PS.

   1. Physical properties:
      a. Thickness 20 MIL.
      b. Weight .142 LBS PER S.F.
      c. Tensile 4080 psi at yield when tested in accordance with ASTM D 636.
d. Izod Impact 3.3 @73 degrees F when tested in accordance with ASTM D 256.
e. Vicat Softening 220 degrees F
f. Color White-primary; color can vary

2. Liner Sheet Size: Liners are provided in 27 inch by 32 inch panels and are manufactured with an EdgeLock quick connect feature for adjacent panels to lock and align efficiently with seamless panel construction.

3. Patterns and Sizes: (Generally available; Custom patterns made on order)
a. Modular, Brick size: 2-1/4 inches by 7-5/8 inches. Sizes do not include overlap dimensions.
   1) Item Number 110.07 “MP” Mushroom Profile - Modular Running Bond Versaliner - field
   2) Item numbers 108.01/106.01/117.01 and others “MP” Mushroom Profile – Modular Running Bond Versaliner – fabricated pieces for 7 5/8” returns, 3 5/8” returns, sills and headers
   3) Item number 125.02 “MP” Mushroom Profile – Modular Soldier Course Versaliner

4. Liner Sheet Indexing: VersaLiner sheets have embossed markings (plus and minus signs) around most perimeters that act as indicators for the molded mortar joints of each sheet. Joints near the minus signs are slightly smaller in order to nest properly underneath the larger joints and provide proper overlapping of each adjoining liner.

5. Liners or other embedding systems that employs individual brick connections leaving visible separation in the molds and subsequent joints will not be considered.

2.10 THIN-BRICK FACINGS

A. Place form-liner templates accurately to provide grid for thin-brick facings. Provide solid backing and supports to maintain stability of liners while placing thin bricks and during concrete placement.

B. Securely place thin-brick units face down into form-liner pockets and place concrete backing mixture.

C. Completely fill joint cavities between thin brick units with sand-cement mortar, and place precast concrete backing mixture while sand-cement mortar is still fluid enough to ensure bond.

D. Mix and install grout according to ANSI A108.10. Completely fill joint cavities between thin brick units with grout, and compress into place without spreading grout onto faces of thin brick units. Remove excess grout immediately to prevent staining of brick.
   1. Tool joints to a slightly concave shape when pointing grout is thumbprint hard.

E. Clean faces and joints of brick facing.

2.11 CONCRETE MIXTURES

A. Prepare design mixtures for each type of precast concrete required.

B. Design mixtures may be prepared by a qualified independent testing agency or by qualified precast plant personnel at precast structural concrete fabricator's option.

C. Limit water-soluble chloride ions to maximum percentage by weight of cement permitted by ACI 318 (ACI 318M) or PCI MNL 116 when tested according to ASTM C 1218/C 1218M.
D. Normal-Weight Concrete Mixtures: Proportion full-depth mixture by either laboratory trial batch or field test data methods according to ACI 211.1, with materials to be used on Project, to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 5000 psi (34.5 MPa).
3. Air-entrainment: 6 percent with a tolerance of plus or minus 1 ½ percent. If less than ¾" nominal maximum aggregate size used, increase air content to 7 +/- percent.
4. Limit use of fly ash to not exceed 20 percent of Portland cement by weight.

E. When included in design mixtures, add other admixtures to concrete mixtures according to manufacturer’s written instructions.

F. Concrete Mix Adjustments: Concrete mix design adjustments may be proposed if characteristics of materials, Project conditions, weather, test results, or other circumstances warrant.

2.12 MOLD FABRICATION

A. Molds: Accurately construct molds, mortar tight, of sufficient strength to withstand pressures due to concrete-placement operations and temperature changes and for prestressing and detensioning operations. Coat contact surfaces of molds with release agent before reinforcement is placed. Avoid contamination of reinforcement and prestressing tendons by release agent.

1. Place form liners accurately to provide finished surface texture indicated. Provide solid backing and supports to maintain stability of liners during concrete placement. Coat form liner with form-release agent.

B. Maintain molds to provide completed precast structural concrete units of shapes, lines, and dimensions indicated, within fabrication tolerances specified.

1. Form joints are not permitted on faces exposed to view in the finished work.
2. Edge and Corner Treatment: Uniformly chamfered.

2.13 FABRICATION

A. Cast-in Anchors, Inserts, Plates, Angles, and Other Anchorage Hardware: Fabricate anchorage hardware with sufficient anchorage and embedment to comply with design requirements. Accurately position for attachment of loose hardware, and secure in place during precasting operations. Locate anchorage hardware where it does not affect position of main reinforcement or concrete placement.

1. Weld-headed studs and deformed bar anchors used for anchorage according to AWS D1.1/D1.1M and AWS C5.4, "Recommended Practices for Stud Welding."

B. Furnish loose hardware items including steel plates, clip angles, seat angles, anchors, dowels, cramps, hangers, and other hardware shapes for securing precast structural concrete units to supporting and adjacent construction.

C. Cast-in reglets, slots, holes, and other accessories in precast structural concrete units as indicated on the Contract Drawings.
D. Cast-in openings larger than 10 inches (250 mm) in any dimension. Do not drill or cut openings or prestressing strand without Architect's approval.

E. Reinforcement: Comply with recommendations in PCI MNL 116 for fabricating, placing, and supporting reinforcement.
   1. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy the bond with concrete. When damage to epoxy-coated reinforcement exceeds limits specified, repair with patching material compatible with coating material and epoxy coat bar ends after cutting.
   2. Accurately position, support, and secure reinforcement against displacement during concrete-placement and consolidation operations. Completely conceal support devices to prevent exposure on finished surfaces.
   3. Place reinforcement to maintain at least 3/4-inch (19-mm) minimum coverage. Increase cover requirements according to ACI 318 (ACI 318M) when units are exposed to corrosive environment or severe exposure conditions. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position while placing concrete. Direct wire tie ends away from finished, exposed concrete surfaces.
   4. Place reinforcing steel and prestressing strand to maintain at least 3/4-inch (19-mm) minimum concrete cover. Increase cover requirements for reinforcing steel to 1-1/2 inches (38 mm) when units are exposed to corrosive environment or severe exposure conditions. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position while placing concrete. Direct wire tie ends away from finished, exposed concrete surfaces.
   5. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh spacing and wire tie laps, where required by design. Offset laps of adjoining widths to prevent continuous laps in either direction.

F. Reinforce precast structural concrete units to resist handling, transportation, and erection stresses.

G. Prestress tendons for precast structural concrete units by either pretensioning or post-tensioning methods. Comply with PCI MNL 116.
   1. Delay detensioning or post-tensioning of precast, prestressed structural concrete units until concrete has reached its indicated minimum design release compressive strength as established by test cylinders cured under same conditions as concrete.
   2. Detension pretensioned tendons either by gradually releasing tensioning jacks or by heat cutting tendons, using a sequence and pattern to prevent shock or unbalanced loading.
   3. If concrete has been heat cured, detension while concrete is still warm and moist to avoid dimensional changes that may cause cracking or undesirable stresses.
   4. Protect strand ends and anchorages with bituminous, zinc-rich, or epoxy paint to avoid corrosion and possible rust spots.

H. Comply with requirements in PCI MNL 116 and in this Section for measuring, mixing, transporting, and placing concrete. After concrete batching, no additional water may be added.

I. Place concrete in a continuous operation to prevent seams or planes of weakness from forming in precast concrete units.

J. Thoroughly consolidate placed concrete by internal and external vibration without dislocating or damaging reinforcement and built-in items, and minimize pour lines, honeycombing, or entrapped air on surfaces. Use equipment and procedures complying with PCI MNL 116.

K. Comply with ACI 306.1 procedures for cold-weather concrete placement.
L. Comply with PCI MNL 116 procedures for hot-weather concrete placement.

M. Identify pickup points of precast structural concrete units and orientation in structure with permanent markings, complying with markings indicated on Shop Drawings. Imprint or permanently mark casting date on each precast structural concrete unit on a surface that will not show in finished structure.

N. Cure concrete, according to requirements in PCI MNL 116, by moisture retention without heat or by accelerated heat curing using low-pressure live steam or radiant heat and moisture. Cure units until compressive strength is high enough to ensure that stripping does not have an effect on performance or appearance of final product.

O. Discard and replace precast structural concrete units that do not comply with requirements, including structural, manufacturing tolerance, and appearance, unless repairs meet requirements in PCI MNL 116 and meet Architect's approval at no expense to the Owner.

2.14 FABRICATION TOLERANCES

A. Fabricate precast structural concrete units straight and true to size and shape with exposed edges and corners precise and true so each finished unit complies with PCI MNL 116 product dimension tolerances.

B. Brick-Faced Precast Structural Concrete Units: Restrict the following misalignments to 2 percent of number of bricks in a unit:

1. Alignment of Mortar Joints:
   a. Jog in Alignment: 1/8 inch (3 mm).
   b. Alignment with Panel Centerline: Plus or minus 1/8 inch (3 mm).

2. Variation in Width of Exposed Mortar Joints: Plus or minus 1/8 inch (3 mm).
3. Tipping of Individual Bricks from the Panel Plane of Exposed Brick Surface: Plus 1/16 inch (1.6 mm); minus 1/4 inch (6 mm) less than or equal to depth of form-liner joint.
4. Exposed Brick Surface Parallel to Primary Control Surface of Panel: Plus 1/4 inch (6 mm); minus 1/8 inch (3 mm).
5. Individual Brick Step in Face from Panel Plane of Exposed Brick Surface: Plus 1/16 inch (1.6 mm); minus 1/4 inch (6 mm) less than or equal to depth of form-liner joint.

2.15 COMMERCIAL FINISHES

A. Standard Finish: Unless noted otherwise provide a normal plant-run finish produced in forms that impart a smooth finish to the concrete. Small surface holes caused by air bubbles, normal color variations, form joint marks, and minor chips and spalls will be tolerated. Major or unsightly imperfections, honeycombs, or structural defects are not permitted. Structural engineer to designate between small surface holes and major or unsightly imperfections.

B. Texture finish: The exterior face of all spandrels, walls, etc. to be cast against form liners attached to the inside face of the forms. The exposed surface shall match the approved sample or mock-up panel.
2.16 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to evaluate precast structural concrete fabricator's quality-control and testing methods.

1. Allow testing agency access to material storage areas, concrete production equipment, concrete placement, and curing facilities. Cooperate with testing agency and provide samples of materials and concrete mixtures as may be requested for additional testing and evaluation.

B. Testing: Test and inspect precast structural concrete according to PCI MNL 116 requirements.

C. Strength of precast structural concrete units will be considered deficient if units fail to comply with ACI 318 (ACI 318M) requirements for concrete strength.

D. If there is evidence that strength of precast concrete units may be deficient or may not comply with ACI 318 (ACI 318M) requirements, employ a qualified testing agency to obtain, prepare, and test cores drilled from hardened concrete to determine compressive strength according to ASTM C 42/C 42M.

1. A minimum of three representative cores will be taken from units of suspect strength, from locations directed by Architect.
2. Cores will be tested in an air-dry condition or, if units will be wet under service conditions, test cores after immersion in water in a wet condition.
3. Strength of concrete for each series of 3 cores will be considered satisfactory if average compressive strength is equal to at least 85 percent of 28-day design compressive strength and no single core is less than 75 percent of 28-day design compressive strength.
4. Test results will be made in writing on same day that tests are performed, with copies to Architect, Contractor, and precast concrete fabricator. Test reports will include the following:
   a. Project identification name and number.
   b. Date when tests were performed.
   c. Name of precast concrete fabricator.
   d. Name of concrete testing agency.
   e. Identification letter, name, and type of precast concrete unit(s) represented by core tests; design compressive strength; type of break; compressive strength at breaks, corrected for length-diameter ratio; and direction of applied load to core in relation to horizontal plane of concrete as placed.

E. Patching: If core test results are satisfactory and precast structural concrete units comply with requirements, clean and dampen core holes and solidly fill with same precast concrete mixture that has no coarse aggregate, and finish to match adjacent precast concrete surfaces.

F. Defective Units: Discard and replace precast structural concrete units that do not comply with requirements, including strength, manufacturing tolerances, and color and texture range. Chipped, spalled, or cracked units may be repaired, subject to Architect's approval. Architect reserves the right to reject precast units that do not match approved samples, sample panels, and mockups.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting structural frame or foundation and conditions for compliance with requirements for installation tolerances, true and level bearing surfaces, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Do not install precast concrete units until supporting, cast-in-place, building structural framing has attained minimum allowable design compressive strength or until supporting steel or other structure is complete.

3.2 INSTALLATION

A. Install clips, hangers, bearing pads, and other accessories required for connecting precast structural concrete units to supporting members and backup materials.

B. Erect precast structural concrete level, plumb, and square within specified allowable tolerances. Provide temporary structural framing, supports, and bracing as required to maintain position, stability, and alignment of units until permanent connection.

1. Install temporary steel or plastic spacing shims or bearing pads as precast structural concrete units are being erected. Tack weld steel shims to each other to prevent shims from separating.

2. Maintain horizontal and vertical joint alignment and uniform joint width as erection progresses.

3. Remove projecting lifting devices and grout fill voids within recessed lifting devices flush with surface of adjacent precast surfaces when recess is exposed.

4. For hollow-core slab voids used as electrical raceways or mechanical ducts, align voids between units and tape butt joint at end of slabs.

C. Connect precast structural concrete units in position by bolting, welding, grouting, or as otherwise indicated on Shop Drawings. Remove temporary shims, wedges, and spacers as soon as practical after connecting and grouting are completed.

1. Do not permit connections to disrupt continuity of roof flashing.

D. Field cutting of precast units is not permitted without approval of the Architect.

E. Fasteners: Do not use drilled or powder-actuated fasteners for attaching accessory items to precast, prestressed concrete units.

F. Welding: Comply with applicable AWS D1.1/D1.1M and AWS D1.4 for welding, welding electrodes, appearance, quality of welds, and methods used in correcting welding work.

1. Protect precast structural concrete units and bearing pads from damage by field welding or cutting operations, and provide noncombustible shields as required.

2. Clean weld-affected steel surfaces with chipping hammer followed by brushing, and reprime damaged painted surfaces.

3. Remove, reweld, or repair incomplete and defective welds.
G. At bolted connections, use lock washers, tack welding, or other approved means to prevent loosening of nuts after final adjustment.
   1. Where slotted connections are used, verify bolt position and tightness. For sliding connections, properly secure bolt but allow bolt to move within connection slot. For friction connections, apply specified bolt torque and check 25 percent of bolts at random by calibrated torque wrench.

H. Grouting: Grout connections and joints and open spaces at keyways, connections, and joints where required or indicated on Shop Drawings. Retain grout in place until hard enough to support itself. Pack spaces with stiff grout material, tamping until voids are completely filled.
   1. Place grout to finish smooth, level, and plumb with adjacent concrete surfaces.
   2. Fill joints completely without seepage to other surfaces.
   3. Trowel top of grout joints on roofs smooth and uniform. Finish transitions between different surface levels not steeper than 1 to 12.
   4. Place grout end cap or dam in voids at ends of hollow-core slabs.
   5. Promptly remove grout material from exposed surfaces before it affects finishes or hardens.
   6. Keep grouted joints damp for not less than 24 hours after initial set.

I. Brick and Form Liners: Where brick is indicated, comply with the following during brick installation:
   1. Maintain environmental records and quality control program during production of tilt-up or precast units. Make records available upon request.
   2. Use rigid forms constructed to maintain precast units uniform in shape, size and finish.
   3. Utilize form liners specified.
   4. Prepare, install, and finish form liners in accordance with current release of manufacturer’s MBrick Technical Design and Installation Guide.
   5. Trim liner sheets as necessary prior to installation into the form.
   6. Mark the side of the form approximately every 2 feet (610 mm) with course reference points for coursing control purposes.
   7. Begin placing liner sheets in the form in accordance with the shop drawings. Note: The plus (+) edge joint secures over the minus (-) edge joint on the adjoining sheet. Place only one tier of sheets prior to placing the bricks, face down, in to the liner. Adjust coursing as needed while installation progresses.
   8. Place Bricks face side down into the liner. Once fully bricked, check panel to ensure all bricks are fully nested and flat in the liner.
   9. Install reinforcement and necessary devices to support reinforcement and proceed with the pour as specified.
  10. Embed reinforcing steel, anchors, inserts plates, angles, and other cast-in items as indicated on Drawings.
  11. Place recessed flashing reglets provided by Section 07800 continuous and straight.
  12. Locate hoisting devices to permit removal after erection.
  13. Cure units to develop concrete quality, and to minimize appearance blemishes including non-uniformity, staining, or surface cracking.
  14. Remove liner sheets by peeling them off the cured panel.
  15. Cleanup: Spray panel with a pressure washer delivering a minimum of 1000 PSI of water pressure and using hot (180 degrees F) water to remove concrete film from placed brick faces. Non-waxed bricks do not require hot water rinse.
  16. Erect units without damage to shape or finish. Replace or repair damaged panels.
  17. Erect members level and plumb within allowable tolerances.
  18. Maintain uniform horizontal and vertical joint, alignment and spacing across construction joints as erection progresses.
  19. When members require adjustment beyond design or tolerance criteria, discontinue affected work; advise Architect/Engineer.
20. Fasten units in place. Perform welding, including tack welds, in accordance with AWS D1.1 and AWS D1.4.
21. Seal perimeter and intermediate joints in accordance with Section 07900.

J.

3.3 ERECTION TOLERANCES
A. Erect precast structural concrete units level, plumb, square, true, and in alignment without exceeding the noncumulative erection tolerances of PCI MNL 135.
B. Minimize variations between adjacent slab members by jacking, loading, or other method recommended by fabricator and approved by Architect.

3.4 FIELD QUALITY CONTROL
A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
   1. Erection of precast structural concrete members.
B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
C. Field welds will be visually inspected and nondestructive tested according to ASTM E 165 or ASTM E 709. High-strength bolted connections will be subject to inspections.
D. Testing agency will report test results promptly and in writing to Contractor, Architect, and Structural Engineer.
E. Repair or remove and replace work where tests and inspections indicate that it does not comply with specified requirements at no expense to the Owner.
F. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
G. Prepare test and inspection reports.

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

3.6 REPAIRS
A. Repair precast structural concrete units if permitted by Architect.
   1. Repairs may be permitted if structural adequacy, serviceability, durability, and appearance of units has not been impaired.
B. Mix patching materials and repair units so cured patches blend with color, texture, and uniformity of adjacent exposed surfaces and show no apparent line of demarcation between original and repaired work, when viewed in typical daylight illumination from a distance of 20 feet (6 m).

C. Prepare and repair damaged galvanized coatings with galvanizing repair paint according to ASTM A 780.

D. Wire brush, clean, and paint damaged prime-painted components with same type of shop primer.

E. Remove and replace damaged precast structural concrete units that cannot be repaired or when repairs do not comply with requirements as determined by Architect.

3.7 CLEANING

A. Clean mortar, plaster, fireproofing, weld slag, and other deleterious material from concrete surfaces and adjacent materials immediately.

B. Clean exposed surfaces of precast concrete units after erection and completion of joint treatment to remove weld marks, other markings, dirt, and stains.
   1. Perform cleaning procedures, if necessary, according to precast concrete fabricator's written recommendations. Clean soiled precast concrete surfaces with detergent and water, using stiff fiber brushes and sponges, and rinse with clean water. Protect other work from staining or damage due to cleaning operations.
   2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes or damage adjacent materials.

END OF SECTION 034100
SECTION 054000 - COLD-FORMED METAL FRAMING

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:
   1. Exterior non-load-bearing wall framing.

1.3 ACTION SUBMITTALS
A. Product Data: For each type of cold-formed steel framing product and accessory.
B. Shop Drawings:
   1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
   2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
C. Delegated-Design Submittal: For cold-formed steel framing.

1.4 QUALITY ASSURANCE
A. Testing Agency Qualifications:Qualified according to ASTM E 329 for testing indicated.
B. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
C. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.5 DELIVERY, STORAGE, AND HANDLING
A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.
PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cold-formed steel framing.

B. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.

1. Design Loads: 25 PSF.
2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
   a. Exterior Non-Load-Bearing Framing: Horizontal deflection of 1/240 of the wall height.
3. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F (67 deg C).
4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
   a. Upward and downward movement of 1/2 inch (13 mm).
5. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

C. Cold-Formed Steel Framing Design Standards:
1. Wall Studs: AISI S211.

D. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

2.2 COLD-FORMED STEEL FRAMING, GENERAL

A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

1. Grade: As required by structural performance.
2. Coating: G60 or equivalent.

2.3 EXTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0538 inch (18 gauge).
2. Flange Width: 1-5/8 inches (41 mm).
3. Section Properties: Minimum yield point of 33,000 psi; ASTM A625, A 579 A611
B. **Steel Track:** Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and same minimum base-metal thickness as steel studs.  
   1. Provide damp proof membrane (minimum 15# felt paper) separation to concrete or masonry underneath track no less than 10mm wider than the selected track width.

C. **Single Deflection Track:** Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure.

### 2.4 ANCHORS, CLIPS, AND FASTENERS

A. **Steel Shapes and Clips:** ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. **Anchor Bolts:** ASTM F 1554, Grade 55, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.

C. **Expansion Anchors:** Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488 conducted by a qualified testing agency.

D. **Power-Actuated Anchors:** Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.

E. **Mechanical Fasteners:** ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.  
   1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

F. **Welding Electrodes:** Comply with AWS standards.

### 2.5 MISCELLANEOUS MATERIALS

A. **Galvanizing Repair Paint:** ASTM A 780.

B. **Cement Grout:** Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

C. **Shims:** Load bearing, high-density multimonomer plastic, and nonleaching.

D. **Sealer Gaskets:** Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Install load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch (6 mm) to ensure a uniform bearing surface on supporting concrete or masonry construction.
   1. Provide damp proof membrane (minimum 15# felt paper) separation to concrete or masonry underneath track no less than 10mm wider than the selected track width.

B. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200 and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
   1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
   1. Cut framing members by sawing or shearing; do not torch cut.
   2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
      a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place,
undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Section 072100 "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

J. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.

B. Fasten both flanges of studs to bottom track unless otherwise indicated. Space studs as follows:

1. Stud Spacing: As indicated.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.

D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.

1. Install single deep-leg deflection tracks and anchor to building structure.

E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Shop Drawings but not more than 48 inches (1220 mm) apart. Fasten at each stud intersection.

1. Bridging:
   a. Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs OR
   b. Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.
3.5 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000
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:
      1. Steel framing and supports for exterior screen wall.
      2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
      3. Elevator hoist beams.
      4. Abrasive metal nosings.
      5. Loose bearing and leveling plates for applications where they are not specified in other Sections.
   B. Related Sections:
      1. Section 033000 "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
      2. Section 034100 "Precast Concrete" for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
      3. Section 055213 "Pipe and Tube Railings."

1.3 PERFORMANCE REQUIREMENTS
   A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
      1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.4 ACTION SUBMITTALS
   A. Product Data: For the following:
      1. Metal nosings and treads.
      2. Paint products.
   B. Shop Drawings: Show fabrication and installation details for metal fabrications.
      1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   C. Samples for Verification: For each type of nosing.
1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified professional engineer.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
3. AWS D1.6, "Structural Welding Code - Stainless Steel."

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages and steel weld plates and angles for casting into concrete. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 FERROUS METALS

A. Steel Plates, Shapes, Angles, and Bars: ASTM A 36/A 36M.

B. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240/A 240M or ASTM A 666, Type 304.

C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.
D. Steel Tubing: ASTM A 500, cold-formed steel tubing.

E. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40) unless otherwise indicated.

F. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.

G. W-Shapes: ASTM A 992/A 992M.

2.3 NONFERROUS METALS


D. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless-steel fasteners for fastening aluminum.

2. Provide stainless-steel fasteners for fastening stainless steel.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

C. Steel Bolts and Nuts: Regular hexagon-head bolts or as indicated on drawings, ASTM A 325, Type 3 (ASTM A 325M, Type 3); with hex nuts, ASTM A 563, Grade C3 (ASTM A 563M, Class 8S3); and, where indicated, flat washers; Alloy Group 1 (A1).

D. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593 (ASTM F 738M); with hex nuts, ASTM F 594 (ASTM F 836M); and, where indicated, flat washers; Alloy Group 1 (A1).

E. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Eyebolts: ASTM A 489.


H. Lag Screws: ASME B18.2.1 (ASME B18.2.3.8M).

I. Wood Screws: Flat head, ASME B18.6.1.


L. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

M. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

N. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.


O. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches (41 by 22 mm) by length indicated with anchor straps or studs not less than 3 inches (75 mm) long at not more than 8 inches (200 mm) o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, as needed for fastening to inserts.

2.5 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

C. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

2. Use universal shop primer only for steel in interior, conditioned environments.

D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

F. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
2.6 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
   1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches (3.2 by 38 mm), with a minimum 6-inch (150-mm) embedment and 2-inch (50-mm) hook, not less than 8 inches (200 mm) from ends and corners of units and 24 inches (600 mm) o.c., unless otherwise indicated.

2.7 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
   1. Fabricate units from slotted channel framing where indicated.
   2. Furnish inserts for units installed after concrete is placed.
C. Fabricate supports for exterior screen wall from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as indicated. Drill or punch bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

D. Fabricate steel girders for wood frame construction from continuous steel shapes of sizes indicated.
   1. Provide bearing plates welded to beams where indicated.
   2. Drill or punch girders and plates for field-bolted connections where indicated.
   3. Where wood nailers are attached to girders with bolts or lag screws, drill or punch holes at 24 inches (600 mm) o.c.

E. Fabricate steel pipe columns for supporting wood frame construction from steel pipe with steel baseplates and top plates as indicated. Drill or punch baseplates and top plates for anchor and connection bolts and weld to pipe with fillet welds all around. Make welds the same size as pipe wall thickness unless otherwise indicated.
   1. Unless otherwise indicated, fabricate from Schedule 40 steel pipe.
   2. Unless otherwise indicated, provide 1/2-inch (12.7-mm) baseplates with four 5/8-inch (16-mm) anchor bolts and 1/4-inch (6.4-mm) top plates.

F. Galvanize miscellaneous framing and supports where indicated.

G. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.8 ABRASIVE METAL NOSINGS

A. Cast-Metal Units: Cast aluminum alloy, with an integral-abrasive, as-cast finish consisting of aluminum oxide, silicon carbide, or a combination of both. Fabricate units in lengths necessary to accurately fit openings or conditions.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. American Safety Tread Co., Inc.
      b. Balco Inc.
      c. Barry Pattern & Foundry Co., Inc.
      d. Granite State Casting Co.
      e. Safe-T-Metal Company, Inc.
      f. Wooster Products Inc.

   2. Nosings: Cross-hatched units, 2 inches (100 mm) wide with 1-inch (25-mm) lip, for casting into concrete steps. Color to be visually contrasting to remainder of tread, color to be selected by Architect from manufacturer’s full range.

B. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.

C. Apply bituminous paint to concealed surfaces of cast-metal units.
2.9 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.10 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
   1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
   1. Shop prime with universal shop primer unless zinc-rich primer is indicated.

C. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
   4. Other Items: SSPC-SP 3, "Power Tool Cleaning."

D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
   1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.11 ALUMINUM FINISHES

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

B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

C. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
   1. Cast Aluminum: Heavy coat of bituminous paint.
   2. Extruded Aluminum: Two coats of clear lacquer.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for operable partitions securely to and rigidly brace from building structure.

C. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.
   1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.

D. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.
1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

3.3 INSTALLING NOSINGS, TREADS, AND THRESHOLDS

A. Center nosings on tread widths unless otherwise indicated.

B. For nosings embedded in concrete steps or curbs, align nosings flush with riser faces and level with tread surfaces.

C. Seal thresholds exposed to exterior with elastomeric sealant complying with Section 079200 "Joint Sealants" to provide a watertight installation.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000
SECTION 055213 – PIPE AND TUBE METAL RAILINGS

PART 1  GENERAL

1.01 SECTION INCLUDES

A. Pre-engineered and ASTM tested railing system and guardrail assemblies.

1.02 RELATED REQUIREMENTS

A. Section 033000 “Cast-in-Place Concrete” for anchoring railings.
B. Section 034100 "Precast Structural Concrete" for anchoring railings.
C. Section 061000 "Rough Carpentry" for wood blocking for anchoring railings.

1.03 REFERENCE STANDARDS

A. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate railing system elevations and sections, details of profile, dimensions, sizes, connection attachments, anchorage, size and type of fasteners, and accessories. Indicate anchor and joint locations, brazed connections, transitions, and terminations.
C. Samples: Provide full size section of railing design for review by Architect. Provide finish samples for selection from manufacturer's standard range.
D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
E. Testing- Railing manufacturer must submit ASTM E 894 and ASTM E 935 test reports completed prior to bid. PE calculations and/or a PE stamp will not meet this requirement. Test must be for entire system. Testing of parts or pieces does not meet this test.
F. Quality Assurance: The railing manufacturer must pre-engineer, test, fabricate rail and manufacturer castings all in-house and as a single source.
G. Railings shall be manufactured and fabricated within a 250 mile radius of job site.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver railing materials in factory provided protective coverings and packaging.
B. Protect railing materials against damage during transit, delivery, storage, and installation at site.
C. Inspect railing materials upon delivery for damage. Repair damage to be indistinguishable from undamaged areas; if damage cannot be repaired to be indistinguishable from undamaged parts and finishes, replace damaged items.
D. Prior to installation, store materials and components under cover, in a dry location.

1.06 WARRANTY

A. Warranty: Manufacturer's standard one year warranty against defects in materials, fabrication, finishes, and installation commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. All Decorative Metal Railings shall be provided as a single source by one of the following:

1. Superior Aluminum, basis of design. (502) 228-5828. 9100 Series.
2. Big D.
3. HDI.
5. P&P Artec.
6. Other bidders must be approved by addendum. No verbal approvals will be given.

2.02 RAILING SYSTEMS

A. Railings - General: Factory- or shop-fabricated in design indicated, to suit specific project conditions, and for proper connection to building structure, and in largest practical sizes for delivery to site.

1. Design Criteria: Design and fabricate railings and anchorages to resist the following loads without failure, damage, or permanent set; loads do not need to be applied simultaneously.
   a. Lateral Force: 75 lb (333 N) minimum, at any point, when tested in accordance with ASTM E 935.
   b. Distributed Load: 50 pounds per foot (0.73 kN per m) minimum, applied in any direction at the top of the handrail, when tested in accordance with ASTM E 935.
   c. Concentrated Loads on Intermediate Rails: 50 pounds per square ft (0.22 per sq m), minimum.
   d. Concentrated Load: 200 pounds (888 N) minimum, applied in any direction at any point along the handrail system, when tested in accordance with ASTM E 935.
2. Assembly: Join lengths, seal open ends, and conceal exposed mounting bolts and nuts using slip-on non-weld mechanical fittings, flanges, escutcheons, and wall brackets.
4. Field Connections: Provide sleeves to accommodate site assembly and installation.
5. Mechanical Joints: Make exposed joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish. Welded aluminum joints will not be accepted.
   a. Ease exposed edges to small uniform radius.

2.03 MATERIALS

A. Aluminum components:
   1. Per ASTM standards.
   2. Aluminum Tubing: 0.125 inch, 1-1/2 inch (38 mm) diameter.
   3. Finish: Clear anodized or architect's selection of standard painted color.

2.04 ACCESSORIES

A. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.

B. Anchors and Fasteners: Provide anchors and other materials as required to attach to structure, made of of type, grade, and class required and of suitable materials for anchoring railings to other types of construction; where exposed fasteners are unavoidable provide flush
countersunk fasteners.
1. For anchorage to cast-in-place concrete, provide inserts to be cast into concrete for bolting anchors.
2. For anchorage to masonry, provide brackets to be embedded in masonry for bolting anchors.
3. For anchorage to stud walls, provide backing plates for bolting anchors.
4. Exposed Fasteners: No exposed bolts or screws.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that substrate and site conditions are acceptable and ready to receive work.
B. Verify field dimensions of locations and areas to receive work.
C. Notify Architect immediately of conditions that would prevent satisfactory installation.
D. Do not proceed with work until detrimental conditions have been corrected.
E. Furnish components to be installed in other work to installer of that other work, including but not limited to blocking, sleeves, inserts, anchor bolts, embedded plates and supports for attachment of anchors.

3.02 PREPARATION
A. Review installation drawings before beginning installation. Coordinate diagrams, templates, instructions and directions for installation of anchorages and fasteners.
B. Clean surfaces to receive units. Remove materials and substances detrimental to the installation.

3.03 INSTALLATION
A. Comply with manufacturer's drawings and written instructions.
B. Install components plumb and level, accurately fitted, free from distortion or defects and with tight joints, except where necessary for expansion.
C. Anchor securely to structure.
D. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
E. Isolate dissimilar materials with bituminous coating, bushings, grommets or washers to prevent electrolytic corrosion.

3.04 TOLERANCES
A. Maximum Variation From Plumb: 1/4 inch (6 mm) per floor level, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch (6 mm).
C. Maximum Out-of-Position: 1/4 inch (6 mm).

3.05 CLEANING
A. Remove protective film from exposed metal surfaces.
B. Metal: Clean exposed metal finishes with potable water and mild detergent, in accordance with manufacturer recommendations; do not use abrasive materials or chemicals, detergents or other substances that may damage the material or finish.
C. Glass and Glazing: Clean glazing surfaces; remove excess glazing sealant compounds, dirt, and other substances.

3.06 PROTECTION
A. Protect installed components and finishes from damage after installation.

B. Repair damage to exposed finishes to be indistinguishable from undamaged areas.
   1. If damage to finishes and components cannot be repaired to be indistinguishable from
      undamaged finishes and components, replace damaged items.

END OF SECTION 057300
SECTION 061000 - ROUGH CARPENTRY

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:
1. Wood blocking nailers.
2. Wood preservative-treated lumber
3. Fire-retardant treated lumber
4. Plywood backing panels.

1.3 DEFINITIONS

A. Exposed Framing: Framing not concealed by other construction.

B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.

C. Lumber grading agencies, and the abbreviations used to reference them, include the following:
   2. NLGA: National Lumber Grades Authority.
   3. RIS: Redwood Inspection Service.
   5. WCLIB: West Coast Lumber Inspection Bureau.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.
PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded 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.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

B. Application: Treat all rough carpentry unless otherwise indicated in the drawings.

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, and similar concealed members in contact with masonry or concrete.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying 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 beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.

2. 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.

3. 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 a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
2.4 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.
5. Furring.

B. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber of any species and the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
6. Western woods; WCLIB or WWPA.
7. Northern species; NLGA.
8. Eastern softwoods; NeLMA.

C. For utility shelving, provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Premium or No. 2 Common (Sterling) grade; NeLMA, NLGA, WCLIB, or WWPA.
2. Mixed southern pine; No. 2 grade; SPIB.
3. Hem-fir or hem-fir (north); Select Merchantable or No. 1 Common grade; NLGA, WCLIB, or WWPA.
4. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.

D. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine; No. 2 grade; SPIB.
2. Hem-fir or hem-fir (north); Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
4. Eastern softwoods; No. 2 Common grade; NeLMA.
5. Northern species; No. 2 Common grade; NLGA.
6. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

E. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

F. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
G. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: DOC PS 1, Exterior, AC, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that 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 with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.


D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1.

F. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.


2.7 MISCELLANEOUS MATERIALS

A. Water-Repellent Preservative: NWWD-tatested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
B. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

C. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
   1. Use inorganic boron for items that are continuously protected from liquid water.
   2. Use copper naphthenate for items not continuously protected from liquid water.

D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
   1. NES NER-272 for power-driven fasteners.
   3. 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.

3.2 WOOD GROUND, BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 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.

END OF SECTION 061000
SECTION 061600 - SHEATHING

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 the following:

1. Wall sheathing.

1.3 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
1. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
2. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.


1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack plywood and other panels flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WALL SHEATHING

A. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/1177M.
1. **Products:** Subject to compliance with requirements, provide one of the following:
   a. CertainTeed Corporation; GlasRoc.
   b. G-P Gypsum Corporation; Dens-Glass Gold.
   c. National Gypsum Company; Gold Bond e(2)XP.
   d. Temple-Inland Inc.; GreenGlass
   e. United States Gypsum Co.; Securock.

2. Type and Thickness: Type X, 5/8 inch thick.

2.2 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

2.3 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sheathing Tape for Glass-Mat Gypsum Sheathing Board: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads/inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing board and with a history of successful in-service use.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction, unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:
   1. NES NER-272 for power-driven fasteners.
   2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

D. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.
3.2 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.
   1. Fasten gypsum sheathing to metal framing with screws.
   2. Install boards with a 3/8-inch gap where non-load-bearing construction abuts structural elements.
   3. Install boards with a 1/4-inch gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing boards but do not cut into facing.

C. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent boards without forcing. Abut ends of boards over centers of studs, and stagger end joints of adjacent boards not less than one stud spacing. Attach boards at perimeter and within field of board to each steel stud.
   1. Space fasteners approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of boards.

D. Vertical Installation: Install board vertical edges centered over studs. Abut ends and edges of each board with those of adjacent boards. Attach boards at perimeter and within field of board to each stud.
   1. Space fasteners approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of boards.

3.3 SHEATHING JOINT-AND-PENETRATION TREATMENT

A. Seal sheathing joints according to sheathing manufacturer's written instructions.
   1. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing board joints, and apply and trowel silicone emulsion sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

END OF SECTION 061600
SECTION 071113 - BITUMINOUS DAMP PROOFING

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:
      1. Dampproofing for foundation walls.
      2. Protection Boards

1.3 ACTION SUBMITTALS
   A. Product Data: For each type of product.

1.4 FIELD CONDITIONS
   A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit dampproofing to be performed according to manufacturers’ written instructions.
   B. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has cured.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL
   A. Source Limitations: Obtain primary dampproofing materials and primers from single source from single manufacturer. Provide protection course and auxiliary materials recommended in writing by manufacturer of primary materials.
   B. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction unless otherwise required.

2.2 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING
   A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
      1. Euclid Chemical Company (The); an RPM company. Dehydratine 95
      2. Karnak Corporation.
2.3 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended in writing by dampproofing manufacturer for intended use and compatible with bituminous dampproofing.

B. Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended in writing by manufacturer.

C. Patching Compound: Epoxy or latex-modified repair mortar of type recommended in writing by dampproofing manufacturer.

D. Protection Board: Rigid insulation

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions with Applicator present, for compliance with requirements for surface smoothness, surface moisture, and other conditions affecting performance of bituminous dampproofing work.

1. Test for surface moisture according to ASTM D 4263.

B. Proceed with application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Mask or otherwise protect adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.

B. Clean substrates of projections and substances detrimental to the dampproofing work; fill voids, seal joints, and remove bond breakers if any, as recommended in writing by prime material manufacturer.

C. Apply patching compound to patch and fill tie holes, honeycombs, reveals, and other imperfections.

3.3 APPLICATION, GENERAL

A. Comply with manufacturer’s written instructions for dampproofing application, cure time between coats, and drying time before backfilling unless more stringent requirements are indicated.

1. Apply dampproofing to provide continuous plane of protection.

2. Apply additional coats if recommended in writing by manufacturer or to achieve a smooth surface and uninterrupted coverage.

B. Where dampproofing footings and foundation walls, apply from finished-grade line to top of footing; extend over top of footing and down a minimum of 6 inches over outside face of footing.

1. Extend dampproofing 12 inches onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.

2. Install flashings and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where shown as "reinforced," by embedding an
8-inch- wide strip of asphalt-coated glass fabric in a heavy coat of dampproofing. Dampproofing coat for embedding fabric is in addition to other coats required.

C. Where dampproofing exterior face of inner wythe of exterior masonry cavity walls, lap dampproofing at least 1/4 inch onto flashing, masonry reinforcement, veneer ties, and other items that penetrate inner wythe.

3.4 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

A. Foundation Walls: Apply two brush or spray coats at not less than 1.5 gal./100 sq. ft. for first coat and 1 gal./100 sq. ft. for second coat.

3.5 INSTALLATION OF PROTECTION COURSE

A. Where indicated, install protection course over completed-and-cured dampproofing. Comply with dampproofing-material and protection-course manufacturers’ written instructions for attaching protection course.

1. Support protection course over cured coating with spot application of adhesive type recommended in writing by protection-board manufacturer.
2. Install protection course on same day of installation of dampproofing (while coating is tacky) to ensure adhesion.

3.6 CLEANING

A. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 071113
SECTION 072100 - THERMAL INSULATION

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:
   1. Glass-fiber blanket insulation.
   2. Perimeter insulation under slabs at grade.
B. Related Sections:
   1. Section 075423 "Thermoplastic Polyolefin (TPO) Roofing" for roof insulation.

1.3 ACTION SUBMITTALS
A. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS
A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

1.5 QUALITY ASSURANCE
A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.6 DELIVERY, STORAGE, AND HANDLING
A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
B. Protect foam-plastic board insulation as follows:
   1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
   2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site before installation time.
   3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.
PART 2 - PRODUCTS

2.1 FOAM-PLASTIC BOARD INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C 578, of type and minimum compressive strength indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
   a. Dow Chemical Company (The).
   b. Owens Corning.
   c. Pactiv Building Products. Type IV, 25 psi (173 kPa).

2. Type IV, 25 psi (173 kPa).

B. Unfaced Wall Insulation Drainage Panels: Extruded-polystyrene board insulation complying with ASTM C 578, Type IV, 25-psi (173-kPa) minimum compressive strength; unfaced; fabricated with shiplap or channel edges and with one side having grooved drainage channels.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. DiversiFoam Products.
   b. Dow Chemical Company (The).
   c. Pactiv Building Products.

2.2 GLASS-FIBER BLANKET INSULATION

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

1. CertainTeed Corporation.
2. Guardian Building Products, Inc.
5. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

2.3 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.

1. Products: Subject to compliance with requirements, provide one of the following or approved equal:
   a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
   b. Gemco; Spindle Type.
2. **Plate:** Perforated, galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square.

3. **Spindle:** Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation indicated.

B. **Anchor Adhesive:** Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

1. **Products:** Subject to compliance with requirements, provide one of the following or approved equal:
   a. AGM Industries, Inc.; TACTOO Adhesive.
   b. Gemco; Tuff Bond Hanger Adhesive.

**PART 3 - EXECUTION**

3.1 **PREPARATION**

A. Clean substrates of substances that are harmful to insulation or that interfere with insulation attachment.

3.2 **INSTALLATION, GENERAL**

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 **INSTALLATION OF BELOW-GRADE INSULATION**

A. On vertical surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

1. If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) below exterior grade line or to frost line depth (whichever dimension is deepest).

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

1. If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) in from exterior walls.
3.4 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. 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. Glass-Fiber or Mineral-Wool Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.

C. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Loose-Fill Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).

3.5 PROTECTION

A. 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 is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100
SECTION 072600 – UNDER SLAB VAPOR RETARDER

PART 1 – GENERAL
1.1 SUMMARY

A. Products supplied under this section:
1. Vapor Barrier, seam tape, and mastic for installation under concrete slabs.

B. Related sections:
1. Section 03 Cast-in-Place Concrete

1.2 REFERENCES
A. American Society for Testing and Materials (ASTM):
1. ASTM E 1745-09 Standard Specification for Plastic Water Vapor Barriers Used in Contact with Soil or Granular Fill Under Concrete Slabs.
5. ASTM E 1643-09 Selection, Design, Installation, and Inspection of Water Vapor Barriers Used in Contact with Earth or Granular Fill Under Concrete Slabs.

B. American Concrete Institute (ACI):
1. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

1.3 SUBMITTALS
A. Quality control/assurance:
1. Summary of test results as per paragraph 8.3 of ASTM E 1745.
2. Manufacturer’s samples, literature.
3. Manufacturer’s installation instructions for placement, seaming and penetration repair instructions.

PART 2 – PRODUCTS
2.1 MATERIALS
A. Vapor barrier must have all of the following qualities:
1. Permeance as tested before and after mandatory conditioning (ASTM E 1745 Section 7.1 and subparagraphs 7.1.1 - 7.1.5): less than 0.01 Perms [grains/(ft² · hr · inHg)].
2. Other performance criteria:
a. Strength: ASTM E 1745 Class A.

B. Provide one of the following Vapor barrier products:
1. Stego Industries, LLC; Stego Wrap, 15 mil Class A
2. Carlisle Coatings & Waterproofing, Inc.; Blackline 400
3. Fortifiber Corporation; Moistop Ultra 15
4. Grace Construction Products, W. R. Grace & Company; Florprufe 120
5. Insulation Solutions, Inc; Viper Vaporcheck 16
6. Raven Industries, Inc.; Vapor Block 15
7. W. R. Meadows, Inc.; Perminator 15 mil

2.2 ACCESSORIES
A. Vapor Retarding Seam tape must have the following qualities:

1. Water Vapor Transmission Rate less than or equal to 0.3 perms as tested by ASTM E96

B. Vapor Proofing Mastic must have the following qualities:

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1. Water Vapor Transmission Rate less than or equal to 0.3 perms as tested by ASTM E96.
C. Pipe Boots must be constructed from vapor barrier material, pressure sensitive tape and/or mastic per vapor barrier system manufacturer’s instructions.

PART 3 – EXECUTION
3.1 PREPARATION
A. Ensure that subsoil is approved by Engineer or Special Inspector.
1. Level and compact base material.

3.2 INSTALLATION
A. Install vapor barrier in accordance with manufacturer’s instructions and ASTM E 1643.
1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement.
2. Lap vapor barrier over footings and/or seal to foundation walls.
3. Overlap joints 6 inches and seal with manufacturer’s tape.
4. Seal all penetrations (including pipes) per manufacturer’s instructions.
5. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
6. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all sides with tape.

END OF SECTION 072600
SECTION 072720 - FLUID-APPLIED MEMBRANE AIR AND MOISTURE BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
1. 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. Fluid applied vapor retarding systems.

1.3 PERFORMANCE REQUIREMENTS
A. General: Air and moisture barrier shall be capable of performing as a continuous vapor retarding air barrier. Air barrier shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

1.4 SUBMITTALS
A. Product Data: For each type of product indicated
B. Product certificates.
C. Qualification data.
D. Product test reports.

1.5 QUALITY ASSURANCE
A. Applicator Qualifications: A firm experienced in applying air barrier materials 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.

PART 2 - PRODUCTS

2.1 FLUID-APPLIED MEMBRANE AIR AND MOISTURE BARRIER
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide:
   a. Synthetic Polymer Membrane:
   1) Aquafin Vaportight Coat - SG3 Aquafin Inc. 505 Blue Bell Rd. #160; Elkton;
      Md. 21921 1-866 278 2346 email info@aquafin.net
   3) Henry Company; Air-Bloc 32.
   4) Rubber Polymer Corporation, Inc.; Rub-R-Wall Airtight.
   5) Or approved equal.
3. Physical and Performance Properties:
   a. Membrane Vapor Permeance: Not to exceed 0.5 perm (5.8 ng/Pa x s x sq. m)
      ASTM E 96.

2.2 MATERIALS

A. Moisture Vapor Emission Reduction Control System: One-part system consisting of a
two-component, 100% solids, solvent free, moisture tolerant, high density, low odor, chemically
enhanced epoxy based product which must reduce vapor emissions (MVER) to 3 lbs/24
hrs*1000 SF or less and be compatible with floor finishes and adhesives approved by the
manufacturer. Characteristics:
   1. Product: VAPORTIGHT COAT®-SG3
   2. Component-A and B: Precise blend of clear and yellowish liquid
   3. VOC content: 0
   4. Bond/Adhesion: (ASTM D-4541) >220 psi (>1.5 Mpa) at 28 day old concrete
   5. Permeance: (ASTM E-96) <0.5 perm (<3.1E^-08 grams/Pa*s*m²)
   6. Alkaline Resistance: (ASTM D-1308) up to pH 14
   7. Vapor Reduction: (ASTM E-96) up to 97%
   8. Cured for installation of flooring: 12 hrs at 73 deg F (23 deg C)
   9. pH on cured surface: 7

2.3 AUXILIARY MATERIALS

B. General: Auxiliary materials recommended by air barrier manufacturer for intended use and
compatible with air barrier membrane. Liquid-type auxiliary materials shall comply with VOC
limits of authorities having jurisdiction. Both types of liquid primer in paragraph below may be
used on concrete, masonry, gypsum and wood-based sheathings, metal, and painted
substrates.

C. Joint Sealant: ASTM C 920, single-component, neutral-curing silicone; Class 100/50 (low-
modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates
indicated, Use O. Comply with Division 7 Section “Joint Sealants.”

PART 3 - EXECUTION

3.1 JOINT TREATMENT

A. Concrete and Masonry: Prepare, treat, rout, and fill joints and cracks in substrate according to
ASTM C 1193 and air barrier manufacturer's written instructions.

3.2 AIR AND MOISTURE BARRIER MEMBRANE INSTALLATION

A. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions.
   Provide clean, dust-free, and dry substrate for air barrier application.

B. Apply air barrier membrane within manufacturer's recommended application temperature
   ranges.

C. Apply a continuous unbroken air barrier to substrates according to the following minimum
   thickness.
   1. Vapor-Retarding Membrane Air Barrier: Apply as per manufacturers directions.
D. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

3.3 PROTECTION

A. Protect air and moisture barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
   1. Protect air and moisture barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace air barrier exposed for more than 30 days.

B. Clean spills, stains and soiling from construction that would be exposed in completed work using cleaning agents and procedures recommended by manufacturer of effected construction.

C. Remove masking materials after installation.

END OF SECTION
SECTION 074600- FIBER CEMENT SIDING

PART 1 GENERAL

1.1 SECTION INCLUDES

Fiber cement siding panels and accessories.

1.2 SUBMITTALS

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.

Shop Drawings: Provide detailed drawings of atypical non-standard applications of cementitious siding materials which are outside the scope of the standard details and specifications provided by the manufacturer.

1.3 QUALITY ASSURANCE

Installer Qualifications: Minimum of 2 years experience with installation of similar products.

1.4 DELIVERY, STORAGE, AND HANDLING

Store products in manufacturer's unopened packaging until ready for installation.

Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing.

Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.5 PROJECT CONDITIONS

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.

1.6 WARRANTY

Product Warranty: Limited product warranty against manufacturing defects. Warranty specified is based on James Hardie Building Products fiber cement siding. Alternate fiber cement siding products are acceptable provided that they meet or exceed the standards and warranty described in this product specification.
1. Hardieplank lap and Hardipanel vertical siding for 50 years.
2. Hardie Shingleside for 30 years.
3. HardieTrim for 10 years.

Finish Warranty: Limited product warranty against manufacturing finish defects.
4. When used for its intended purpose, properly installed and maintained according to Hardie's published installation instructions, James Hardie's ColorPlus finish with ColorPlus Technology, for a period of 15 years from the date of purchase: will not peel; will not crack; and will not chip.

Workmanship Warranty: Application limited warranty for 2 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Product: Subject to compliance with requirements, provide HardiePanel vertical siding or comparable product by one of the following:
   1. Cemplank.
   2. CertainTeed Corp.

B. Requests for approval of equal substitutions will be considered in accordance with provisions of Section 016000. All requests for substitution must be submitted to Architect prior to bid. Architect must provide written approval of product substitution via addendum for inclusion in project.

2.2 SIDING

Code Compliance Requirement for Materials:
   1. National Evaluation Report No. NER 405 (BOCA, ICBO, SBCCI)
   2. City of Los Angeles, Research Report No. 24862
   3. Metro Dade County, Florida Acceptance No. 07-0148, 04
   4. US Department of Housing and Urban Development Materials Release 1263d
   5. California DSA PA-019.
   6. City of New York M EA 223-93-M.
   7. Non-asbestos fiber-cement siding where required to be non-combustible shall be tested in accordance with ASTM E136.

Vertical Siding:
   8. Type: Smooth Vertical siding panel 4 feet by 10 feet (1219 mm by 3048 mm).

Trim: Hardietrim Fascia and Moulding as manufactured by James Hardie Building Products, Inc. or approved equal.

2.3 FASTENERS

Metal Framing:
   1. Metal framing: 1-1/4 inches (32 mm) No. 8-18 by 0.375 inch (9.5 mm) head self-drilling, corrosion resistant S-12 ribbed buglehead screws.

2.4 FINISHES

Factory Primer: Provide factory applied universal primer.
   1. Primer: PrimePlus by James Hardie or approved equal
   2. Topcoat: per manufacturer’s specifications
3.1 EXAMINATION

Do not begin installation until substrates have been properly prepared.

If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

Minimum 20 gauge 3-5/8 inch (92 mm) C-Stud 16 inches maximum on center or 16 gauge 3-5/8 inches (92 mm) C-Stud 24 inches (610 mm) maximum on center metal framing complying with local building codes, including the use of water-resistive barriers and/or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.

1. Install water-resistive barriers and claddings to dry surfaces.
2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
3. Protect siding from other trades.

3.2 PREPARATION

Clean surfaces thoroughly prior to installation.

Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION - HARDIEPANEL SIDING

Install materials in strict accordance with manufacturer's installation instructions.

Block framing between studs where Hardiepanel siding horizontal joints occur.

Place fasteners no closer than 3/8 inch (9.5 mm) from panel edges and 2 inches (51 mm) from panel corners.

Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.

Maintain clearance between siding and adjacent finished grade.

Specific framing and fastener requirements refer to Tables 2 and 3 in National Evaluation Service Report No. NER-405.

3.4 INSTALLATION - HARDIETRIM FASCIA AND MOULDING

Install materials in strict accordance with manufacturer's installation instructions. Install flashing around all wall openings.

Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate minimum 3/4 inch (19 mm) or full thickness of sheathing. Additional fasteners may be required to ensure adequate security.
Place fasteners no closer than 3/4 inch (19 mm) and no further than 2 inches (51 mm) from side edge of trim board and no closer than 1 inch (25 mm) from end. Fasten maximum 16 inches (406 mm) on center.

Maintain clearance between trim and adjacent finished grade.

Trim inside corner with single board.

Outside Corner Board: For 3/4 inch (19 mm) trim only. Install single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten Hardietrim board to Hardietrim board.

Allow 1/8 inch gap between trim and siding.

Seal gap with high quality, paint-able caulk.

Shim frieze board as required to align with corner trim.

Install Hardietrim fascia over structural subfascia.

Overlay siding with Hardietrim moulding at windows, doors and inside corners.

Fasten through overlapping boards. Do not nail between lap joints.

Overlay siding with single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten Hardietrim boards to Hardietrim boards.

Shim frieze board as required to align with corner trim.

Install Hardietrim fascia over structural subfascia.

3.5 FINISHING

Finish unprimed siding with a minimum one coat high quality, alkali resistant primer and one coat of either, 100 percent acrylic or latex or oil based, exterior grade topcoats or two coats high quality alkali resistant 100 percent acrylic or latex, exterior grade topcoat within 90 days of installation. Follow paint manufacturer’s written product recommendation and written application instructions.

Finish factory primed siding with a minimum of one coat of high quality 100 percent acrylic or latex or oil based exterior grade paint within 180 days of installation. Follow paint manufacturer’s written product recommendation and written application instructions. Color to be selected by Architect from manufacturer’s full range.

3.6 PROTECTION

Protect installed products until completion of project.

Touch-up, repair or replace damaged products before Substantial Completion.
SECTION 075423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

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:
   1. Adhered TPO membrane roofing system.
   2. Roof insulation.

B. Related Sections:
   1. Section 061000 "Rough Carpentry for wood nailers, curbs, and blocking.
   2. Section 076200 "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.

1.3 DEFINITIONS

A. TPO: Thermoplastic polyolefin.

B. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.

D. FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals markings.
1. Fire/Windstorm Classification: 1A-120.
2. Hail Resistance: MH.

E. Energy Performance: Provide roofing system with initial solar reflectance not less than 0.70 and emissivity not less than 0.75 when tested according to CRRC-1.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
   1. Base flashings and membrane terminations.
   2. Tapered insulation, including slopes.
   3. Roof plan showing orientation of steel roof deck and orientation of membrane roofing and fastening spacings and patterns for mechanically fastened membrane roofing.
   4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Samples for Verification: For the following products:
   1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
   2. Roof insulation.
   3. Walkway pads or rolls.
   4. Metal termination bars.
   5. Battens.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and manufacturer.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
   1. Submit evidence of compliance with performance requirements.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

D. Field quality-control reports.

E. Warranties: Sample of special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for membrane roofing system identical to that used for this Project.
B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

C. Source Limitations: Obtain components including roof insulation and fasteners for membrane roofing system from same manufacturer as membrane roofing.

D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

E. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

F. Preinstallation Roofing Conference: Conduct conference at Project site.
   1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
   2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
   3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
   5. Review structural loading limitations of roof deck during and after roofing.
   6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
   7. Review governing regulations and requirements for insurance and certificates if applicable.
   8. Review temporary protection requirements for roofing system during and after installation.
   9. Review roof observation and repair procedures after roofing installation.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.
1.10  PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.11  WARRANTY

A. Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, cover boards, substrate board, roofing accessories, and other components of membrane roofing system.

2. Warranty Period: 20 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1  TPO MEMBRANE ROOFING


1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following or approved equal:

   a. Carlisle SynTec Incorporated.
   b. Firestone Building Products Company.
   c. GAF Materials Corporation.
   d. Johns Manville.

2. Thickness: 60 mils (1.1 mm), nominal.

2.2  AUXILIARY MEMBRANE ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
B. Sheet Flashing: Manufacturer's standard unreinforced thermoplastic polyolefin sheet flashing, 55 mils (1.4 mm) thick, minimum, of same color as sheet membrane.

C. Bonding Adhesive: Manufacturer's standard.

D. Slip Sheet: Manufacturer's standard, of thickness required for application.

E. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

F. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick (25 mm wide by 1.3 mm thick), prepunched.

G. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

H. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.3 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by TPO membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces.

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.4 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.

B. Full-Spread Applied Insulation Adhesive: Insulation manufacturer's recommended spray-applied, low-rise, two-component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.

2.5 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, approximately 3/16 inch (5 mm) thick, and acceptable to membrane roofing system manufacturer.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
4. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
5. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

D. Install acoustical roof deck rib insulation strips, specified in Section 053100 "Steel Decking," according to acoustical roof deck manufacturer's written instructions, immediately before installation of overlying construction and to remain dry.

3.3 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness as noted on drawings.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.

1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.

G. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

1. Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m) and allow primer to dry.
2. Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F (14 deg C) of equiviscous temperature.
3. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
4. Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.4 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.

B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

G. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

H. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

3.5 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.6 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer’s written instructions.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.9 ROOFING INSTALIER'S WARRANTY

A. WHEREAS <Insert name> of <Insert address>, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: <Insert name of Owner>.
2. Address: <Insert address>.
3. Building Name/Type: <Insert information>.
4. Address: <Insert address>.
5. Area of Work: <Insert information>.
6. Acceptance Date: <Insert date>.
7. Warranty Period: <Insert time>.
8. Expiration Date: <Insert date>.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period;

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
   a. Lightning;
   b. Peak gust wind speed exceeding 180 mph;
   c. Fire;
   d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
   e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
   f. Vapor condensation on bottom of roofing; and
   g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.

3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.

4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.

7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this <Insert day> day of <Insert month>, <Insert year>.

1. Authorized Signature: <Insert signature>.
2. Name: <Insert name>.
3. Title: <Insert title>.

END OF SECTION 075423
SECTION 076200 - SHEET FLASHING AND TRIM

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. Section Includes:

1. Manufactured Products:
   a. Manufactured through-wall flashing and counterflashing.
   b. Manufactured reglets and counterflashing.

2. Formed Products:
   a. Formed roof metal fabrications.
   b. Formed wall sheet metal fabrications.

1.3 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Fabricate and install flashing and copings capable of resisting the following forces according to recommendations in FMG Loss Prevention Data Sheet 1-49:

   1. Wind Zone 2: For velocity pressures of 31 to 45 lbf/sq. ft.: 90-lbf/sq. ft. perimeter uplift force, 120-lbf/sq. ft. corner uplift force, and 45-lbf/sq. ft. outward force.

C. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.

   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Qualification Data: For qualified fabricator.

C. Warranty: Sample of special warranty.
1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

B. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

1.7 WARRANTY

A. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

2. Surface: Smooth, flat.
3. Exposed Coil-Coated Finishes:
   a. Two-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
4. Color: As selected by Architect from manufacturer's full range.
5. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.
C. Metallic-Coated Steel Sheet: Restricted flatness steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.
2. Surface: Smooth, flat.
3. Exposed Coil-Coated Finish:
   a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
4. Color: As selected by Architect from manufacturer's full range.
5. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.2 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
B. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
   2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.
   3. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Carlisle Coatings & Waterproofing Inc.; CCW WIP 300HT.
      c. Henry Company; Blueskin PE200 HT.
      d. Metal-Fab Manufacturing, LLC; MetShield.
      e. Owens Corning; WeatherLock Metal High Temperature Underlayment.
C. Slip Sheet: Building paper, 3-lb/100 sq. ft. minimum, rosin sized.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal unless otherwise indicated.
B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
   1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.

2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329 or Series 300 stainless steel.

C. Solder:
1. For Zinc-Tin Alloy-Coated Stainless Steel: ASTM B 32, 100 percent tin.
2. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.


2.4 MANUFACTURED SHEET METAL FLASHING AND TRIM

A. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with interlocking counterflashing on exterior face, of same metal as reglet.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Cheney Flashing Company.
b. Fry Reglet Corporation.
c. Heckmann Building Products Inc.
d. Hickman, W. P. Company.
e. Hohmann & Barnard, Inc.; STF Sawtooth Flashing.
g. National Sheet Metal Systems, Inc.
h. Sandell Manufacturing Company, Inc.


3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
4. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.

5. Accessories:
   a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
   b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.


2.5 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

D. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.

E. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.

F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

G. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" for application, but not less than thickness of metal being secured.

H. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

I. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.
J. Do not use graphite pencils to mark metal surfaces.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof-Edge Flashing (Gravel Stop): Fabricate from the following materials:
   1. Prefinished Galvanized Steel: 26ga.

B. Copings: Fabricate from the following materials:
   1. Prefinished Galvanized Steel: 26ga.

C. Base Flashing: Fabricate from the following materials:
   1. Prefinished Galvanized Steel: 26ga.

D. Counterflashing: Fabricate from the following materials:
   1. Prefinished Galvanized Steel: 26ga.

E. Flashing Receivers: Fabricate from the following materials:
   1. Prefinished Galvanized Steel: 26ga.

F. Roof-Drain Flashing: Fabricate from the following materials:
   1. Prefinished Galvanized Steel: 26ga.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.
   1. Verify compliance with requirements for installation tolerances of substrates.
   2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. General: Install underlayment as indicated on Drawings.

B. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.
3.3 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
5. Install sealant tape where indicated.
6. Torch cutting of sheet metal flashing and trim is not permitted.
7. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.

1. Coat back side of uncoated aluminum sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.

D. Fastener Sizes: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws; metal decking not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Seal joints as shown and as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches, except reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not solder aluminum sheet.
2. Pre-tinning is not required for zinc-tin alloy-coated copper.
3. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

G. Rivets: Rivet joints in uncoated aluminum where indicated and where necessary for strength.

3.4 ROOF DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

B. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints a minimum of 4 inches in direction of water flow.

3.5 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at 24-inch centers.

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with sealant. Secure in a waterproof manner by means of snap-in installation and sealant or lead wedges and sealant.

D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.6 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Through-Wall Flashing: Installation of through-wall flashing is specified in Division 4 Section "Unit Masonry".

C. Reglets: Installation of reglets is specified in Division 4 Section "Unit Masonry".

D. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.
3.7 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.8 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

B. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

3.9 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200
SECTION 079200 - JOINT SEALANTS

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 joint sealants for the following applications:
      1. Exterior joints in the following vertical surfaces and horizontal non-traffic surfaces:
         b. Other joints as indicated and as required for a complete weather-tight exterior enclosure system.
      2. Exterior joints in the following horizontal traffic surfaces:
         a. Isolation and contraction joints in cast-in-place concrete slabs.
         b. Joints between different materials listed above.
         c. Other joints as indicated.
   B. Related Sections:
      1. Division 03 “Concrete”.

1.3 QUALITY ASSURANCE
   A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
   B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

1.4 PROJECT CONDITIONS
   A. Do not proceed with installation of joint sealants under the following conditions:
      1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F
      2. When joint substrates are wet.
      3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
      4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
1.5 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

1. Type S: Single component / one-part
2. Type M: Multi-component / two or more parts
3. Grade P: Pourable for horizontal surfaces
4. Grade NS: Non-sag for vertical surfaces
5. Class 25: Tested range +/- 25% of joint width
6. Use T: Suitable for surfaces subject to traffic
7. Use NT: Non-traffic surfaces

2.3 SEALANT A:

A. One-Part Nonsag Urethane Sealant for Use NT: Type S; Grade NS; Class 25; use NT, M, A, and, as applicable to joint substrates indicated; O.

1. Acceptable Product: Provide one of the following:
   e. “Dynatrol I”; Pecora Corp.
   f. “Permapol RC-1”; Products Research & Chemical Corp.
   g. “Sikaflex-la”; Sika Corp.
   h. “Sikaflex-15LM”; Sika Corp.
   i. “Sonolastic NP 1”; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
   j. “Dymonic”; Tremco, Inc.
   k. Or approved equal

2.4 SEALANT B:

A. Multi-Part Nonsag Urethane Sealant for Use NT: Type M; Grade NS; Class 25; use NT.

1. Acceptable Product: Provide one of the following:
   e. Products Research & Chemical Corp.
   f. “Sikaflex-2c NS”; Sika Corp.
   g. “Sonolastic NP 2”; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
   h. “Dymeric 511”; Tremco Inc.

2.5 SEALANT C:

A. One-Part Pourable Urethane Sealant for Use T: Type S; Grade P; Class 25; use T.

1. Acceptable Product: Provide one of the following:
   c. “NR-201 Urexpan”; Pecora Corp.
   d. “Sonolastic SL-1”; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
2.6 SEALANT D:

A. Multi-Part Pourable Urethane Sealant for Use T; Type M, Grade P, Class 25, use T.

1. Acceptable Product: Provide one of the following:
   d. “Pourthane”; W.R. Meadows, Inc.
   e. “NR-200 Ureexpan”; Pecora Corp.
   f. “PRC 280”; Products Research & Chemical Corp.
   g. “Sikaflex-2c SL”; Sika Corp.
   h. “Sonolastic SL-2”; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
   i. “THC-900”; Tremco, Inc.

2.7 SEALANT E:

A. Acrylic-Emulsion Sealant: Manufacturer’s standard, one part, nonsag, mildew-resistant, acrylic-emulsion sealant complying with ASTM C 834, formulated to be paintable and recommended for exposed applications on interior and on protected exterior locations involving joint movement of not more than plus or minus 5 percent.

1. Acceptable Product: Provide one of the following:
   b. “AC-20”; Pecora Corp.
   c. “Sonolac”; Sonneborn Building Products Div.; Rexnord Chemical Products, Inc.
   d. “Tremco Acrylic Latex 834”; Tremco Inc.

2.8 SEALANT F:

A. One-Part Mildew-Restant Silicone Sealant: Type S; Grade NS; Class 25; Use NT; formulated with fungicide; intended for sealing interior joints with nonporous substrates and subject to in-service exposure to conditions of high humidity and temperature extremes.

1. Acceptable Product: Provide one of the following:
   a. “Dow Corning 786”; Dow Corning Corp.
   b. “SCS 1702 Sanitary”; General Electric Corp.
   c. “863 #345 White”; Pecora Corp.
   d. “Rhodorsil 6B White”; Rhone-Poulenc Inc.
   e. “Proglaze White”; Tremco Corp.

2.9 SEALANT H:

A. Manufacturer’s standard single component neutral / basic curing nonsag silicone sealants,
1. **Acceptable Product:** Provide one of the following:
   b. Dow Corning “795”; Dow Corning Corp.

2.10 **JOINT SEALANT BACKING**

A. **General:** Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. **Plastic Foam Backer Rods:** Performed, compressible, resilient, nonwaxing, nonextruding strips of flexible, nongassing plastic foam of material indicated below; nonabsorbent to water and gas; and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.11 **MISCELLANEOUS MATERIALS**

A. **Primer:** Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. **Cleaners for Nonporous Surfaces:** Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. **Masking Tape:** Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

**PART 3 - EXECUTION**

3.1 **EXAMINATION**

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 **PREPARATION**

A. **Surface Cleaning of Joints:** Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.

3. Remove laitance and form-release agents from concrete.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.
   a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

G. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:

1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

H. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping. Do not pull or stretch material. Produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:
   a. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.

   a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:
   a. Whether sealants filled joint cavities and are free of voids.
   b. Whether sealant dimensions and configurations comply with specified requirements.
   c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200
SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY
   A. Section Includes:
      1. Standard hollow metal doors and frames.

1.2 DEFINITIONS
   A. Minimum Thickness: Minimum thickness of base metal without coatings.
   B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.3 SUBMITTALS
   A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, and finishes.
   B. Shop Drawings: Include the following:
      1. Elevations of each door design.
      2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
      3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
      4. Locations of reinforcement and preparations for hardware.
      5. Details of each different wall opening condition.
      6. Details of anchorages, joints, field splices, and connections.
      7. Details of accessories.
      8. Details of moldings, removable stops, and glazing.
      9. Details of conduit and preparations for power, signal, and control systems.
   C. Other Action Submittals:
      1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.
   D. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.
   E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.4 QUALITY ASSURANCE
   A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UBC Standard 7-2.

1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

2. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

C. Smoke-Control Door Assemblies: Comply with UL-10C

D. Preinstallation Conference: Conduct conference at Project site if requested by Architect and/or Contractor.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to finish of factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Amweld Building Products, LLC.
2. Benchmark; a division of Therma-Tru Corporation.
3. Ceco Door Products; an Assa Abloy Group company.
4. Curries Company; an Assa Abloy Group company.
5. Deane Steel Manufacturing Company, Inc.
7. Fleming Door Products Ltd.; an Assa Abloy Group company.
10. Mesker Door Inc.
13. Steelcraft; an Ingersoll-Rand company.
15. Metal Products Inc. (MPI of Corbin KY)

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 metallic coating.

C. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

E. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.

F. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

G. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-development indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
2.3 STANDARD HOLLOW METAL DOORS

A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.

1. Design: As indicated on drawings.
2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
   a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated in plans.
   b. Thermal-Rated (Insulated) Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than $4.0\text{ deg F} \times h \times \text{sq. ft./Btu}$ when tested according to ASTM C 1363.
5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch-thick, end closures or channels of same material as face sheets.

B. Exterior Doors: Face sheets fabricated from metallic-coated steel sheet. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush).

C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush).

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

E. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.4 STANDARD HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Interior Frames: Fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated.

1. Fabricate frames with mitered or coped corners.
2. Fabricate knocked-down, drywall slip-on frames for in-place gypsum board partitions.
3. Frames for Level 1 Steel Doors: 0.042-inch-thick steel sheet.
4. Frames for Wood Doors: 0.042-inch-thick steel sheet.
5. Frames for Borrowed Lights: 0.042-inch-thick steel sheet.
6. Frames for Stiffened Hollow Metal Doors: 0.0625-inch-thick steel sheet.

C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:
1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface. According to ANSI/SDI 250.8, any core construction listed in first subparagraph below may be selected by manufacturer at its discretion. Edit subparagraph if some types of cores are not permitted. Limiting core construction may result in increased cost or delivery time. See Evaluations for discussion.

2.6 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch-wide steel.

C. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

2.7 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow Metal Doors:
1. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.

C. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. **Welded Frames**: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

2. **Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.**

3. **Grout Guards**: Weld guards to frame at back of hardware mortises in frames to be grouted.

4. **Floor Anchors**: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.

5. **Jamb Anchors**: Provide number and spacing of anchors as follows:
   
   a. **Masonry Type**: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      
      1) Two anchors per jamb up to 60 inches high.
      2) Three anchors per jamb from 60 to 90 inches high.
      3) Four anchors per jamb from 90 to 120 inches high.
      4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
   
   b. **Compression Type**: Not less than two anchors in each jamb.
   
   c. **Postinstalled Expansion Type**: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

6. **Door Silencers**: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
   
   a. **Single-Door Frames**: Drill stop in strike jamb to receive three door silencers.
   
   b. **Double-Door Frames**: Drill stop in head jamb to receive two door silencers.

D. **Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.**

E. **Hardware Preparation**: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."

   1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
   2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
   3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
   4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.8 **STEEL FINISHES**

A. **Prime Finish**: Apply manufacturer's standard primer immediately after cleaning and pretreating.

   **Shop Primer**: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded/built-in anchors to verify locations before frame installation.

C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:

1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive nontemplated, mortised, surface-mounted hardware.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

   a. At fire-protection-rated openings, install frames according to NFPA 80.
   b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
   c. Install door silencers in frames before grouting.
   d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
e. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

f. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.

a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.

4. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

a. Squareness: Plus or minus 1/16 inch measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

b. Alignment: Plus or minus 1/16 inch measured at jambs on a horizontal line parallel to plane of wall.

c. Twist: Plus or minus 1/16 inch measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

d. Plumbness: Plus or minus 1/16 inch measured at jambs at floor.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

a. Jambs and Head: 1/8 inch plus or minus 1/16 inch

b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch

c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch

d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3. Smoke-Control Doors: Install doors according to NFPA 105.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
SECTION 087100 - DOOR HARDWARE & DOOR-SET INDEX

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 the following:

1. Commercial door hardware for the following swinging doors:
   a. Hollow metal.

B. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

6. NFPA 105 - Installation of Smoke Door Assemblies.
7. KENTUCKY BUILDING CODE.

C. Related Sections include the following:

1. Division 08 Section "Hollow Metal Doors and Frames" for door silencers provided as part of hollow-metal frames.

1.3 SUBMITTALS

A. Number of Submittals: All items listed in this section are to be included in one submittal prepared by one Supplier.

B. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Qualification Data:

1. Finish Hardware Installers
   a. Finish hardware, including electrified hardware, for wood, hollow metal, and aluminum doors to be installed by personnel trained and certified by the manufacturer of the product furnished.

   b. Provide manufacturer’s certificates for installer as part of Contractor’s bid information. Failure to supply certificates may result in rejection of bid.

2. Hardware Supplier
   a. Established contract hardware firm which maintains and operates an office, display, and stock in project area and which is a factory authorized distributor of the lock being furnished.
b. Hardware scheduled and furnished by or under direct supervision an Architectural Hardware Consultant.

c. All schedules submitted to the Architect for approval and job use must carry the signature and certified seal of this Architectural Hardware Consultant.

3. Architectural Hardware Consultant
   a. Currently certified by the Door and Hardware Institute.
   b. Full-time employee of the Hardware Supplier or an individual having no contractual ties to any supplier/manufacturer entity.
   c. Available at reasonable times to Architect, Owner, and Contractor during course of work.

D. Maintenance Data: For each type of door hardware. Include final hardware schedule, keying schedule, riser diagrams, and point-to-point wiring diagrams in 3-ring binder, labeled on spine with project name and “Door Hardware”.

E. Warranty: Special warranty specified in this Section.

F. Other Action Submittals:

1. Door Hardware Sets: Prepared by or under the supervision of a DHI certified Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

   a. Format: Comply with scheduling sequence and vertical format in DHI’s “Sequence and Format for the Hardware Schedule”; other formats will be rejected without review. Double space entries, and number and date each page.
   b. Numerical Sequence of Sets and Headings: Submittal headings shall be in exact order as hardware sets in specification: one heading only per set. Submittal set numbers shall relate to specification set numbers, i.e. if three headings are required for Set 12 due to door width differences, then the heading numbers should be 12.1, 12.2, and 12.3 or employing similar linking logic.
   c. Door Numbers: Identical to those used in the contract documents.
   d. Number of Copies: (5).
   e. Content: Include the following information:

   1) Identification number, location, hand, fire rating, and material of each door and frame.
   2) Type, style, function, size, quantity, and finish of each door hardware item.
   3) Complete designations of every item required for each door or opening including name and manufacturer.
   4) Degree of opening for closer and overhead stop and holder installation.
   5) Keying information.
   6) Fastenings and other pertinent information.
   7) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
   8) Explanation of abbreviations, symbols, and codes contained in schedule.
   9) Mounting locations for door hardware.
   10) Notes included with specification hardware sets transcribed verbatim into submittal hardware sets.
   11) Door and frame sizes and materials.
   12) List of related door devices specified in other Sections for each door and frame.
f. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

2. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 QUALITY ASSURANCE

A. Furnish proper hardware types and quantities for door function, hardware mounting and clearances, and to meet applicable codes. Bring discrepancies to the attention of the Architect a minimum of (10) days prior to bid date so that an addendum may be issued. No additional compensation will be allowed after bidding for hardware changes required for proper function, hardware mounting or clearances, or to meet codes.

B. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

C. Source Limitations: All items listed in hardware sets are to be furnished by one supplier. Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

D. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:

1. NFPA 70 "National Electrical Code", including electrical components, devices, and accessories listed and labeled as defined in Article 100 by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

2. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
   a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
   b. Door Closers: Comply with the following maximum opening-force requirements indicated:
      1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
      2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
   c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.

3. NFPA 101: Comply with the following for means of egress doors:
   a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
   b. Thresholds: Not more than 1/2 inch high.
E. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to Owner by registered mail or overnight package service. Obtain Owner's contact name and address from Architect.

1.6 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Distribute templates in a timely manner so as not to delay suppliers. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.7 WARRANTY

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

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

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

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

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Five years for exit hardware.
3. Ten years for manual door closers.
1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner’s continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide (6) months’ full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this and door hardware sets indicated in Part 3 “Door Hardware Sets” Article.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers’ products.

B. Designations: Requirements for design, grade, function, material, finish, size and other distinctive qualities of each type of door hardware are indicated in Part 3 “Door Hardware Schedule” Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers’ Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers’ names are abbreviated in Part 3 “Door Hardware Schedule” Article.

2. References to BHMA Standards: In addition to other requirements in this section, provide products complying with or exceeding these standards and requirements for description, quality, and function.

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

D. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include manufacturers specified.

2.2 BUTT HINGES, GENERAL

A. Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to 60 inches (1524 mm).
2. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).
3. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).
4. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).
B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Hinge Height, Width, and Weight: Unless otherwise indicated, provide the following:
   1. Doors with Exit Devices or 3'6" or more in width: 5" high, heavy-weight hinges.
   2. Doors less than 3'6" in width: 4-1/2" high, standard-weight hinges.
   3. Width: 4-1/2" heavy-weight, 4" standard-weight, unless proper clearance requires a different width.

D. Hinge Base Metal: Unless otherwise indicated, provide the following:
   1. Exterior and in-swinging restroom door hinges: Stainless steel, with stainless-steel pin.
   2. Balance of hinges: Steel, with steel pin.

E. Hinge Options: Provide the following:
   1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for reverse bevel lockable doors.
   2. Corners: Square.
   3. Number of knuckles: Five.

F. Fasteners: Comply with the following:
   2. Wood Screws: For wood doors and frames.
   3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.

G. Template Hinge Dimensions: BHMA A156.7.

H. Available Manufacturers:
   2. Hager Companies (HAG).
   3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
   4. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
   5. PBB, Inc. (PBB)

2.3 LOCKS AND LATCHES, GENERAL

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

   1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Lock Trim:
1. Levers: Cast.
   a. Best 15 model with full angled return.

2. Roses: Forged.
   a. Best H model.

3. Lockset Designs: Provide design indicated in hardware sets, or, if sets are provided by another manufacturer, provide designs that match those designated.

D. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:


E. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

F. Strikes: Manufacturer’s standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:


2.4 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:


B. Mortise Locks: Stamped steel case with steel or brass parts; BHMA A156.13 Grade 1.

1. Available Manufacturers:
   b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
   c. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
   d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
   e. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
   f. Hager.

C. Compatibility with Key Cylinders: fully warranted for use with key cylinder furnished.

2.5 EXIT DEVICES

A. Exit Devices: BHMA A156.3, Grade 1.

B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board’s “Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

C. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.
D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

E. Outside Trim: As specified in hardware sets; material and finish to match locksets, unless otherwise indicated.
   1. Match design for locksets and latchsets, unless otherwise indicated.

F. Fasteners. Manufacturer’s standard, except furnish sex bolts for attachments to doors.

G. Shims: Provide shims if needed for clearance.

H. Available Manufacturers:
   1. Detex, Inc. (DTX)
   2. Precision Hardware, Inc. (PH).
   3. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
   4. Von Duprin; an Ingersoll-Rand Company (VD).
   5. Yale.
   6. Corbin-Russwin.

2.6 KEY CYLINDERS

A. Standard Lock Cylinders: BHMA A156.5, Grade 1.

B. Cylinders: Provide cylinders for all devices requiring key cylinders to properly function: constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
   1. Number of Pins: Six or seven as directed by Owner.
   2. Keyway: Patented or non-patented as directed by Owner.
   3. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
   4. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.

C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
   1. Small-format Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Construction Keying: Comply with the following:
      a. Replace construction cores with permanent cores as directed by Owner.

E. Supplemental Items: Provide cylinder spacers, collars, and correct cams as needed for proper function of locking devices.

F. Available Manufacturers:
   2. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
   3. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
4. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
5. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
6. Hager.

2.7 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:

1. Great-Grand Master Key System: Cylinders are operated by a change key, a master key, a grand master key, and a great-grand master key.
2. Existing System: Master key or grand master key locks to Owner's existing system.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
   a. Notation: "DO NOT DUPLICATE."
2. Quantity: Provide the following:
   b. Master Keys: Six per master.
   c. Grand Master Keys: Six.
   d. Control Keys: Two.
   e. Construction Control Keys: Two.
   f. Blanks: Twenty.

2.8 SURFACE CLOSERS

A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Comply with the following maximum opening-force requirements:
   a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
   b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.

C. Fasteners: Manufacturer's standard for arms, shoes and brackets. Sex bolts for fastening closers to doors.

D. Mounting Accessories: Provide shoes, brackets, drop plates, spacers, etc., as needed for proper mounting of closers and arms to door and frame.

1. At openings with hollow metal or wood doors in hollow metal frames requiring jamb seals and parallel arm closers, provide 1/4" high or 7/8" high closer arm bracket spacers per
the frame stop width for the installation of the critical fifth screw for the arm bracket to the top jamb.

a. Spacers: 1/4" or 7/8" H, 0.625" OD, 0.281" ID countersunk 0.06", deburred outside edges, grooved (0.032"W x 0.032" D) at 1/8" increments for field cutting, solid 6061 aluminum.


E. Spring Size of Units: Provide field-sizeable closers, adjustable for spring sizes 1-6, plus 50% extra spring power at spring size 6, to meet field conditions and requirements for opening force.

F. Cylinders: Diameter per models in hardware sets; aluminum.

G. Available Manufacturers and Series for Rack and Pinion Surface Closers:

1. LCN Closers.
2. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
3. Stanley Commercial Hardware; Div. of The Stanley Works (STA).
5. Yale.

2.9 PROTECTIVE TRIM UNITS

A. Size:

1. Width
   a. Singles, and pairs with removable mullions or surface applied astragals: 2 inches (38 mm) less than door width on push side and 1 inch (13 mm) less than door width on pull side
   b. Other pairs: 1 inch (13 mm) less than door width

2. Height: as specified in door hardware sets; or, if constrained by door bottom rail height, 1" less bottom rail height.

B. Fasteners: Manufacturer's machine or self-tapping countersunk screws.

C. Metal Protective Trim Units: BHMA A156.6; beveled 4 sides; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel.

D. Available Manufacturers:

1. Hager Companies (HAG).
2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. Hiawatha (HIW).
4. Burns (BRN).
5. Rockwood Manufacturing Company (RM).
6. Trimco (TBM).

2.10 MECHANICAL WALL AND FLOOR STOPS AND HOLDERS

A. Stops and Bumpers: BHMA A156.16, Grade 1.

1. Provide wall stops for doors unless floor, overhead, or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Provide floor stops
(and spacers if needed) of proper height and configuration to accommodate floor condition. Where floor or wall stops are not appropriate, provide overhead holders.

2. Properties. Cast construction with fastener suitable for wall or floor condition.

3. Available Manufacturers:
   a. Hager Companies (HAG).
   b. IVES Hardware; an Ingersoll-Rand Company (IVS).
   c. Hiawatha (HIW).
   d. Burns (BRN).
   e. Rockwood Manufacturing Company (RM).
   f. Trimco (TBM).

B. Wall and Floor mounted Combination Door Stops and Holders: BHMA A156.16, Grade 1.

1. Properties: Heavy cast with adjustable holding force, self-compensating for changes up to ¼” in vertical door position. Provide flush spacers finished to match adjoining substrates for clearance as needed.

2. Manufacturer and Model: Trimco 1283.

2.11 OVERHEAD STOPS AND HOLDERS

A. BHMA A156.8, Grade 1. Template for maximum degree of opening before encountering obstruction.

B. Available Manufacturers:

1. Architectural Builders Hardware Mfg., Inc. (ABH).
2. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
3. Hager (HAG).
4. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
5. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).

2.12 SILENCERS

A. Provide silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

B. Available Manufacturers:

2. Hager Companies (HAG).
3. IVES Hardware; an Ingersoll-Rand Company (IVS).
4. McKinney Products Company; an ASSA ABLOY Group company (MCK).
5. Rockwood Manufacturing Company (RM).
6. Trimco (TBM).

2.13 DOOR GASKETING

A. General: Provide continuous weather-strip gasketing on exterior hollow metal doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners as indicated by models in hardware sets.

1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame. If hardware is to be attached to the frame and would interfere with the gasketing, then provide hardware compatible gasketing that does not need to be cut for the mounting of hardware.
2. Sweeps: Apply to bottom of in-swinging exterior hollow metal doors, or as required for sound attenuation, forming seal with threshold or floor when door is closed.
3. Seals integral to threshold at out-swinging exterior hollow metal doors.

B. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.

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

D. Jamb Gasketing Materials:
   1. Adhesive Seals. As specified in hardware sets or approved equal.
   2. Intumescents: As required.

E. Available Manufacturers for Jamb Gaskets (provided they provide items with polyurethane inserts):
   1. Hager Companies (HAG).
   2. National Guard Products (NGP).
   4. Reese Enterprises (REE).
   5. Zero International (ZER).

2.14 THRESHOLDS

A. Standard: BHMA A156.21

B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."
   1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.

C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch (13 mm) high.

D. Fasteners: ¼-20 machine screws and expansion anchors.

E. Available Manufacturers:
   1. Hager Companies (HAG).
   2. National Guard Products (NGP).
   4. Reese Enterprises (RE).
   5. Zero International (ZER).

2.15 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Manufacturer's standard, except as noted in product sections of this specification. Provide Rivnuts for the fastening of surface-mounted items to existing door frames.

2.16 FINISHES

A. Standard: BHMA A156.18, as indicated in door hardware sets.

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

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 Series.

1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.


B. Mounting Locations:

1. Wall Stops: Locate so that lockset spindle and wall stop share horizontal and vertical centerlines.

2. Wall Stop/Holders: Locate 4" down and in from top lock-edge corner of door w/holder slot at bottom of unit.
3. Closers and Overhead Stop/holders: Template and mount closers and overhead stops for maximum degree of opening before door encounters obstruction or so as to interface with specified wall stops and holders. When used with closers, template and locate overhead stops so that closer arm does not fully extend and bottom out. These functionality requirements override any degree of opening information in the specifications or submittals. Also see 087100-3.2.C for special locations due to seal-mounted hardware.

C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants." Position for complete seal with bottom of doors with no penetration of air or daylight.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Perform a final inspection of the installed door hardware and access control system and state in report whether installed work complies with or deviates from requirements, including whether each component representing the opening assembly is properly installed, adjusted, operating and performing to system operational narratives.

3.5 ADJUSTING

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

B. Overhead Stops/holders: Set adjustable stops for maximum degree of opening before door encounters obstruction. Adjust friction to control door.

C. Wall Mounted Stop/holders: Adjust holding force with spanner head wrench so that door is held securely, yet is easy to pull out of hold open.

D. Door Closers:

1. Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.
2. Adjust latch period so that door does not slam nor injure fingers.
3. Adjust spring power for minimum force required so that door properly and reliably latches. It is recommended that all closers be adjusted to a Spring Size 1 (either at the factory or at the facility of the Contract Hardware Supplier) prior to delivery to job; they can then be adjusted up to meet requirements. ADA maximum force to open a non-rated interior doors is 5 lbf; 8.5lbf for an exterior non-rated door. Installer is required to adjust spring power on every closer during installation using a door force gage. If ADA requirements
cannot be met due to door-frame-hardware clearance issues of HVAC issues, bring to Contractors attention to resolve problem.

4. Adjust backcheck to slow door down before hitting stop point so as to prevent damage to closer, arm, door, frame, and fasteners.

E. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DOOR HARDWARE SCHEDULE

Hardware Set 01 – Doors 102, 106, 202, 302

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<thead>
<tr>
<th>Item Description</th>
<th>Model Number</th>
<th>Quantity</th>
<th>Supplier Code</th>
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<td>Butt Hinges</td>
<td>BB5002-454</td>
<td>3</td>
<td>BOM</td>
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<tr>
<td>Storeroom Lock</td>
<td>45H7D-15H</td>
<td>1</td>
<td>BES</td>
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<td>Kick Plate</td>
<td>KO050 8 x 2LDW x CS x B4E</td>
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<td>TRI</td>
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<td>Wall Stop, Convex</td>
<td>1270CX</td>
<td>1</td>
<td>TRI</td>
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<tr>
<td>Cat H Adhesive Jamb Seal Set</td>
<td>2525B</td>
<td>1</td>
<td>BLK, NGP</td>
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<tr>
<td>Door Bottom</td>
<td>217APK</td>
<td>1</td>
<td>PEM</td>
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<td>¼” Saddle Threshold</td>
<td>513 x RCE</td>
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<td>NGP</td>
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Hardware Set 01A – Door 402

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<td>BOM</td>
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<tr>
<td>Storeroom Lock</td>
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<td>Kick Plate</td>
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<td>Wall Stop, Convex</td>
<td>1270CX</td>
<td>1</td>
<td>TRI</td>
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<td>Cat H Adhesive Jamb Seal Set</td>
<td>2525B</td>
<td>1</td>
<td>BLK, NGP</td>
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<tr>
<td>Door Bottom/Drip</td>
<td>216APK</td>
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<td>PEM</td>
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<td>¼” Saddle Threshold</td>
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Hardware Set 01B – Doors 103, 203, 303

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<td>Storeroom Lock</td>
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Hardware Set 02 – Doors 105A, 108

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<td>BOM</td>
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<tr>
<td>Office Lock</td>
<td>45H7A-15H</td>
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<td>Closer, Regular Arm</td>
<td>D-1611 FC</td>
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<td>STA</td>
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<td>Kick Plate</td>
<td>KO050 8 x 2LDW x CS x B4E</td>
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<td>Kick-down Holder</td>
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<td>Cat H Adhesive Jamb Seal Set</td>
<td>2525B</td>
<td>1</td>
<td>BLK, NGP</td>
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</tbody>
</table>
(1) Door Bottom 217APK 628 PEM
(1) ¼” Saddle Threshold 513 x RCE 628 NGP

**Hardware Set 02A – Door 109**
(3) Butt Hinges BB5000-454 652 BOM
(1) Office Lock 45H7A-15H 626 BES
(1) Wall Stop, Convex 1270CX 626 TRI

**Hardware Set 03 – Door 105B**
(3) Butt Hinges BB5002-454 630 BOM
(1) Privacy Set 45H0L-15H 626 BES
(1) Closer, Regular Arm D-1611 FC 689 STA
(1) Kick Plate KO050 8 x 2LDW x CS x B4E 630 TRI
(1) Mop Plate KM050 4 x 1LDW x CS x B4E 630 TRI
(1) Wall Stop, Convex 1270CX 626 TRI

**Hardware Set 04 – Door 104A**
(3) Butt Hinges BB5006-545 630 BOM
(1) Panic Device, Rim, 03 2103CD 630 PHI
(1) Rim Cylinder IE72 626 BES
(1) Mortise Cylinder 1E74 626 BES
(2) Keyed Brass Construction Core 630 BES
(1) Offset Pull 1191-3 630 TRI
(1) Closer, w/Spring Stop D-4550 CS 689 STA
(1) Kick Plate KO050 8 x 2LDW x CS x B4E 630 TRI
(1) Door Bottom/Drip 216APK 628 PEM
(1) ¼” Saddle Threshold 513 x RCE 628 NGP

**Hardware Set 05 – Door 104B, 204, 304**
(3) Butt Hinges BB5006-545 630 BOM
(1) Panic Device, Rim, 14 2114LD x 4914A 630 PHI
(1) Closer, HD Parallel Arm D-4550 EDA 689-SRI STA
(1) Kick Plate KO050 8 x 2LDW x CS x B4E 630 TRI
(1) Wall Stop, Convex 1270CX 626 TRI
(1) Cat H Adhesive Jamb Seal Set 2525B BLK NGP
(1) Door Bottom 217APK 628 PEM
(1) ¼” Saddle Threshold 513 x RCE 628 NGP

**Hardware Set 05A – Door 404**
(3) Butt Hinges BB5006-545 630 BOM
(1) Panic Device, Rim, 14 2114LD x 4914A 630 PHI
(1) Closer, HD Parallel Arm D-4550 EDA 689-SRI STA
(1) Kick Plate KO050 8 x 2LDW x CS x B4E 630 TRI
(1) Wall Stop, Convex 1270CX 626 TRI
(1) Cat H Adhesive Jamb Seal Set 2525B BLK NGP
(1) Door Bottom/Drip 216APK 628 PEM
(1) ¼” Saddle Threshold 513 x RCE 628 NGP

END OF SECTION 087100
SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Windows.
2. Doors.

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient, material surfaces.

1.3 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Samples: For the following products, in the form of 12-inch- (300-mm-) square Samples for glass and of 12-inch- (300-mm-) long Samples for sealants. Install sealant Samples between two strips of material representative in color of the adjoining framing system.

C. Samples: For the following products, in the form of 12-inch- (300-mm-) square Samples for glass.

1. Each color of glass.
2. Insulating glass for each designation indicated.

D. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.

E. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer.
F. Qualification Data: For installers.

G. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

B. Source Limitations for Glass: Obtain the following through one source from a single manufacturer for each glass type: clear float glass, coated float glass and insulating glass.

C. Source Limitations for Glass Sputter-Coated with Solar-Control Low-E Coatings: Where solar-control low-e coatings of a primary glass manufacturer that has established a certified fabricator program is specified, obtain sputter-coated solar-control low-e-coated glass in fabricated units from a manufacturer that is certified by coated-glass manufacturer.

D. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.

E. Glazing for Fire-Rated Door Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252.

F. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201 and, for wired glass, ANSI Z97.1.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. For insulating-glass units that will be exposed to substantial altitude changes, comply with insulating-glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.

1.6 PROJECT CONDITIONS

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

1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F (4.4 deg C).
1.7 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form, made out to Owner and signed by coated-glass manufacturer agreeing to replace coated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form, made out to Owner and signed by insulating-glass manufacturer agreeing to replace insulating-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, unless otherwise noted, provide glass by one of the following Manufacturers.

1. PPG/ Solar Ban 60
2. Guardian SN68
3. Or approved equal

2.2 GLASS PRODUCTS

A. Tempered Glass: ASTM C 1048, Kind FT (fully tempered), Type I, Class 1 (clear), and of quality, finish, and pattern specified.

B. Insulating-Glass Units, General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in Part 2 "Insulating-Glass Units" Article.

1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.
2. Provide Kind FT (fully tempered) glass lites where safety glass is indicated.
3. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.
4. Sealing System: Dual seal, with primary and secondary sealants as follows:

   a. Manufacturer's standard sealants.

2.3 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:
1. **Compatibility:** Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. **Suitability:** Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

3. **Colors of Exposed Glazing Sealants:** As selected by Architect from manufacturer's full range.

### 2.4 MISCELLANEOUS GLAZING MATERIALS

**A. General:** Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

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

**C. Setting Blocks:** Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

**D. Spacers:** Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

**E. Edge Blocks:** Elastomeric material of hardness needed to limit glass lateral movement (side walking).

**F. Cylindrical Glazing Sealant Backing:** ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

**G. Perimeter Insulation for Fire-Resistive Glazing:** Identical to product used in test assembly to obtain fire-resistance rating.

### 2.5 FABRICATION OF GLAZING UNITS

**A.** Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

**B.** Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites in a manner that produces square edges with slight kerfs at junctions with outdoor and indoor faces.

**C.** Grind smooth and polish exposed glass edges and corners.

### 2.6 INSULATING-GLASS UNITS

**A.** Solar-Control Low-E Insulating-Glass Units:

1. **Overall Unit Thickness and Thickness of Each Lite:** 1” and ¼”.

2. **Interspace Content:** Argon.
3. Outdoor Lite: Float glass.
   a. Color: Selected from manufacturer’s full color range

4. Indoor Lite: Float glass.
   a. Annealed, Kind HS (heat strengthened), Kind FT (fully tempered).

5. Low-E Coating: Pyrolytic on second surface.

2.7 FLOAT GLASS

A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated. Provide fully tempered float glass where indicated on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:
   1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
   2. Presence and functioning of weep system.
   3. Minimum required face or edge clearances.
   4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
3.4 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as 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 than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000
SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Interior gypsum board.
   2. Tile backing panels.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch long length for each trim accessory indicated.

1.3 QUALITY ASSURANCE

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

1.4 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
B. Do not install interior products until installation areas are enclosed and conditioned.
C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. 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:
   a. American Gypsum Co.
   b. Certainteed Gypsum Inc.
   c. G-P Gypsum.
   d. Lafarge North America Inc.
   e. National Gypsum Company.
   f. USG Corporation.

B. Regular Type:
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered.

C. Type X:
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered.

D. Type C:
   1. Thickness: As required by fire-resistance-rated assembly indicated on Drawings.
   2. Long Edges: Tapered.

E. Ceiling Type: Manufactured to have more sag resistance than regular-type gypsum board.
   1. Thickness: 1/2 inch.
   2. Long Edges: Tapered.

F. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.
   1. Core: 5/8 inch, Type X.
   2. Long Edges: Tapered.
2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
   2. Shapes:
      a. Corner bead.
      b. Bullnose bead.
      c. LC-Bead: J-shaped; exposed long flange receives joint compound.
      d. L-Bead: L-shaped; exposed long flange receives joint compound.
      e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      f. Expansion (control) joint.
      g. Curved-Edge Corner bead: With notched or flexible flanges.

   1. Material: Hot-dip galvanized steel sheet, plastic, or rolled zinc.
   2. Shapes:
      a. Corner bead.
      b. LC-Bead: J-shaped; exposed long flange receives joint compound.
      c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
   1. Interior Gypsum Wallboard: Paper.
   2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Prefilling: At open joints, beveled panel edges, and damaged surface areas, use setting-type taping compound.
   2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
   3. Fill Coat: For second coat, use setting-type, sandable topping compound.
   4. Finish Coat: For third coat, use setting-type, sandable topping compound.
   5. Skim Coat: For final coat of Level 5 finish, use high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish. See finish plans for level of finish.

D. Joint Compound for Tile Backing Panels:
   1. Cementitious Backer Units: As recommended by backer unit manufacturer.
2.5    AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
   1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
   1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
   2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Sound Attenuation Blankets: As specified in Division 07 Section "Thermal Insulation."
   1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

E. Acoustical Sealant:
   1. Provide sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

F. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."

PART 3 - EXECUTION

3.1    EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2    APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
   1. Regular Type: Vertical surfaces, unless otherwise indicated.
   2. Type X: Where required for fire-resistance-rated assembly.
   3. Type C: Where required for specific fire-resistance-rated assembly indicated.
   4. Ceiling Type: Ceiling soffit surfaces.

B. Single-Layer Application:
   1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
      a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
      b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.

2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.

4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 APPLYING TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.

B. Areas Not Subject to Wetting: Install regular-type gypsum wallboard panels to produce a flat surface except at showers, tubs, and other locations indicated to receive water-resistant panels.

C. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners, unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.

D. Exterior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.
3.6 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for tile.
   3. Level 4: See finish plan for locations.
   4. Level 5: See finish plan for locations.
      a. Primer and its application to surfaces are specified in other Division 09 Sections.

E. Cementitious Backer Units: Finish according to manufacturer’s written instructions.

3.7 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900
SECTION 095123 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified, 6 inches in size.

C. Samples for Initial Selection: For components with factory-applied color finishes.

D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Panel: Set of 6-inch- square Samples of each type, color, pattern, and texture.

2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- long Samples of each type, finish, and color.

1.2 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.

C. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

D. Field quality-control reports.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.

2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to NVLAP for testing indicated.
B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of typical ceiling area as shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

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

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

1.7 FIELD CONDITIONS

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

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
2. Smoke-Developed Index: 50 or less.

C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 PANELS AND HANGERS

1. See drawings for product panel and hanger profiles to be provided.
2.3 ACCESSORIES

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

B. Perimeter Moldings: Same material and finish as grid.
   1. At exposed grid: Provide L-shaped molding for mounting at same elevation as face of grid.

C. Acoustical Insulation: Specified in Section 072100.
   1. Size: To fit acoustical suspension system.

D. Acoustical Sealant for Perimeter Moldings: Specified in Section 079005.

E. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

   1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.

B. Suspend ceiling hangers from building's 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 structure or of ceiling suspension system.
2. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.

4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.

7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.

8. Do not attach hangers to steel deck tabs.

9. Do not attach hangers to steel roof deck. Attach hangers to structural members.

10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.

11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.

3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

1. Arrange directionally patterned acoustical panels as follows:

   a. As indicated on reflected ceiling plans.
   b. Install panels with pattern running in one direction parallel to long axis of space.
   c. Install panels in a basket-weave pattern.
2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
4. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
   1. Compliance of seismic design.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

C. Perform the following tests and inspections of completed installations of acoustical panel ceiling hangers and anchors and fasteners in successive stages. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations show compliance with requirements.
   1. Extent of Each Test Area: When installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.
      a. Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
      b. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.

D. Acoustical panel ceiling hangers and anchors and fasteners will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.5 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer’s written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095123
SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Resilient base.

B. Related Sections:
   1. Section 096519 Resilient Tile Flooring

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification: For each type of product indicated, in manufacturer's standard-size samples of each resilient product color, texture, and pattern required

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. Mockups: Provide resilient products with mockups specified in other Sections.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 55 deg F or more than 85 deg F.
1.6 PROJECT CONDITIONS

A. Install resilient products after other finishing operations, including painting, have been completed.

B. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F, in spaces to receive resilient products during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

C. Maintain the ambient relative humidity between 40% and 60% during installation.

D. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

PART 2 - PRODUCTS

2.1 Refer to finish plans for resilient base specified in project.

2.2 INSTALLATION MATERIALS

A. Adhesives: as recommended by manufacturer to meet site conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until they are same temperature as the space where they are to be installed.
1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

D. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products until Substantial Completion.

END OF SECTION 096513
SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following exterior substrates:
   1. Concrete
   2. Steel.
   4. Exterior gypsum board & fiber cement siding.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.

   1. Submit Samples on rigid backing, 8 inches square.
   2. Step coats on Samples to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
   2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.3 QUALITY ASSURANCE

A. MPI Standards:

   1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.
1.5 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Benjamin Moore & Co.
2. PPG Paints
3. ECOSPEC
4. Sherwin Williams
5. Or approved equal.

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Colors: As selected by Architect from manufacturer's full range.

2.3 BLOCK FILLERS


1. VOC Content: E Range of E2.
2.4 PRIMERS/SEALERS

A. Alkali-Resistant Primer: MPI #3.
   1. VOC Content: E Range of E2.

   1. VOC Content: E Range of E2.

2.5 METAL PRIMERS (Metal must be prepared when paint over galvanized steel.)

A. Alkyd Anticorrosive Metal Primer: MPI #79.
   1. VOC Content: E Range of E2.

2.6 EXTERIOR ALKYD PAINTS

A. Exterior Alkyd Enamel (Semigloss): MPI #94 (Gloss Level 5).
   1. VOC Content: E Range of E2.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Concrete: 12 percent.
   3. Wood: 15 percent.
   4. Gypsum Board: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

G. Exterior Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint entire exposed surface of window frames and sashes.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of paint materials with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:

1. Latex System:
   a. Prime Coat: Primer, alkali resistant, water based, MPI #3.
   c. Topcoat: Latex, exterior, low sheen (Gloss Level 3-4), MPI #15.

B. Steel Substrates:

1. Alkyd System: MPI EXT 5.1D.
   c. Topcoat: Exterior alkyd enamel (semigloss).

C. Galvanized-Metal Substrates:

1. Alkyd System: MPI EXT 5.3B.
c. Topcoat: Exterior alkyd enamel (semigloss).

D. Exterior Gypsum Board & Fiber Cement Panel Substrates:

1. Latex System: MPI EXT 9.2A.
   c. Topcoat: Exterior latex (semigloss).

END OF SECTION 099110
SECTION 099723: CONCRETE SEALERS

PART 1 GENERAL

1.1 SUMMARY
   A. This Section specifies an applied sealer for horizontal cast-in-place concrete surfaces.

1.2 SUBMITTALS
   A. Product Data: Submit manufacturer’s product data and installation instructions.

1.3 QUALITY ASSURANCE
   A. Manufacturer: Minimum 10 years experience producing concrete coatings.
   B. Installer: Licensed installers experienced and trained in the use of specified products.
   C. Suitability of Substrate: Concrete surface must be clean and dry with all stains, oil, grease, dust, and dirt removed prior to application. A thorough pressure washing is highly recommended.
   D. Regulatory Requirements: Comply with requirements of authorities having jurisdiction and applicable codes at the location of the project.

1.4 DELIVERY, STORAGE AND HANDLING
   A. Deliver materials and products in unopened factory labeled packages. Protect from damage.
   B. Store in a safe place, out of direct sunlight. Keep containers tightly sealed. Do not allow product to freeze. Use within manufacturer’s recommended shelf life, approximately 12 months.

PART 2 - PRODUCTS

2.1 PRODUCTS
   A. Refer to finish schedule for specified products, manufacturers and finishes not referenced in this section.

PART 3 - EXECUTION

3.1 PREPARATION
   A. Inspection: Prior to start of application, inspect existing conditions to ensure surfaces are suitable for installation including the following:
      1. Concrete has cured for a minimum of 28 days prior to application of sealer.
      2. Surface is completely free of sealers, oils, dirt, paint, alkali, penetrating sealers and foreign materials that would prevent the sealer from penetrating the concrete surface.
      3. Concrete has been swept clean.
      4. Test area has been approved.
3.2 APPLICATION

A. Concrete Sealer: Strictly comply with manufacturer’s installation recommendations including the following.

1. Apply after stain has dried at rate recommended by manufacturer.
2. Clean surface as recommended by manufacturer.
3. All concrete flatwork designated as being sealed in the plans and specifications shall be sealed with 2-3 even coats of sealer, at the rate of approximately 150 to 200 square feet per gallon.

3.3 CLEANING AND PROTECTION

A. Protection: Do not cover, but protect floor area from paint and other contaminants that could inhibit the sealer.

END OF SECTION 099723
SECTION 101400 - SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Exterior Room Identification:
   1. Type A Stair Identification
   2. Type B Room Identification
   3. Type C Directional Signage
   4. Type D Illuminated Blade Sign
   5. Metal Numbers
   6. Vinyl Graphics and Letters

1.2 REFERENCES
A. Americans with Disabilities Act (ADA).
B. American National Standards Institute (ANSI):

1.3 SUBMITTALS
A. Submit under provisions of Section 013300.
B. Product Data: Manufacturer's data sheets on each product to be installed.
C. Shop Drawings: Shop drawings with letter style, dimensions, materials, finishes and
general layout for each sign type, with sizes, edge and corner treatment, and mounting
methods shown.
D. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or
sections of units showing the full range of colors available for the following:
   1. Metal Letters.
   2. Polyurethane paint.
E. Maintenance Data: For signage cleaning and maintenance requirement to be included.
F. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE
A. Manufacturer Qualifications: Manufacturer shall have five years' experience
manufacturing and fabricating products of similar type and scope as those specified in
this section.
B. Warranties are required, manufacturer and/or installers shall be authorized by the
entity provided the warranty.
C. All completed signs shall be free from defects in material and workmanship and
effectively present specified or permitted message under both day and night viewing
conditions. Sign faces shall be smooth, shall exhibit uniform color and brightness over
entire background surface and shall not appear mottled, streaked or stained when viewed
either in ordinary daylight or incidental beams of automobile headlamps.
D. Support structures for any signage requiring to meet wind load shall will be engineered
by others in accordance with the state of Kentucky.
E. Regulatory Requirements:
   1. Comply with American with Disabilities Act (ADA) and state and local codes as
      adopted by authorities having jurisdiction. Sign affected may include, but not be
      limited to:
      a. Permanently Designated Room and Spaces: Type A & B Signs.
      b. Elevator Signs.
      c. Stairway Identification
   2. MUTCD
      a. Regulatory signs shall be fully compliant with all requirement of the
         Manual on Uniform Traffic Control devices (MUTCD) except that sign
         size may be modified due to space constraints
F. Design Criteria: Drawing indicate sizes, profiles, and dimensional requirements of signs. Other signs with deviations for indicated dimensions and profiles may be considered, provided deviation do not change design concept. Burden of proof on equality is on prosper.

G. Installers are to coordinate sign placement with structural configuration and lighting location. Before sign installation, arrange meeting with Engineer/Architect and lighting installer at site or review sign placement.

H. Sign Quantity Count: Architect/Owner shall be responsible for determining the final sign quantity and sign schedule as indicated on the signage schedule and location plans prior to fabrication.

I. Provide written 5 year replacement warranty to Owner, that all signage will be free of defects due to workmanship and material including, but limited to fading, peeling, delamination, with no additional cost to owner. Repair all defects that develop during the warranty period and all damage to other work due to such defects.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's recommendations for delivery, storage and handling.

B. Materials shall be delivered to the location in unopened, labeled factory containers. Upon delivery, materials shall be inspected for damage. Deficient materials shall not be used.

1.6 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 absolute limits.

B. For signs to be supported by or anchored to permanent construction, provide manufacture and installers with specific requirements for anchorage devices.

C. Field Measurements: Verify recess openings by field measurements before fabrication and indicate measurements on shop drawings.

1.7 MAINTENANCE

A. Maintenance Instructions: Furnish maintenance instructions to owners personnel for cleaning and maintaining the signage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Corpus Christi Stamp Works, Inc. DBA/ National Signage Affiliates, located at: P. O. Box 2189 502 S. Staples (78401); Corpus Christi, TX 78403; Toll Free Tel: 800-322-4515; Email: sales@ccstampworks.com; Web: www.ccswsignsystems.com

B. Acceptable Manufacturer: South Texas Graphic Specialties, located at: 10216 Georgibelle Dr., Houston, TX 77043; 713-467-4499; Email: stgs@sbcglobal.net

C. Substitution: acceptable if approved by architect.

2.2 MATERIALS

A. Graphics:

1. Graphics shall be highest quality with sharp lines and smooth curves. Images shall be uniform colors and free from streaks or spotting.

2. Content and Style: Provide sign copy that complies with requirements indicated for size, style, spacing, content, position, material, finishes and colors of letters, numbers and other graphic devices. Refer to the sign schedule for copy, description of signs and reference to the sign types.

3. Pressure applied Graphics:
a. Where pressure-applied graphic applied to painted background are specified or permitted, the paint shall be flat, opaque Matthews Acrylic Polyurethane as recommended by manufacture.
b. Where pressure-applied, reflective graphics on an opaque painted background are specified or permitted, letters shall be digitally produced and cut by electronic cutting machines from 3M or equivalent engineered Grade sheeting, colors TBD.
c. Where pressure-applied non-reflective graphics are specified letters shall be digital produced and cut by computer driven processes from 3m or equivalent film.

4. Aluminum:
   a. Provide aluminum sheet of 6061-T6 or 5052-H38 alloys and temper recommended by aluminum producer or finisher for use type and finish indicated and with not less than strength and durability properties specified in ASTM B209 for 5052-H15.
   b. Aluminum extrusion shall be of alloy and temper recommended by aluminum producer for type of use and finish and with not less than strength and durability properties specified in ASTM B221 for 6063-T5.
   c. All aluminum will be Heliarch welded.

5. Paints:
   a. All paints shall be (MAP) Matthews Acrylic Polyurethane paint. Exact colors TBD.
   b. All color for which color match specified shall be approved by architect prior to production.

6. Electrical: To meet local, state and federal regulations/codes.
   a. The LED light engine panel shall consist of adequate LED’s to provide 200 nits (200 Candela per square meter) or equivalent surface luminance of 660 lux over a -40 degree to +60 degree C ambient temperature range.
   b. There shall be sufficient quantity of white LED’s to uniformly illuminate the viewing area with no more than a 20% deviation from any two points on the sign face in light output.
   c. Power use shall be 3-4 walls per square foot of viewing area. The failure of one LED shall not reduce the light output by more than 8% per square foot of sign face. If any 1 LED should fail it will not cause any other LEDs to fail.
   d. The LED light engine panel shall consist of a circuit board comprised of an insulated aluminum substrate with a minimum thickness of .050 inch.
   e. Circuit conductors and LED attachment adhesive shall be minimally 90% silver to insure optimal electrical and thermal conductivity.

B. ROOM IDENTIFICATION:
   Sign Types A & B - Description: ADA VisiTouch Sign Systems. Compliant signs with 1/8"clear non-glare acrylic face with back painted, color TDB; ADA text, pictograms chemically welded to face, color TBD; DuraDot© Braille rasters as specified; Demarcation line (if desired TBD) – 1/32” high, color TBD, ADA approved plastic chemically welded to face, edges TBD.
   1. Background color select from Matthews Acrylic Polyurethane paint chart or custom match TBD.
   2. Text and demarcation line color select from VisiTouch color chart TBD.
   3. Sign Edges: Matte, polished or painted as indicated by architect TBD.
   4. Mounting, 3M VHB foam tape and silicone adhesive or mechanical with screws and anchors TBD.

C. DIRECTIONAL SIGNAGE:
   1. 1.5” square aluminum frames welded together. MAP Color TBD.
2. 1/8” thick MAP painted acrylic panels mounted to frame with 3M VHB and silicone adhesive. MAP Panel Color TBD.
3. 3” H vinyl graphics pressure-applied retroreflective or non-reflective TBD.
4. Signs will have 3 mounting plates each. Size will be ¼” x 6”x6” aluminum Mounting plate color TBD.
5. Mounting plates will swivel and have 4, ½” D and holes.
6. Directional will be mounted to concrete ceiling with concrete screws and anchors in conjunction with epoxy adhesive.
7. Mounting heights per architect’s instructions.
8. Signs will meet ADMG of ADA.

D. ILLUMINATED BLADE SIGN:
1. Sign size is 36”x 36”. Standard viewable height. Overall thickness of sign body shall be 6” double sided blade mounted sign.
2. Sign body shall be fabricated in accordance with NEMA 3R standards.
3. Sign body shall be constructed of aluminum extrusions and or sheet aluminum 6061T or 5052H32 with a thickness of .090 or better.
4. The sign body shall include internal electrical box and LED lit.
5. Frame will have continuous hinges on top. Frame will lock into place with secured screws on bottom for maintenance.
6. Face panel will be .187 translucent white polycarbonate or TBD.
7. Graphics and Copy will be vinyl film or painted TBD.

E. METAL NUMBERS:
1. Numbers will be Precision CNC cut from aluminum 5052H32. 10” Height. Thickness 3/8”.
2. Numbers will be painted or satin clear coated with Matthews Acrylic Polyurethane paint.
3. Font TBD.
4. Mounting with threaded studs and silicone. Projection ½”.
5. Exact mounting heights and location TBD by architect.
6. Mounting templates to be provided by manufacture.
7. Exact message to be provided by architect.

F. VINYL GRAPHICS AND LETTERS:
1. Letters will be 3M 5 mil vinyl film or equivalent.
2. Letter will be of height indicated on drawings.
3. Color texture and or pattern TBD.
4. Exact mounting heights and location TBD by architect.
5. Exact message to be provided by architect.

2.3 ACCESSORIES
A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.4 FABRICATION
A. General: Provide manufacturer’s standard signs of configurations indicated.

2.5 FINISHES, GENERAL
A. Comply with NAAMM’s "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

1. Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness of 1.5 mils, medium gloss.

PART 3 EXECUTION

3.1 EXAMINATION

A. Installer shall examine signs for defects, damage, and compliance with specifications. Installation shall not proceed until satisfactory conditions are achieved.
B. Inspect conditions of substrate and other conditions which may affect installation of signage.
C. Do not begin installation until substrates are within manufacturer's specified tolerances and have been prepared in accordance with manufacturer's instructions.
D. If substrate preparation is the responsibility of another installer, do not proceed with installation. Notify Architect of any unsatisfactory conditions immediately.
E. Commencement of work is deemed as acceptance of installation conditions.

3.2 PREPARATION

A. Verify mounting heights and locations for signage will comply with specified requirements, including accessibility requirements.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions. Clean mounting locations of dirt, dust, grease or similar conditions that would prevent proper installation.

3.3 INSTALLATION

A. Install in accordance with manufacturer's printed installation instructions, and in proper relationship with adjacent work.
B. Use mounting methods and fasteners as recommended by the manufacturer.
C. Set level, plumb, rigid and at heights indicated with surfaces free from defects.

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 101400
SECTION 104413 - FIRE EXTINGUISHERS CABINETS AND ACCESSORIES

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 DESCRIPTION OF WORK

A. Extent of fire extinguishers, cabinets and accessories is indicated on drawings.

B. Definition: "Fire extinguishers" as used in this section refers to units which can be hand-carried as opposed to those which are equipped with wheels or to fixed fire extinguishing systems.

C. Types of products required include:
   1. Fire extinguishers with enclosed cabinets

1.3 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain products in this section from one manufacturer.

B. UL-Listed Products: Provide new portable fire extinguishers which are UL-listed and bear UL "Listing Mark" for type, rating, and classification of extinguisher indicated.

1.4 SUBMITTALS

A. Product Data: Submit product data for each type of product included in this section. For fire extinguisher cabinets include roughing-in dimensions and details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, and panel style and materials.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis of Design: Cabinets as indicated are “Classic” series cabinets as manufactured by J-L Industries. Subject to compliance with requirements, products of a similar style, trim and finish may be considered by the following:
1. Larsen Manufacturing, Architectural Series
2. Potter-Roemer, Alta Series
3. Clear acrylic or tempered glass vertical "slot" lite in lieu of solid front door is acceptable.

2.2 FIRE EXTINGUISHERS

A. General: Provide fire extinguishers for each extinguisher cabinet.

B. Multi-Purpose Dry Chemical Type: UL-rated 4-A:60-B: C, 10 lb. nominal capacity, in enameled steel container, for Class A, Class B and Class C fires.

2.3 FIRE EXTINGUISHER CABINETS

A. General: Provide fire extinguisher cabinets where indicated, of suitable size for housing fire extinguishers of types and capacities indicated.

B. Cabinets suitable for mounting conditions indicated, of the following types as indicated.

C. Surface-Mounted Cabinet: Cabinet box fully exposed and mounted directly on wall with no trim.
   2. Door Material: Galvanized steel sheet.
   3. Door Style: Fully glazed panel with frame.
   5. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
   6. Accessories:
      a. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
      b. Break-Glass Strike: Manufacturer's standard metal strike, complete with chain and mounting clip, secured to cabinet.
      c. Door Lock: Cylinder lock, keyed alike to other cabinets.
      d. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, color, and location.
   7. Finishes:
      a. Manufacturer's standard baked-enamel paint for the following:
      b. Exterior of cabinet, door, and trim except for those surfaces indicated to receive another finish.
      c. Interior of cabinet and door.
D. Steel or aluminum tubs: Manufacturer's standard folded and seamed construction, powder coated finish.

E. Door Hardware: Provide manufacturer's standard door operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam action latch, or door pull, exposed or concealed, and friction latch. Provide concealed or continuous type hinge permitting door to open 180 deg.

F. Finish: Match door and trim finish.

2.4 ACCESSORIES

A. Mounting Brackets: Manufacturer's standard steel, designed to secure extinguisher, of sizes required for types and capacities of extinguishers indicated, with plated or baked-enamel finish.

   1. Provide brackets for extinguishers not located in cabinets.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install items included in this section in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

B. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

END OF SECTION 104413
SECTION 111233.13 – LIFT ARM PARKING GATES

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:
   1. Automatic barrier gates.
   2. Vehicle detectors.

B. Related Sections:
   1. Section 101400 "Signage" for exterior parking-related signs.
   2. Section 28130 "Access Control" for integrating parking control equipment.

1.3 SYSTEM DESCRIPTION

A. Parking Control System: Intended to be used for the following types of parking management:
   1. Monthly Parking: Monthly rated parking, with fee paid by the month and access gained by access control card.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for parking control equipment. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For parking control equipment. Include plans, elevations, sections, details, and attachments to other work.
   1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   2. Wiring Diagrams: For power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Field quality-control reports.
1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For parking control equipment to include in emergency, operation, and maintenance manuals.

B. Software and Firmware Operational Documentation:
   1. Software operating and upgrade manuals.
   2. Program Software Backup: On magnetic media or compact disk, complete with data files.
   3. Device address list.
   4. Printout of software application and graphic screens.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Gate Arms: Two breakaway gate arms for each gate installed, complete with accessory components.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain parking control equipment from single source from single manufacturer.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
   2. Extruded Shapes: ASTM B 221 (ASTM B 221M).

B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

C. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, commercial quality, with G60 (Z180) coating designation; mill phosphatized.

D. Stainless-Steel Sheet: ASTM A 666, Type 304.

2.2 AUTOMATIC BARRIER GATES

A. General: Provide UL-approved parking control device consisting of operator and controller housed in a weathertight, tamper-resistant cabinet enclosure with gate arm. Device shall be activated by a signal from access or revenue control device. Fabricate unit with gate-arm height in down position of not more than 35 inches (889 mm) above pavement to prevent even small vehicles from passing under gate arm.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Linear LLC Barrier Gate LN-BGUD1021W with 2800-111 articulating arm. Product substitutions permitted based on submitting for approval prior to bid date.

B. Standard: Provide barrier gates and gate operators that are listed and labeled according to UL 325 by a qualified testing agency.

C. Controller: Factory-sealed, solid-state, plug-in type, with galvanized-steel box for wiring connections, coordinated with Access Control requirements.

D. Cabinets: Fabricated from metal sheet with seams welded and ground smooth; approximately 15 inches square by 40 inches tall (381 mm square by 1016 mm tall). Provide single, gasketed access door for each cabinet with flush-mounted locks. Furnish two keys for each lock, all locks keyed alike. Fabricate cabinet with internal reinforcing and four mounting holes accessible only from inside cabinet.

E. Folding Gate Arm: Two pieces of 1-by-4-inch nominal- (19-by-89-mm actual-) size pine or redwood joined together with metal side brackets; with painted finish and black diagonal stripes on traffic-side face. Provide mounting flange with breakaway feature to ensure clean break if arm is struck by vehicle.

1. Length: 10 feet (3.0 m).

F. Operator: 1/3 hp; 115V, 60-Hz, single-phase, instant-reversing, continuous-duty motor for operating gate arm. Transmit power to gate-arm drive shaft through speed reducer to harmonic-acting crank and connecting rod. Fabricate crank, rod, and drive shaft of galvanized solid bar steel. Provide an operable cam for adjusting arm travel.

G. Accessories:

1. Audible alarm that activates as part of a safety device system.

2.3 VEHICLE DETECTORS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Linear LLC or comparable product by one of the following:

1. Amano Cincinnati, Inc.
2. Amtel Security System Inc.
4. Engineered Parking Systems, Inc.
5. Federal APD, Inc.
7. Operator Specialty Co., Inc.; Linear LLC group member.
9. PTC Industries.
B. Vehicle Loop Detector System: Provide self-tuning electronic presence detector with adjustable detection patterns, adjustable sensitivity and frequency settings, and panel indicator light designed to detect presence or transit of a vehicle over an embedded loop of wire and to emit signal activating gate-arm operator. Include automatic closing timer with adjustable time delay before closing, timer cut-off switch, and vehicle loop detector designed to open and close gate arm. Provide number of loops consisting of multiple strands of wire, number of turns, loop size, and method of placement at location shown on Drawings, as recommended in writing by detection system manufacturer for function indicated.

1. Field-Assembled Loop: Wire, in size indicated for field assembly, and sealant; style for saw-cut installation.

2.4 STEEL FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with the following:

1. ASTM A 123/A 123M for iron and steel parking control equipment.
2. ASTM A 153/A 153M and ASTM F 2329 for iron and steel hardware for parking control equipment.

B. Galvanized-Steel and Steel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, including equipment bases; accurate placement, pattern, and orientation of anchor bolts; critical dimensions; and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical systems to verify actual locations of connections before parking control equipment installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install parking control equipment as required for a complete and integrated installation.

1. Rough-in electrical connections.

B. Automatic Barrier Gates: Anchor cabinets to concrete bases with anchor bolts or expansion anchors and mount barrier gate arms.

1. Install barrier gates according to UL 325.
C. Vehicle Loop Detectors: Cut grooves in pavement and bury and seal wire loop at locations indicated on Drawings according to manufacturer's written instructions. Connect to parking control equipment operated by detector.

D. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

E. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.
   1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:
   1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
   2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
   3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Parking control equipment will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.4 ADJUSTING

A. Adjust parking control equipment to function smoothly and lubricate as recommended by manufacturer.

B. Confirm that locks engage accurately and securely without forcing or binding.

C. After completing installation of exposed, factory-finished parking control equipment, inspect exposed finishes and repair damaged finishes.

3.5 PROTECTION

A. Remove barrier gate arms during the construction period to prevent damage, and install them immediately before Substantial Completion.

3.6 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain parking control equipment.
3.7 PARKING CONTROL EQUIPMENT SCHEDULE

A. Provide parking control equipment for each lane as follows:

1. Exit Lane
   a. Linear LLC LN-BGUD1021W, 10' 115V/24VDC barrier gate with 2800-111 articulating arm.
   b. Open loop.
   c. Reset loop.
   d. See section 28130 "Access Control" for associated integrating parking control equipment.

2. Entry Lane
   a. Linear LLC LN-BGUD1021W, 10' 115V/24VDC barrier gate with 2800-111 articulating arm.
   b. Door controller reader.
   c. Reset loop.
   d. See section 28130 "Access Control" for associated integrating parking control equipment.

END OF SECTION 111233.13
SECTION 133410 – ALUMINUM PERFORATED STRUCTURE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnish and install prefabricated aluminum structure with support tubes, perforated design and AAMA tested non-combustible plate panels. Plate panels, perforated panels and aluminum structure shall be engineered, designed, perforated and fabricated by a single manufacturer in-house.

1.2 RELATED WORK

A. Miscellaneous Steel: General contractor shall provide steel wall support as detailed.

1.3 REFERENCES


B. ASTM B-209 - Specifications for flat sheet, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than strength and durability properties of alloy 5005 H15.

C. ASTM A-924 - General requirements for steel sheet, metallic coated by the hot-dip process.

D. AISI - Specification for the design of cold formed steel structural members.

1.4 SYSTEM DESCRIPTION

A. Design of structure shall be in accordance with applicable local building codes and certified by a professional engineer registered in the State of Kentucky. System is delegated design so bidders are responsible for sizing tubes and wall thicknesses prior to bid.

1.5 QUALITY ASSURANCE

A. Manufacturer: Shall have a minimum of 5 years experience in the manufacturer and supplying of aluminum structures and plate panels. Manufacturer must engineer, design, fabricate and perforate all panels in-house. Outsourcing and/or subcontracting of any operation will not be accepted.

B. Installer shall have a minimum of 5 years experience installing pre-engineered structures. Installation shall be in accordance with manufacturer's shop drawings.

C. Materials and finishes shall meet or exceed ASTM and Federal Test requirements.

D. Mockups: Before production of exterior screen wall, construct full-sized mockup to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

   i. Build 6’-0” wide mockup in areas designated by Architect including structural support, panels, framing, lighting & accessories complete with anchors, connections, flashings, and joint fillers.
1. Do not proceed with remaining work until workmanship and color are approved by Architect.
2. Rebuild mock-up as required to produce acceptable work at no additional cost to the Owner.
3. Accepted mock-up shall be comparison standard for remaining Work.
4. Approved mockups may become part of the completed Work if undamaged at time of Substantial Completion and approved by the Architect.
5. Approval of mockups does not constitute approval of deviations from the Contract Documents unless such deviations are specifically approved by Architect in writing.

1.6 REGULATORY REQUIREMENTS
   A. Conform to the Local Building Code Requirements.

1.7 SUBMITTALS
   A. Submit two 2" x 3" color samples for selection of roof deck and trim.
   B. Product Data: Submit manufacturer’s product data and installation instructions for each type of material indicated.
   C. Shop Drawings: Submit shop drawings for components and installation which are fully dimensioned or detailed on manufacturer’s data sheets.
   D. Testing: Plate panel ASTM and AAMA testing must be performed by an independent third party testing agency. A PE stamp and/or calculations performed after the bid will not meet this criteria.

1.8 DELIVERY, STORAGE AND HANDLING
   A. Store materials on site in a manner so they will not be damaged. Materials shall be placed so water will drain and not accumulate.

1.9 WARRANTY
   A. Provide two-year manufacturer’s warranty.
   E. Warranty: Include coverage of materials and workmanship.

1.10 TESTING
   A. General performance: Metal plate wall panel assemblies shall comply with performance requirements without failure due to defective manufacturing, fabrication, installation, or other defects in construction. Design, fabricate, and a pressure equalized “rainscreen” aluminum wall panel system to meet the of AAMA 508-7 Voluntary Test Method and Specifications for Pressure Equalized Rain Screen Wall Cladding Systems, specifically as follows. System shall meet AAMA 508-7 testing without any intermediate caulks, flashings, gaskets or trims.

PART II - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS
   A. Sobotec Ltd. (basis of design); Pohl Inc or Zehner Company or approved equal.
2.2 MATERIALS
   A. Plate panels shall be 25,000 psi yield minimum aluminum 1/8" thick minimum, 3/16" as required.
   B. Perforated panels shall be 25,000 psi yield minimum aluminum 1/8" thick minimum, 3/16" as required. Perforated panels shall have two different designs.
   C. Panels shall be 2 ¼" minimum depth. Less than 2 ¼" shall not be accepted.
   D. Tubes shall be square tubes meeting ASMT Specification A-500, Grade B.

2.3 FINISH
   A. General: Comply with NAAMM’s “Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designating finishes.
   B. Three-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      1. Plate panels and perforated panels with two different designs shall be painted two different colors.

PART 3 - EXECUTION
3.1 INSPECTION
   A. Verity that panels and structure are installed straight and true.

3.2 INSTALLATION
   A. Install panels and structure in accordance with architectural drawings and details and manufacturer's drawings and specifications.

3.3 TOLERANCES
   A. Maximum Variation from plan or location indicated on drawings and field verified: none.
   B. Maximum offset from true alignment between adjacent members butting or in line: none.

3.4 ADJUSTING AND CLEANING
   A. Cleanup site and remove excess material.

END OF SECTION 133410
SECTION 142400 - HYDRAULIC ELEVATORS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Hydraulic passenger elevators as shown and specified. Elevator work includes:
   2. Elevator car enclosures, hoistway entrances and signal equipment.
   3. Jack(s).
   4. Operation and control systems.
   5. Accessibility provisions for physically disabled persons.
   6. Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity.
   7. Materials and accessories as required to complete the elevator installation.

B. Related Sections:
   1. Division 1 General Requirements: Meet or exceed all referenced sustainability requirements.
   2. Division 3 Concrete: Installing inserts, sleeves and anchors in concrete.
   4. Division 5 Metals:
      a. Providing hoist beams, pit ladders, steel framing, auxiliary support steel and divider beams for supporting guide-rail brackets.
      b. Providing steel angle sill supports and grouting hoistway entrance sills and frames.
   5. Division 9 Finishes: Providing elevator car finish flooring and field painting unfinished and shop primed ferrous materials.
   6. Division 22 Plumbing:
      a. Sump pit and oil interceptor.
   7. Division 23: Heating, Ventilation and Air Conditioning
      a. Heating and ventilating hoistways and machine rooms.
   8. Division 16 Sections:
      a. Providing electrical service to elevators, including fused disconnect switches.
      b. Emergency power supply, transfer switch and auxiliary contacts.
      c. Heat and smoke sensing devices.
      d. Convenience outlets and illumination in machine room, hoistway and pit.

C. Work Not Included: General contractor shall provide the following in accordance with the requirements of the Model Building Code and ANSI A17.1 Code. For specific rules, refer to ANSI A17.1, Section 300 for hydraulic elevators. State or local requirements must be used if more stringent.

   1. Elevator hoist beam to be provided at top of elevator shaft. Beam must be able to accommodate proper loads and clearances for elevator installation and operation.
   2. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports and bracing including all setting templates and diagrams for placement.
   3. Hatch walls require a minimum two hours of fire rating. Hoistway should be clear and plumb with variations not to exceed 1/2” at any point.
   4. Elevator hoistways shall have barricades, as required.
   5. Install bevel guards at 75° on all recesses, projections or setbacks over 2” (4” for A17.1 2000 areas) except for loading or unloading.
   6. Provide rail bracket supports at pit, each floor and roof. For guide rail bracket supports, provide divider beams between hoistway at each floor and roof.
   7. Pit floor shall be level and free of debris. Reinforce dry pit to sustain normal vertical forces from rails and buffers.
   8. Where pit access is by means of the lowest hoistway entrance, a vertical ladder of non-
combustible material extending 42" minimum, (48" minimum for A17.1-2000 areas) shall be provided at the same height, above sill of access door or handgrips.

9. Machine room to be enclosed and protected.
10. Machine Room temperature must be maintained between 55º and 90º F.
11. If machine room is remote from the elevator hoistway, clear access must be available above the ceiling or metal/concrete raceways in floor for oil line and wiring duct from machine room.
12. Access to the machinery space and machine room must be in accordance with the governing authority or code.
13. Provide an 8” x 16” cutout through machine room wall, for oil line and wiring duct, coordinated with elevator contractor at the building site.
14. All wire and conduit should run remote from either the hoistways or the machine room.
15. When heat, smoke or combustion sensing devices are required, connect to elevator machine room terminals. Contacts on the sensors should be sided for 120 volt D.C.
16. Install and furnish finished flooring in elevator cab.
17. Finished floors and entrance walls are not to be constructed until after sills and door frames are in place. Consult elevator contractor for rough opening size. The general contractor shall supply the drywall framing so that the wall fire resistance rating is maintained, when drywall construction is used.
18. Where sheet rock or drywall construction is used for front walls, it shall be of sufficient strength to maintain the doors in true lateral alignment. Drywall contractor to coordinate with elevator contractor.
19. Before erection of rough walls and doors; erect hoistway sills, headers, and frames. After rough walls are finished; erect fascias and toe guards. Set sill level and slightly above finished floor at landings.
20. To maintain legal fire rating (concrete and/or masonry construction), door frames are to be anchored to walls and properly grouted in place.
21. The elevator wall shall interface with the hoistway entrance assembly and be in strict compliance with the elevator contractor's requirements.
22. General Contractor shall fill and grout around entrances, as required.
23. Elevator sill supports shall be provided at each opening.
24. All walls and sill supports must be plumb where openings occur.
25. For applications with jack hole, free and clear access to the elevator pit area for the jack hole-drilling rig is required.
26. Where jack hole is required, remove all spoils from jack hole drilling.
27. When not provided by Elevator Contractor, jack hole shall accommodate the jack unit. If required the jack hole is to be provided in strict accordance with the elevator contractor's shop drawings.
28. Locate a light fixture and convenience outlet in pit with switch located adjacent to the access door.
29. A light switch and fused disconnect switch for each elevator should be located inside the machine room adjacent to the door, where practical, per the National Electrical Code (NFPA No. 70).
30. As indicated by elevator contractor, provide a light outlet for each elevator, in center of hoistway (or in the machine room).
31. For signal systems and power operated door: provide ground and branch wiring circuits, including main line switch. For car light and fan: provide a feeder and branch wiring circuits, including main line switch.
32. Wall thickness may increase when fixtures are mounted in drywall. These requirements must be coordinated between the general contractor and the elevator contractor.
33. Provide supports, patching and recesses to accommodate hall button boxes, signal fixtures, etc..
34. Locate telephone and convenience outlet on control panel.
1.02 SUBMITTALS

A. Product data: When requested, the elevator contractor will provide standard cab, entrance and signal fixture data to describe product for approval.

B. Shop drawings:
   1. Show equipment arrangement in the machine room/control space, pit and hoistway. Provide plans, elevations, sections and details of assembly, erection, anchorage, and equipment location.
   2. Indicate elevator system capacities, sizes, performances, safety features, finishes and other pertinent information.
   3. Show floors served, travel distances, maximum loads imposed on the building structure at points of support and all similar considerations of the elevator work.
   4. Indicate electrical power requirements and branch circuit protection device recommendations.

C. Powder Coat Paint selection: Submit manufacturer’s standard selection charts for exposed finishes and materials.

D. Plastic laminate selection: Submit manufacturer’s standard selection charts for exposed finishes and materials.

E. Metal Finishes: Upon request, standard metal samples provided.

F. Operation and maintenance data. Include the following:
   2. Parts list, with recommended parts inventory.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: An approved manufacturer with minimum fifteen years experience in manufacturing, installing, and servicing elevators of the type required for the project.
   1. Must be the manufacturer of the power unit, controller, signal fixtures, door operators cab, entrances, and all other major parts of the elevator operating equipment.
      a. The major parts of the elevator equipment shall be manufactured in the United States, and not be an assembled system.
   2. The manufacturer shall have a documented, on-going quality assurance program.
   3. ISO-9001:2000 Manufacturer Certified
   4. ISO-14001:2004 Environmental Management System Certified
   5. LEED Gold certified elevator manufacturing facility.

B. Installer Qualifications: The manufacturer or an authorized agent of the manufacturer with not less than fifteen years of satisfactory experience installing elevators equal in character and performance to the project elevators.

C. Regulatory Requirements:
   1. ASME/ANSI A17.1 Safety Code for Elevators and Escalators, latest edition or as required by the local building code.
   6. CAN/CSA C22.1 Canadian Electrical Code.
   8. California Department of Public Health Standard Method V1.1–2010, CA Section 01350
D. Fire-rated Entrance Assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ASTM E2074, CAN4-S104 (ULC-S104), UL10(B), and NFPA 80. Provide entrance assembly units bearing Class B or 1 1/2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).

E. Inspection and testing: Elevator Installer shall obtain and pay for all required inspections, tests, permits and fees for elevator installation.
   1. Arrange for inspections and make required tests.
   2. Deliver to the Owner upon completion and acceptance of elevator work.

F. Product Qualifications:
   1. LCA, EPD and HPD data must be provided for all major components of the elevator system.
   2. LCA data must be compatible with GaBI Software.
   3. Environmental Product Declaration (EPD): Publicly available, critically reviewed life cycle analysis having at least a cradle-to-gate scope.
   4. GreenScreen Chemical Hazard Analysis: All ingredients of 100 parts-per-million or greater evaluated using GreenScreen for Safer Chemicals Method v1.2.
   5. Health Product Declarations (HPD v2 or later): Complete, published declaration with full disclosure of known hazards, prepared using the Health Product Declaration Collaborative's "HPD builder" on-line tool; Unknown hazard listed will not be considered acceptable.

1.04 DELIVERY, STORAGE AND HANDLING

A. Manufacturing will deliver elevator materials, components and equipment and the contractor is responsible to provide secure and safe storage on job site.

1.05 PROJECT CONDITIONS

A. Prohibited Use: Elevators shall not be used for temporary service or for any other purpose during the construction period before Substantial Completion and acceptance by the purchaser unless agreed upon by Elevator Contractor and General Contractor with signed temporary agreement.

B. Provide the hole for the jack unit (if required by the type of jack provided), based on excavation through normal soil or clay which can be removed by manual digging or by standard truck-mounted regular drilling unit. Provide a casing if required to retain the walls of the hole. General contractor shall remove excavation spoils deposited in the elevator pit.
   1. If a physical obstruction or hindrance is encountered below the ground surface, including boulders, rock, gravel, wood, metal, pilings, sand, water, quick sand, caves, public utilities or any other foreign material, obtain written authorization to proceed with excavating using special excavation equipment.
   2. Maintain a daily log of time and material costs involved.
   3. Elevator contractor will be compensated on a time and material basis for additional costs incurred after encountering the physical obstruction or hindrance, including the cost of the special excavation equipment.
1.06 WARRANTY

A. Warranty: Submit elevator manufacturer's standard written warranty agreeing to repair, restore or replace defects in elevator work materials and workmanship not due to ordinary wear and tear or improper use or care for 12 months after completion of installation or acceptance thereof by beneficial use, whichever is earlier.

1.07 MAINTENANCE

A. Furnish maintenance and call back service for a period of 12 months for each elevator after completion of installation or acceptance thereof by beneficial use, whichever is earlier, during normal working hours, excluding callbacks. Service shall consist of periodic examination of the equipment, adjustment, lubrication, cleaning, supplies and parts to keep the elevators in proper operation.

1. Manufacturer shall have a service office and full time service personnel within a 100 mile radius of the project site.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Product: Subject to compliance with requirements, provide ThyssenKrupp Elevator or comparable product by one of the following:
   a. DC Elevator
   b. Schindler Elevator Corp

2.02 MATERIALS, GENERAL

A. All Elevator Cab materials including frame, buttons, lighting, wall and ceiling assembly, laminates and carpet shall have an EPD and an HPD, and shall meet the California Department of Public Health Standard Method V1.1–2010, CA Section 01350 as mentioned in 1.03.9 of this specification.

B. Colors, patterns, and finishes: As selected by the Architect from manufacturer's standard colors, patterns, and finish charts.

C. Steel:
   1. Shapes and bars: Carbon.
   2. Sheet: Cold-rolled steel sheet, commercial quality, Class 1, matte finish.

D. Plastic laminate: Decorative high-pressure type, complying with NEMA LD3, Type GP-50 General Purpose Grade, nominal 0.050” thickness.

E. Carpet: By others.

2.03 HOISTWAY EQUIPMENT

A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded with a wood subfloor. Underside of the platform shall be fireproofed. The car platform shall be designed and fabricated to support one-piece loads weighing up to 25% of the rated capacity.

B. Sling: Steel stiles affixed to a steel crosshead and bolstered with bracing members to remove
strain from the car enclosure.

C. Guide Rails: Steel, omega shaped, fastened to the building structure with steel brackets.

D. Guide Shoes: Slide guides shall be mounted on top and bottom of the car.

E. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on a steel template that is fastened to the pit floor or continuous channels fastened to the elevator guide rail or securely anchored to the pit floor. Provide extensions if required by project conditions.

F. Jack: Jack unit shall be of sufficient size to lift the gross load the height specified. Factory test jack to insure adequate strength and freedom from leakage. Brittle material, such as gray cast iron, is prohibited in the jack construction. Provide the following jack type: Single post conventional (in ground). Single polished steel hydraulic plunger housed in a steel sealed casing with sufficient clearance space to allow for alignment during installation. The casing shall have a dished endcap and safety bulkhead as required by A17.1 code. The plunger shall have a high-pressure sealing system which will not allow for seal movement or displacement during the course of operation. The jack system will be supplied with schedule 40 pvc or an HDPE protection system complying with A17.1 code requirements to prevent in ground corrosion of the casing. The jack casing shall have a bleeder valve to discharge any air trapped in the jack.

G. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the landings and correct for overtravel or undertravel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load.

H. Wiring, Piping, and Oil: Provide all necessary hoistway wiring in accordance with the National Electrical Code. All necessary code compliant pipe and fittings shall be provided to connect the power unit to the jack unit. Provide proper grade readily biodegradable oil as specified by the manufacturer of the power unit (see Power Unit section 2.04.G for further details)

2.04 POWER UNIT

A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit consisting of the following items:
1. Oil reservoir with tank cover.
2. An oil hydraulic pump.
3. An electric motor.
4. Oil control valve with the following components built into single housing; high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and electro-magnetic controlling solenoids.

B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.

C. Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating shall be selected for specified speed and load.

D. Control System: Shall be microprocessor based and protected from environmental extremes and excessive vibrations in a NEMA 1 enclosure.

E. Oil Control Unit: The following components shall be built into a single housing. Welded manifolds with separate valves to accomplish each function are not acceptable. Adjustments
shall be accessible and be made without removing the assembly from the oil line.
1. Relief valve shall be externally adjustable and be capable of bypassing the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve.
2. Up start and stop valve shall be adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and up stops.
3. Check valve shall be designed to close quietly without permitting any perceptible reverse flow.
4. Lowering valve and leveling valve shall be adjustable for down start speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" starts and stops. The leveling valve shall be designed to level the car to the floor in the direction the car is traveling after slowdown is initiated.


G. Oil Type: USDA certified biobased product, ultra low toxicity, readily biodegradable, energy efficient, high performing fluid made from canola oil with antioxidant, anticorrosive, antifoaming, and metal-passivating additives. Especially formulated for operating in environmentally sensitive areas. USDA certified biobased product, >90% bio-based content, per ASTM D6866

2.05 HOISTWAY ENTRANCES

A. Doors and Frames: Provide complete hollow metal type hoistway entrances at each hoistway opening bolted/knock down construction.
1. Manufacturer's standard entrance design consisting of hangers, doors, hanger supports, hanger covers, fascia plates, sight guards, and necessary hardware.
2. Main landing door & frame finish: Stainless steel panels, no. 4 brushed finish.
3. Typical door & frame finish: Stainless steel panels with no. 4 brushed finish.

B. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code.

C. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door.
1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
2. Hangers: Provide an adjustable device beneath the track to limit the up-thrust of the doors during operation.
3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.

D. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum.

2.06 CAR ENCLOSURE

A. Car Enclosure:
1. Walls: Cab type TKAP, reinforced cold-rolled steel with two coats factory applied baked enamel finish, with applied vertical wood core panels covered on both sides with high pressure plastic laminate. Applied panels shall be removable.
   a. Reveals and frieze: Powder Coated
2. Canopy: Cold-rolled steel with hinged exit.
3. Ceiling: Suspended type, fluorescent lighting with translucent diffuser mounted in a metal frame.
5. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on
sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic sliding guides.

a. Door Finish: Stainless steel panels: No. 4 brushed finish.
b. Cab Sills: Extruded aluminum, mill finish.

6. Handrail: Provide 1.5” diameter cylindrical metal on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, no. 4 brushed finish.

7. Ventilation: Manufacturer’s standard exhaust fan, mounted on the car top.

B. Car Top Inspection: Provide a car top inspection station with an “Auto-Inspection” switch, an “emergency stop” switch, and constant pressure “up and down” direction and safety buttons to make the normal operating devices inoperative. The station will give the inspector complete control of the elevator. The car top inspection station shall be mounted in the door operator assembly.

2.07 DOOR OPERATION

A. Door Operation: Provide a direct current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. Door movements shall be electrically cushioned at both limits of travel and the door operating mechanism shall be arranged for manual operation in event of power failure. Doors shall automatically open when the car arrives at the landing and automatically close after an adjustable time interval or when the car is dispatched to another landing. Closed-loop, microprocessor controlled motor-driven linear door operator, with adjustable torque limits, also acceptable. AC controlled units with oil checks or other deviations are not acceptable.

1. No Un-Necessary Door Operation: The car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as a dispatch car.

2. Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated.

3. Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car’s current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel will reverse and the door will reopen to answer the other call.

4. Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door closing is prevented for a field programmable time, a buzzer will sound. When the obstruction is removed, the door will begin to close at reduced speed. If the infra-red door protection system detects a person or object while closing on nudging, the doors will stop and resume closing only after the obstruction has been removed.

5. Limited Door Reversal: If the doors are closing and the infra-red beam(s) is interrupted, the doors will reverse and reopen partially. After the obstruction is cleared, the doors will begin to close.

6. Door Open Watchdog: If the doors are opening, but do not fully open after a field adjustable time, the doors will recycle closed then attempt to open six times to try and correct the fault.

7. Door Close Watchdog: If the doors are closing, but do not fully close after a field adjustable time, the doors will recycle open then attempt to close six times to try and correct the fault.

8. Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close.

B. Door Protection Devices: Provide a door protection system using 150 or more microprocessor
controlled infra-red light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen.

2.08 CAR OPERATING STATION

A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in an integral swing return panel requiring no applied faceplate. Swing return shall have a brushed stainless steel finish. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons that illuminate using long lasting LED’s shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for car light and accessories shall be provided.

B. Emergency Communications System: Integral phone system provided.

C. Auxiliary Operating Panel: Not Required

D. Column Mounted Car Riding Lantern: Not required for this application.

E. Special Equipment: Not Applicable

2.09 CONTROL SYSTEMS

A. Controller: The elevator control system shall be microprocessor based and software oriented. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings.

B. Automatic Light and Fan shut down: The control system shall evaluate the system activity and automatically turn off the cab lighting and ventilation fan during periods of inactivity. The settings shall be field programmable.

C. Special Operation: Not Applicable

D. Emergency Power Operation: (10-DOA) Upon loss of the normal power supply, building-supplied standby power is available on the same wires as the normal power supply. Once the loss of normal power is detected and standby power is available, the elevator is lowered to a pre-designated landing and the doors are opened. After passengers have exited the elevator, the doors are closed and the car is shut down. When normal power is restored, the elevator automatically resumes operation.

2.10 HALL STATIONS

A. Hall Stations, General: Vandal resistant buttons with center jewels which illuminate to indicate that a call has been registered at that floor for the indicated direction. Each button shall be provided with an internal automatic stop to prevent damage of switches that register the call. Provide 1 set ofpushbutton risers. All fixtures shall be vandal resistant type. Provide one pushbutton riser with faceplates having a brushed stainless steel finish.

1. Phase 1 firefighter’s service key switch, with instructions, shall be incorporated into the hall station at the designated level.

B. Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements.

C. Hall Position Indicator: Not Applicable
D. Hall lanterns: A hall lantern with adjustable chime shall be provided at each landing and located adjacent to the entrance. The lanterns, when illuminated, shall indicate the elevator car that shall stop at the landing and in what direction the car is set to travel. When the car reaches a predetermined distance from the floor where it is going to stop, the corresponding hall lantern shall illuminate and the chime shall sound. The hall lantern shall remain illuminated until the car doors close in preparation for leaving the floor. Illumination of the arrow shall be with LED’s. Faceplates shall match the hall station finish. Provide at all typical landings.

E. Special Equipment: Not Applicable

2.11 MISCELLANEOUS ELEVATOR COMPONENTS

A. Oil Hydraulic Silencer: Install an oil hydraulic silencer (muffler device) at the power unit location. The silencer shall contain pulsation absorbing material inserted in a blowout proof housing arranged for inspecting interior parts without removing unit from oil line.

PART 3 EXECUTION

3.01 EXAMINATION

A. Before starting elevator installation, inspect hoistway, hoistway openings, pits and machine rooms/control space, as constructed and verify all critical dimensions, and examine supporting structures and all other conditions under which elevator work is to be installed. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.02 INSTALLATION

A. Install elevator systems components and coordinate installation of hoistway wall construction.
   1. Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1, manufacturer’s installation instructions and approved shop drawings.
   2. Comply with the National Electrical Code for electrical work required during installation.

B. Jack unit excavation (if required by the type of jack provided): Drill or otherwise excavate below elevator pit construction as required to install the jack unit.
   1. Install casing for jack unit.
   2. Provide HDPE jack protection system for all in ground jacks.
   3. Set casing for jack unit assembly plumb, and partially fill with water-settled sand, eliminating voids. Back fill depth shall be sufficient to hold the bottom of the jack in place over time.

C. Coordination: Coordinate elevator work with the work of other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work.

D. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum safe, workable dimensions at each landing.
E. Lubricate operating parts of system where recommended by manufacturer.

3.03 FIELD QUALITY CONTROL

A. Acceptance testing: Upon completion of the elevator installation and before permitting use of elevator, perform acceptance tests as required by A17.1 Code and local authorities having jurisdiction. Perform other tests, if any, as required by governing regulations or agencies.

B. Advise Owner, Contractor, Architect, and governing authorities in advance of dates and times tests are to be performed on the elevator.

3.04 ADJUSTING

A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.

3.05 CLEANING

A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with manufacturer's recommendations for type of material and finish provided. Stainless stall shall be cleaned with soap and water and dried with a non-abrasive surface; shall not be cleaned with bleached-based cleansers.

B. At completion of elevator work, remove tools, equipment, and surplus materials from site. Clean equipment rooms and hoistway. Remove trash and debris.
   a. Use environmentally preferable and low VOC emitting cleaners for each application type. Cleaners that contain solvents, pine and/or citrus oils are not permitted.

3.06 PROTECTION

A. At time of Substantial Completion of elevator work, or portion thereof, provide suitable protective coverings, barriers, devices, signs, or other such methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.

3.07 DEMONSTRATION

A. Instruct Owner's personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.

B. Make a final check of each elevator operation, with Owner's personnel present, immediately before date of substantial completion. Determine that control systems and operating devices are functioning properly.

3.08 ELEVATOR SCHEDULE

A. Elevator Qty. 1
  1. Elevator Model: endura Below-Ground Conventional
  2. Rated Capacity: 3500 lbs.
  3. Rated Speed: 200 ft./min.
  4. Operation System: TAC32
  5. Travel: 36'-0"
  6. Landings: 4 total
7. Openings:
   a. Front: 4
   b. Rear: 0
8. Clear Car Inside: 6' - 8" wide x 5' - 5" deep
9. Cab Height: 8'-0" nominal
10. Hoistway Entrance Size: 3' - 6" wide x 7'-0" high
11. Door Type: Single Speed
13. Seismic Requirements: Zone 1
14. Fixture & Button Style: Vandal Resistant Signal Fixtures
15. Special Operations: None

3.09 SPECIAL CONDITIONS (Note: Add Special Conditions as Needed)

END OF SECTION