

SPECIFICATIONS
NEW ADDITION
for
Kettering Seventh-Day Adventist Church
3939 Stonebridge Road, Kettering, Ohio

PACKAGE 3A
MASONRY WORK
and
GRADE BEAM FOUNDATION WORK

May 20, 2019

Prepared by:

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Specifications Index
NEW ADDITION
for
Kettering Seventh-Day Adventist Church
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PACKAGE 3A

MASONRY WORK
and
GRADE BEAM WORK

May 20, 2019

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DOCUMENT 001116 – INSTRUCTIONS TO BIDDERS

Sealed bids will be received at the office of the Architect until **xx.xx p.m. EST**, local time on **Xxxxxx, xx, 2019** for the necessary labor, materials, tools, machinery and appliances required for the construction and completion of **"Addition to KETTERING SEVENTH-DAY CHURCH"** in connection with drawings and specifications on file in the office of the Architect.

A total Construction bid, including GRADE BEAM FOUNDATION WORK AND MASONRY WORK will be received. Separate prices shall be indicated for each alternate listed.

Contractors may obtain three (3) sets of drawings and specifications from the Architect for a deposit of (\$75.00).

Additional single sets of plans and specifications may be purchased from the following reprographics company:

ARC Document Solutions 424 E3rd St. Dayton Ohio 45402, Phone: 937.277.7930

Deposit checks shall be made payable to Ruetschle Architects.

Deposit will be refunded in full for sets of drawings and specifications in good condition returned within ten (10) days after bid date.

A Pre-bid Conference will be held at **xx:xx p.m. EST** local time, on **Xxxxxx, xx, xxxx**, at **Kettering Seventh-Day Adventist Church, 3939 Stonebridge Road, Kettering, Ohio**.

Bids must be submitted on blanks to be furnished by the Architect.

Bidders shall list on their proposals the contractor for the work.

Each bid must contain the full name of every person or company interested in the same, and shall separately state the price for labor and material.

The successful bidders upon receipt of notice of acceptance of their proposals, must furnish 100% Bid Security Form and 100% Labor and Material Payment Bond to the Owner.

No bidder may withdraw his bid within sixty (60) days after the actual date of bid opening. A prompt award of contract is expected.

If in the opinion of the Owner and/or his delegated representative, the acceptance of the lowest bid is not in the best interests of all concerned, the Owner may accept another proposal so opened or reject all proposals and advertise for other bids. The Owner reserves the right to waive any informalities.

END OF INSTRUCTIONS TO BIDDERS

DOCUMENT 004300 - BIDDERS PROPOSAL

Having carefully read and examined the "Instructions to Bidders", "Agreement", "General and Supplementary Conditions", "General Requirements", "Specifications", and "Plans" for the "Addition to KETTERING SEVENTH-DAY ADVENTIST CHURCH", and having inspected the premises and all the conditions affecting the work, and having examined the Performance Bond form required, the undersigned proposes to furnish all materials and perform all the labor necessary to the performance and completion of the project, all to be in full accordance with the documents named above, and has been duly filled out by:

The undersigned further agrees that if said bid is accepted, they will enter into a contract with the Owner for the faithful performance of labor and furnishing of materials included in such bid so accepted.

CAST-IN-PLACE CONCRETE GRADE BEAM WORK CONTRACT Division 03 30 00
(Total shall be the sum of Labor and Material)

Proposed Sub-Contractor: _____

Figures

Words

Total _____

MASONRY WORK CONTRACT : Division 04
(Total shall be the sum of Labor and Material)

Proposed Sub-Contractor: _____

Figures

Words

Total _____

TOTAL CONTRACT:
(Total sum of cast in place grade beam and masonry work contracts)

Figures

Words

Total Labor &
Material _____

STATEMENT BY CONTRACTOR

I, or we, have received the following ADDENDA as listed below:

New Addition
Kettering Seventh-Day Adventist
Church
Comm. No. 61716

004300-1

BIDDERS PROPOSAL

TIME OF COMPLETION

I, or we, have read and reviewed the Contract Documents and are fully aware of all the conditions regarding the "Time of Completion" as stated herein and as specifically set forth under the paragraph titled "Time of Completion", contained in the "INSTRUCTIONS TO BIDDERS".

We agree to complete the work covered by this Proposal, on or before the expiration of _____ calendar weeks, excluding weekends and legal holidays, from the date of awarding of the contract, or date given by Owner in a "Notice to Proceed" letter, while formal contracts are being prepared. In accordance with the provisions of the Agreement, an actual date shall be established for completion, based on the above stipulated number of weeks.

The full name and address of all persons and parties interested in the foregoing proposals as principals are as follows:

Bidder _____ Address _____

Bidder _____ Address _____

Bidder _____ Address _____

If no other person or party is interested, state that no person or party other than the Bidder is interested in the said Proposal. Also, state whether individual, partnership or corporation. If a corporation, state where organized, and if authorized to do business in Ohio.

(Bidder's Signature) _____

By: _____

Its: _____

(Official Title)

NOTE: The bidder shall sign his bid on the line indicated above; if it be a partnership, the firm name shall be signed, followed by the signature of the partner signing, his own name to be signed on the line beginning with the word "By"; if a corporate, name shall be signed, followed by the signature and official title of the Officer signing name.

AFFIX SEAL BELOW

BIDDER'S ADDRESS:

Address: _____

City: _____

State: _____

SUBSTITUTIONS

Voluntary substitutions may be listed below, or may be attached to the Proposal Form on the Contractor's official letterhead stationery. See heading titled "Substitutions" in the General Requirements, Section 01600.

Branch of Work	Name of Contractor	Item Offered As Substitution	Add	Deduct

END OF DOCUMENT 004300



STEC-CC
Rev. 3/15/04

Sales and Use Tax Construction Contract Exemption Certificate

Identification of Contract:

Contractee's (Owner's) name: s

Exact location of job/project: _____

Name of job/project as it appears
on contract documentation: _____

The undersigned hereby certifies that the tangible personal property purchased under this exemption certificate was purchased for incorporation into:

<input checked="" type="checkbox"/>	real property under a construction contract with the United States government, its agencies, the State of Ohio, or an Ohio political subdivision;	<input type="checkbox"/>	real property which is owned, or will be accepted for ownership at the time of completion, by the United States government, its agencies, the State of Ohio, or an Ohio political subdivision;
<input type="checkbox"/>	a horticulture structure or livestock structure for a person engaged in the business of horticulture or producing livestock;	<input type="checkbox"/>	a house of public worship or religious education;
<input type="checkbox"/>	a building used exclusively for charitable purposes by a nonprofit organization operated exclusively for charitable purposes as defined in section 5739.02(B)(12) of the Revised Code;	<input type="checkbox"/>	a building under a construction contract with an organization exempt from taxation under section 501(c)(3) of the Internal Revenue Code of 1986 when the building is to be used exclusively for the organization's exempt purposes;
<input type="checkbox"/>	the original construction of a sports facility under section 307.696 of the Revised Code;	<input type="checkbox"/>	a hospital facility entitled to exemption under section 140.08 of the Revised Code;
<input type="checkbox"/>	real property outside this state if such materials and services, when sold to a construction contractor in the state in which the real property is located for incorporation into real property in that state, would be exempt from a tax on sales levied by that state		

The original of this certificate must be signed by the owner/contractee and/or government official and must be retained by the prime contractor. Copies must be maintained by the owner/contractee and all subcontractors. When copies are issued to suppliers when purchasing materials, each copy must be signed by the contractor or subcontractor making the purchase.

Prime Contractor

Name: _____

Signed by: _____

Title: _____

Street address: _____

City, state, ZIP code: _____

Date: _____

Owner/Contractee

Name: _____

Signed by: _____

Title: _____

Street address: _____

City, state, ZIP code: _____

Date: _____

Subcontractor

Name: _____

Signed by: _____

Title: _____

Street address: _____

City, state, ZIP code: _____

Date: _____

Political Subdivision

Name: same as the Owner/Contractee

Signed by: _____

Title: _____

Street address: _____

City, state, ZIP code: _____

Date: _____

DELINQUENT PERSONAL PROPERTY TAX AFFIDAVIT

(Section 5719.042, ORC)

The undersigned individual, or duly authorized representative of the identified company, having been first duly cautioned and sworn, alleges and states that said individual or company has been advised that he has or it has received a contract let by competitive bid by MIAMI COUNTY BOARD OF DEVELOPMENTAL DISABILITIES pursuant to Section 5719.042, ORC, provides this statement to the Treasurer under oath that he or it was not charged, on the date the Bid(s) was submitted, with any delinquent personal property taxes on the general tax list of personal property of Miami County, Ohio, or that he or it is so charged in the following amount:

Delinquent Tax: _____

Penalties and interest due and unpaid: _____

Total (if none, indicate "NONE") _____

A copy of this sworn statement will be attached to and incorporated into the Contract(s) for this Project which shall enable payments to be made under said Contract(s).

Date: _____

By: _____

Company: _____

Project: _____

State of Ohio)
) SS.
County of _____)

Sworn to and executed before me this _____ day of _____, 20__.

Notary Public

My commission expires: _____

150380

CERTIFICATION OF COMPLIANCE WITH SECTION 3517.13 OF THE O.R.C.

ASSIGNING JUDGE _____
CR _____

- ☐ **CONTRACTS AWARDED TO INDIVIDUAL, PARTNERSHIP, OTHER UNINCORPORATED BUSINESS, ASSOCIATION (INCLUDING A PROFESSIONAL ASSOCIATION ORGANIZED UNDER CHAPTER 1785), ESTATE, OR TRUST MUST CONTAIN THE FOLLOWING CERTIFICATION:**

Any contract for goods or services costing more than five hundred dollars must contain a certification by the contracting entity (vendor) that all of the following persons are in compliance with 3517.13(I)(1), limiting campaign contributions to the holder of the public office having the ultimate responsibility for the award of the contract:

- THE INDIVIDUAL
- EACH PARTNER OR OWNER OF THE PARTNERSHIP OR UNINCORPORATED BUSINESS
- EACH SHAREHOLDER OF THE ASSOCIATION
- EACH ADMINISTRATOR OF THE ESTATE
- EACH EXECUTOR OF THE ESTATE
- EACH TRUSTEE OF THE TRUST
- EACH SPOUSE OF ANY OF THE PRECEEDING PERSONS
- EACH CHILD SEVEN YEARS TO SEVENTEEN YEARS OF AGE OF ANY OF THE PRECEEDING PERSONS
- ANY COMBINATION OF THE PERSONS LISTED ABOVE

- ☐ **CONTRACTS AWARDED TO A CORPORATION OR BUSINESS TRUST (EXCEPT A PROFESSIONAL ASSOCIATION ORGANIZED UNDER CHAPTER 1785) MUST CONTAIN THE FOLLOWING CERTIFICATION:**

Any contract for goods or services costing more than five hundred dollars must contain a certification by the contracting entity (vendor) that all of the following persons are in compliance with 3517.13(J)(1), limiting campaign contributions to the holder of the public office having the ultimate responsibility for the award of the contract:

- EACH OWNER OF MORE THAN TWENTY PER CENT OF THE CORPORATION OR BUSINESS TRUST
- EACH SPOUSE OF AN OWNER OF MORE THAN TWENTY PER CENT OF THE CORPORATION OR BUSINESS TRUST
- EACH CHILD SEVEN YEARS TO SEVENTEEN YEARS OF AGE OF AN OWNER OF MORE THAN TWENTY PER CENT OF THE CORPORATION OR BUSINESS TRUST
- ANY COMBINATION OF THE PERSONS LISTED ABOVE

It is hereby certified that all of the persons listed above are in compliance with section 3517.13(I)(1) or 3517.13(J)(1) of the Ohio Revised Code.

PRINTED NAME

TITLE

SIGNATURE

DATE

(Form of) BID GUARANTY BOND and PERFORMANCE BOND

A bond filed by a bidder to meet both the bid guaranty and performance bond requirements of division (B) of Section 153.54 of the Ohio Revised Code shall be in substantially the following form in accordance with O.R.C. 153.571:

"KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____ as
principal,
and _____ as sureties,
are hereby held and firmly bound unto _____
_____ as obligee in the penal sum of the dollar
amount of the bid submitted by the principal to the obligee on _____ 20____ to
undertake the project known as: _____

The penal sum referred to herein shall be the full dollar amount of the principal's bid to the obligee, incorporating any additive or deductive alternate proposals made by the principal on the date referred to above to the obligee, which are accepted by the obligee. In no case shall the penal sum exceed the amount of

_____ dollars (\$ _____)

(If the above line is left blank, the penal sum will be the full amount of the Principal's bid, including alternates, in dollars and cents. A percentage is not acceptable). For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed this _____ day of _____, 2018____, THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named principal has submitted a bid for:

—

Now, therefore, if the obligee accepts the bid of the principal and the principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the principal pays to the obligee the difference not to exceed ten (10%) percent of the penalty hereof between the amount specified in the bid and such larger amount for which the obligee may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the obligee does not award the contract to the next lowest bidder and resubmits the project for bidding, the principal pays to the obligee the difference not to exceed ten percent (10%) of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising, and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect; if the obligee accepts the bid of the principal and the principal within ten days after the awarding of the contract enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made part of this bond the same as though set forth herein;

Now also, if the said principal shall well and faithfully do and perform the things agreed by the principal to be done and performed according to the terms of said contract; and shall pay all lawful claims of sub-contractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialmen or laborer having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of the said contract or in or to the plans or specifications therefor shall in any wise affect the obligations of said surety on its bond."

Signed this _____ day of _____, 20__.

WITNESSES:

_____	_____
	Principal
_____	By _____
_____	_____
_____	_____
	Attorney in Fact

(Form of) PERFORMANCE BOND

The successful bidder who has filed with his bid a 10% bid guaranty in the form of a certified check, cashier's check, or a letter of credit pursuant to Chapter 1305 of the Ohio Revised Code, in accordance with O.R.C. Chapter 153.54, division (C), in lieu of a "bid and performance bond", shall enter into a contract with the obligee by the execution of a performance bond, in substantially the following form:

"KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

_____ as principal,

and _____ as sureties,

sureties, are hereby held and firmly bound unto _____

in the penal sum of \$ _____, _____ dollars,

for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed this _____ day of _____, 2018.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named principal did on the _____ day of _____ 2018, enter into a contract with

—

which said contract is made a part of this bond the same as though set forth herein;

Now, if the said principal shall well and faithfully do and perform the things agreed by the principal to be done and performed according to the terms of said contract; and shall pay all lawful claims of sub-contractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialmen or laborer having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of the said contract or in or to the plans or specifications therefore shall in any wise affect the obligations of said surety on its bond."

Signed this _____ day of _____, 2018.

WITNESSES:

_____	Principal
_____	By _____
_____	_____
_____	_____
_____	Attorney in Fact

DRAFT AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

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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.
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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 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. 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.

§ 1.2 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.

§ 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.

§ 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. 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.

§ 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.

§ 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 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner’s obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner’s ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 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.

§ 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 ten-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 reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. 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.

§ 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.

§ 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 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.

§ 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, 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 and 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.

§ 3.5 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. 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 and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar 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.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 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.

§ 3.7.4 **Concealed or Unknown Conditions.** 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, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect 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 Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 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 through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect 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 or Architect 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.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 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(s) for the Architect's approval. The Architect'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 to review submittals. If the Contractor fails to submit a submittal schedule, 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.

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

§ 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.

§ 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 excavation. The Contractor shall not cut or otherwise alter 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.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 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 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, 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), 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 that would otherwise exist as to a party or person described in this Section 3.18.

§ 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 performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect'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.

§ 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. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

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 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 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. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work 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.

§ 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 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.

§ 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 the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 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.

§ 7.3.8 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 completed 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.

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.

§ 8.2.2 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.

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

§ 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.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

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.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to 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.

§ 9.3 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.

§ 9.3.2 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.

§ 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 seven 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. 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.

§ 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 or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. 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 or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof 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 for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. 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. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 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 on-site visits 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.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall 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, (4) consent of surety, if any, to final payment and (5), 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. 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.

§ 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

§ 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.

§ 10.2.2 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.

§ 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 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 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon 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.

~~DELETED § 10.3.3 To the fullest extent permitted by law, 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.~~

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§ 10.3.4 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 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.

~~DELETED § 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.~~

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§ 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 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 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.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

~~DELETED, § 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, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.~~

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~~DELETED, § 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.~~

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~~DELETED, § 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work.~~

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The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

~~DELETED, § 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.~~

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§ 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.

~~DELETED, § 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.~~

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~~DELETED, § 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.~~

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~~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.~~

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~~DELETED, § 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.~~

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~~DELETED, § 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.~~

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~~DELETED, § 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.~~

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§ 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.

~~DELETED, § 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.~~

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~~DELETED, § 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.~~

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~~DELETED, § 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.~~

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§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to 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 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

~~DELETED~~ except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

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§ 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.

§ 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.

§ 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.

§ 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, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

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, 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

§ 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; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 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 The 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.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract 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 costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 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.

§ 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.

§ 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.

§ 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.

~~DELETED: § 15.3 MEDIATION~~

~~DELETED: § 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.~~

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~~DELETED: § 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. 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.~~

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~~DELETED, § 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.

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~~DELETED, § 15.4 ARBITRATION~~

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~~DELETED, § 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.

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~~DELETED, § 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.

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~~DELETED, § 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.

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~~DELETED, § 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.

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~~DELETED, § 15.4.4 CONSOLIDATION OR JOINDER~~

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~~DELETED, § 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).

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~~DELETED, § 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, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

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~~DELETED, § 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.

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DOCUMENT 007300 - SUPPLEMENTARY CONDITIONS

The following supplements modify the "General Conditions of the Contract for Construction", A.I.A. Document A201, Fourteenth Edition, 1997. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

Article 2: Owner

Add the following sub-paragraph 2.2.6

2.2.6 Notice of Commencement

2.2.6.1, The Owner shall prepare a Notice of Commencement in affidavit form pursuant to Section 1311 sub-paragraphs .01 through .22 of the Ohio Revised Code.

Article 3: Contractor

Add the following subparagraph 3.4.4

3.4.4 The Owner and the Architect will consider a formal request for the substitution of products in lieu of those specified only under the conditions set forth in Section 01600, Products and Substitutions.

3.6 TAXES

Delete this subparagraph in its entirety. Refer to Section 01400, Paragraph 1.01.C Taxes for additional information.

3.9 SUPERINTENDENT

Subparagraph 3.9.1 of the General Conditions shall remain in effect and unchanged. See Section 01300 Project Procedures and Controls, Paragraph 1.01 Job Superintendent, for additional requirements regarding Superintendent.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

The General Requirements instruct the contractor to submit structural items directly to the Structural Engineer, and similarly, items of a Plumbing, HVAC, and Electrical nature to be submitted directly to the Consulting Engineer for review. In subparagraphs 3.12.1 through 3.12.10 of the General Conditions, wherever the term "Architect" is used, shall also apply to the Structural and/or Consulting Engineer, when review of submittal is the responsibility of the respective Engineering firm.

Article 4: Administration of the Contract

4.2.10. Delete wording of this subparagraph as stated, and substitute the following:

The Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site, in accordance with and under the restrictions of subparagraph 4.2.2 of the General Conditions.

4.5 Delete this section in its entirety.

4.6 Delete this section in its entirety.

Article 8; Time

Delete subparagraphs 8.1.4 and substitute the following:

8.1.4 The term "day" as used in the Contract Documents shall mean working day, excluding weekends and legal holidays.

Article 9; Payments and Completion

Add the following sentence to subparagraph 9.3.1:

The forms of Application for Payment shall be a notarized A.I.A. Document G-702, Application and Certificate for Payment, supported by AIA Document G-703, Continuation Sheet.

Add the following sentence to subparagraph 9.3.1:

9.3.1.3 Until final payment, the Owner shall pay ninety-two percent (92%) of the amount due the Contractor on account of progress payments.

Article 11 - Insurance and Bonds

To subparagraph 11.1.1, add the following clauses:

- 11.1.1.9 Liability insurance shall include all major divisions of coverage and be on a comprehensive basis including:
1. Premises Operations as applicable.
 2. Independent Contractors' Protective.
 3. Products and Completed Operations.
 4. Personal Injury Liability with Employment Exclusion deleted.
 5. Contractual, including specified provision for Contractor's obligation under Paragraph 3.18.
 6. Owned, non-owned and hired motor vehicles.
 7. Broad Form Property Damage including Completed Operations.

To Subparagraph 11.1.2, add the following clause:

- 11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits, or greater if required by law.
1. Workers' Compensation: state statutory
 2. Comprehensive General Liability (including Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage Contractual Liability and Personal Injury):
 - (a) Bodily Injury:

\$1,000,000	Each Occurrence
\$2,000,000	Aggregate
 - (b) Property Damage:

\$1,000,000	Each Occurrence
\$2,000,000	Aggregate

Property Damage Liability Insurance shall include coverage for explosion, collapse, and underground.
 3. Business Auto Liability (including owned, non-owned, and hired vehicles):
 - (a) Bodily Injury:

\$1,000,000	Each Person
\$1,000,000	Each Occurrence

- (b) Property Damage:
\$1,000,000 Each Occurrence
- 4. All Carriers must have a financial "Best" rating of at least "A".
- 5. If the General Liability coverages are provided by a Commercial Liability Policy, the:
 - (a) General Aggregate shall be not less than \$3,000,000 and it shall apply, in total.
 - (b) Fire Damage Limit shall be not less than \$1,000,000 on any one fire.
 - (c) Medical Expense Limit shall be not less than \$5,000 on any one person.
- 6. Umbrella Excess Liability:
 - \$ 3,000,000.00 over primary insurance
 - \$ 10,000.00 retention for self-insured hazards each occurrence.

To Subparagraph 11.1.3, add the following sentence:

If this insurance is written on the Comprehensive General Liability policy form, the Certificates shall be AIA Document G-705, or equal, Certificate of Insurance. If this insurance is written on a Commercial General Liability policy form, ACORD form 25S will be acceptable. The Contractor shall require his sub-contractors to carry insurance in the amounts listed above except that Umbrella Excess Liability (item 7), shall be \$1,000,000.00.

~~To Paragraph 11.4, Property Insurance, all references to Property Insurance shall mean "Builder's Risk Insurance".~~

~~To Subparagraph 11.4.1, delete all references to the Owner purchasing and maintaining property insurance and substitute the Contractor as providing and maintaining the property insurance.~~

~~To Subparagraph 11.4.1, add the following sentence:~~

~~"This policy must name Fairhaven Church as "Additional Insured", not simply as Certificate Holder.~~

~~Delete Clause 11.4.1.4, and substitute the following:~~

11.3.1.4 The Contractor shall provide insurance coverage for portions of the work stored off the site after written approval of the Owner at the value established in the approval, and also for portions of the Work in transit.

To Subparagraph 11.4.7, this shall be clarified to state that mutual waiver of subrogation is contingent upon complete and entire recovery of sustained loss by the owner from the underwriter for the builder's risk coverage for any and all damage and or injury associated with the loss event.

Article 13: Miscellaneous Provisions

Add the following paragraph 13.8:

13.8 Equal Opportunity

13.8.1 The Contractor shall maintain policies of employment as follows:

13.8.1.1 The Contractor and the Contractor's Subcontractors shall comply with Executive Order 11246, Section 202, Items 1 through 7, and shall not discriminate against any employee or applicant for employment because of race, creed, handicaps, color, sex or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, creed, handicap, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; 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 setting forth the policies of non-discrimination.

- 13.8.1.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, creed, handicap, color, sex or national origin.

END OF DOCUMENT 007300

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 UNIT PRICES

- A. Each bidder shall submit unit pricing for each item listed in the Unit Price Schedule in the Bidder's Proposal.
- B. These prices shall become part of the contract and shall be used to determine what will be added to or deducted from the Contract Sum by Change Order to the extent that the quantities of work required by the Contract Documents are increased or decreased. In the event that greater or lesser quantities of material are required than the estimated quantity listed on the part schedule, the Unit Price will be used as the basis for adjustment by Change Order, for the duration of the Contract.
- C. Payment shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals, erection or installation, and shall include overhead and profit.
- D. Payment will not be made for materials wasted or disposed of in a manner that is not acceptable or materials remaining on hand after completion of the work.
- E. Requirements of the Work related to unit prices are specified in the Contract Documents.

1.02 DOCUMENTS REQUIRED PRIOR TO SIGNING OF CONTRACT

- A. Prior to signing of Contract, successful Bidder shall furnish to Owner:
 - 1. Schedule of Values
 - 2. List of Sub-contractors
 - 3. A Workman's Compensation Certificate
 - 4. Credentials showing the Power of Attorney of the Agent of the Surety.
 - 5. A Certificate of Compliance, issued by the Division of Insurance, showing the right of the bonding company to do business in the State of Ohio.
 - 6. Certificate of Insurance, and Certification indicating that the Owner is named "Additional Insured".
 - 7. Performance bond and payment bond.
 - 8. In accordance with Section 30719 of the Ohio Revised Code, the successful bidder shall submit to the District's fiscal officer a statement affirmed under oath that the person with whom the contract is to be made was not charged at the time the bid was submitted with any delinquent personal property taxes on the general tax list of personal property of any county in which the taxing district has territory.

1.03 PAYMENT REQUESTS

- A. The Contractor shall submit his monthly Application for Payment on the most recent publication of A.I.A. Documents G-702 and G-703. Computerized forms, similar to G-702 and G-703 will be acceptable.
- B. Schedule of Values (on A.I.A. Document G-703) shall be prepared in such a manner that each major item of Work and each subcontracted item of Work is shown as a single line item.
 - 1. More than one G-703 form may be used if necessary to show all the required line items.
 - 2. Contingency Allowance shall be listed on the schedule of Values as a separate line item.

- C. Each Application for Payment form G-702 shall be notarized.
- D. Day of the month on which the Owner will authorize payment will be established at the Pre-Construction Meeting.

1.04 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect, with a detailed description of the proposed change and supplemental or revised Drawings and specifications, if necessary.
- B. Unless otherwise indicated in the proposal request, within 10 days of receipt of the proposal request, submit to the Architect for the Owner's review, an estimate of cost necessary to execute the proposed change.
 - 1. Include all materials purchased by the Contractor and incorporated into the changed work, showing costs, quantities, or unit prices of all items as appropriate.
 - 2. Indicate labor costs including the number of labor hours required.
 - 3. Indicate applicable delivery charges and equipment rental.
 - 4. Indicate contractor's overhead and profit.
 - 5. Indicate cost for extending the bonding and insurance.
 - 6. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- C. Contractor-initiated Change Order Proposal Requests: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.
 - 1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 - 2. Include all materials purchased by the Contractor and incorporated into the changed work, showing costs, quantities, or unit prices of all items as appropriate.
 - 3. Indicate labor costs including the number of labor hours required.
 - 4. Indicate applicable delivery charges and equipment rental.
 - 5. Indicate contractor's overhead and profit.
 - 6. Indicate cost for extending the bonding and insurance.
 - 7. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
 - 8. Comply with requirements in Section 01600 "Product Substitutions", if the proposed change in the Work requires the substitution of one product or system for a product or system specified.
- D. Proposal Request Form: Use A.I.A. Document G-709 for Change Order Proposal Requests.

1.05 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request, the Architect may issue a Construction Change Directive on A.I.A. Form G714, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. Construction change directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time.
- C. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 30 00

PROJECT PROCEDURES AND CONTROLS

PART 1 - GENERAL

1.01 JOB SUPERINTENDENT

- A. The Contractor and each prime sub-contractor shall have a qualified and competent superintendent on the project at all times when work is being done. Immediately after the award of the contract, the Contractor and each prime sub-contractor shall submit an outline experience record of his qualifications. The Architect will notify each contractor of his approval or disapproval. Until completion and acceptance of the work, contractor shall not change or remove the approved Superintendent except with the mutual consent of Owner and the Architect.
- B. If the Job Superintendent fails to perform to the satisfaction of the Architect or Owner, the Contractor shall replace him with a qualified superintendent.

1.02 PROGRESS SCHEDULE AND REPORTS

- A. Within 10 days after the execution of contract, submit a comprehensive bar-chart type progress schedule indicating a time bar for each significant category or unit of work to be performed at the site. Arrange the schedule to indicate required sequencing of units, and to show time allowances for submittals, inspections and similar time margins. Sub-contractors shall assist in the preparation of bar chart.
- B. Show critical submittal dates related to each time bar, or prepare separate coordinated listing of critical submittal dates.
- C. Following initial revision of schedule after Architect's/Owner's review, print and distribute schedule to entities with a need-to-know responsibility, including 3 copies to Architect/Owner. Post in temporary office space. Revise at intervals matching payment requests and redistribute/repost. Provide required copies with payment requests.

1.03 PROJECT MEETINGS

- A. Pre-Bid Conference
 - 1. Pre-bid Conference for contractors will be held on December 20, 2018 at 3:30 PM local time. All contractors are to attend the meeting at Kettering Seventh-Day Adventist Church.
- B. Pre-Construction Meeting
 - 1. A pre-construction conference will be held within fifteen (15) days after the execution of the Contract to review the submitted schedules and establish procedures for the orderly completion of the Contract. The Architect, Owner's representative and any consultants deemed necessary will be in attendance.
- C. Project Meetings
 - 1. Conduct general progress meetings as required, attended by a representative of each primary entity engaged for performance of work, including the Owner and Architect.
 - 2. Contractor shall conduct meeting, and record discussions and decisions which shall be transcribed, typed, and mailed by the Contractor to meeting attendees and others with a need-to-know basis, within two (2) working days subsequent to each meeting.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The Contractor or any of his subcontractors shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such work shall be done in accordance with the approved submittals. Any changes required due to the unauthorized start of fabrication will be made at no additional expense to the Owner.
- B. Comply with manufacturer's instructions and recommendations when manufacturer's printed information is more detailed or stringent than requirements contained directly in contract documents.
- B. Anchor work securely in place, properly located by measured line and level, organized for best possible uniformity, visual effect, operational efficiency, durability and similar benefit to Owner's use. Isolate non-compatible materials from contact sufficiently to prevent deterioration.
- C. Mount individual units of work at industry-recognized mounting heights, if not otherwise indicated; refer uncertainties to Architect before proceeding.

3.02 CLEANING UP

- A. Removing Rubbish
 - 1. The Contractor, and each sub-contractor, shall clean up and remove all debris caused by him, from the building property. This shall be done at regular intervals and a minimum of once each week. The premises shall be kept clean and in an orderly manner at all times, to the satisfaction of the Owner and Architect. The Architect reserves the right to order this cleaning done, should contractors not comply with the above, and charge same to them.
- B. Clean all appointments throughout the interior and exterior of the building where work under this contract has caused dust, dirt, debris, soiling, etc. of any surface, and turn each area over to Owner ready for use.
- C. Protection
 - 1. The Contractor and each sub-contractor shall cover and protect their own work. If sub-contractors habitually neglect to cover and protect their work, the General Contractor shall cover and protect the work as necessary, and may charge the cost for protection of the work to the appropriate contractor.

END OF SECTION

SECTION 01 35 00

SUBMITTALS

PART 1 - GENERAL

1.01 GENERAL

- A. Coordinate submittal preparation with performance of construction activities and with purchasing or fabricating, delivery, other submittals and related activities. Transmit in advance of performance of related activities to avoid delay.
- B. Coordinate transmittal of different submittals for related elements so processing will not be delayed by the need to review concurrently for coordination. The Architect reserves the right to withhold action on a submittal requiring coordination until related submittals are received.
- C. Allow 15 calendar days for initial review of submittal items. Allow more time if processing must be delayed for coordination with other submittals. The Architect will advise the Contractor when a submittal will be delayed for coordination.
- D. As part of the progress schedule for the project, the General Contractor shall prepare a comprehensive schedule indicating shop drawing, sample and technical data submission dates.

1.02 SHOP DRAWINGS, SAMPLES, AND PRODUCT DATA

- A. Submittal quantities will be determined at the pre-construction meeting.
- B. Shop Drawings
 - 1. Submit shop drawings to the Architect in ample time for checking and approval prior to fabrication or delivery. All branches and trades shall furnish approved shop or setting drawings to other trades and branches affected by same. The Architect will retain two (2) sets and return the remaining sets to the contractor. If corrections are to be made, they shall be corrected and resubmitted until approved. The approval shall not relieve the Contractor from deviations from the contract documents unless he makes a written statement showing where such deviations occur.
 - 2. Contractor shall check the shop drawings and indicate with an approved stamp that the Drawings have been checked prior to submission to the Architect. Do not forward shop drawings to Architect that are incomplete or that do not conform to the drawings and specifications.
- C. Samples
 - 1. The Contractor shall furnish the Architect, at his office, and for his inspection, all current samples of materials as shall be requested. The work shall be in accordance with approved samples.
- D. Product Data
 - 1. Submit copies of product/technical data cuts to the Architect in ample time for checking and approval prior to fabrication or delivery. The Architect will retain two (2) sets and return the remaining copies to the contractor. If corrections are to be made, they shall be corrected and resubmitted until approved. The approval shall not relieve the Contractor from deviations from the contract documents unless he makes a written statement showing where such deviations occur.

2. Contractor shall check the product/technical data and indicate with an approved stamp that the Drawings have been checked prior to submission to the Architect. Do not forward information to Architect that is incomplete or that does not conform to drawings and specifications. Information pertinent to the project shall be circled, highlighted, underlined, or otherwise made to stand out, to clearly indicate to the Architect only pertinent information; similarly, non-conforming or non-pertinent information shall be crossed out or indicated as N.A. (not applicable). Information received by Architect not meeting this criteria will be rejected without further review, and returned for proper clarification.

E. See individual sections for required submittal items.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 COMMENCEMENT OF WORK

- A. The Contractor or any of his subcontractors shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such work shall be done in accordance with the approved submittals. Any changes required due to the unauthorized start of fabrication will be made at no additional expense to the Owner.

END OF SECTION

SECTION 01 40 00

QUALITY ASSURANCE & CONTROL

PART 1 - GENERAL

1.01 REGULATORY REQUIREMENTS

A. Permits

1. The Contractor and each sub-contractor shall comply in every respect with the building laws in operation and enforced by the legal bodies having jurisdiction in the territory in which the building is located. Each Contractor shall be solely responsible for any damage, or injury, or delay caused to the Owner or others, through failure or negligence to observe said Laws.
2. The Contractor and each sub-contractor shall procure at their own expense all necessary permits from municipal and other public authorities, shall give all notices required by law or ordinances, shall pay all fees and charges incident to the due and lawful prosecution of the work covered by this Contract, and shall comply with all laws, regulations and ordinances. Verify all fees required by the County and other public authorities during the bidding phase. No additional charge shall accrue to the Owner for the completion of the work.
3. The Ohio Basic Building Code and all related codes governing all branches of the work and provisions of same insofar as applicable, is a part of this Specification.

B. Safety And Accident Prevention and OSHA Requirements

1. All Contractors and sub-contractors shall take all reasonable precautions in the performance of the work under this contract to protect the health and safety of employees and the public and to minimize danger from all hazards to life and property.
2. All Contractors and Sub-contractors shall comply fully with the Federal Occupational Safety & Health Act. Said contractors are responsible for all provisions of OSHA regulations and for any reports, inspections, or precautions so required, and for compliance of their employees or sub-contractors.
3. Each Contractor shall be responsible for providing protective railings, guards, etc., as may be required by OSHA, whether or not specifically called for on the drawings and in the specifications, and shall pay for all costs for the furnishing and installation of these safety devices. All accidents, fires, and other emergencies that arise out of and involve the construction work are the responsibility of the contractors involved.

C. Taxes

1. Materials purchased for use or consumption in connection with the Work will be exempt from the State of Ohio Sales Tax as provided for in Section 5739.02 of the Revised Code of Ohio, and also from the State of Ohio Use Tax, Section 57401.01.
2. Purchases by the Contractor of expendable items such as form lumber, tools, oils, grease, fuel or equipment rentals are subject to the application of the Ohio Sales or Use Tax.

1.02 MATERIAL TESTING & INSPECTION

A. Testing by Contractor

1. Testing services where required in connection with the following shall be performed and paid for by the Owner. See the individual sections listed for specific testing requirements a. Site Clearing - Section 311000
 - 1) Soil Inspection

2) Compaction Bearing Capacity

- b. Concrete - Section 033000
 - 1) 7 & 28 day strength testing
 - (a) Floor flatness
 - (b) ASTM F 2170 in - situ relative humidity / moisture testing of concrete slabs 01 40 00 - 1
 - c. Mortar & Grout - Section 040513
 - 1) Slump and Compressive Testing of masonry wall / floor mortars & grouts
 - 2) Certificates of Materials Used
 - d. Structural Framing - Section 051000
 - 1) Bolted connections
 - 2) Field welding
 - e. Building Interior Spaces During Construction - Section 015000-2 - NOT USED.
2. The Owner shall employ directly independent firm(s) to perform these field and laboratory testings. The contractor shall cooperate fully with and furnish materials, facilities, and attendants in the field to such firm(s) for the said services. The Owner reserves the right to include any additional field and/or laboratory testing(s) of any kind, not specified in the said program but deemed necessary.
3. The contractor shall demolish and reconstruct and/or repair any portion(s) of the completed building structure where testing results indicate substandard construction and/or non-compliance with any requirement(s) of this contract, to the extent deemed necessary and in the manner as may be directed by Owner and/or their agent(s). Such remedial work shall be executed at the expense of the contractor and to the satisfaction of the Owner.

B. Inspection

- 1. Installer of each major unit of work shall inspect substrate and conditions for installation, and to report in writing unsatisfactory conditions. Correct unsatisfactory conditions before proceeding. Inspect each product immediately before installation, and do not install damaged or defective products, materials, or equipment.

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, equipment and material necessary to furnish and install temporary facilities where indicated on the drawings and as specified herein.
- B. Temporary facilities shall include, but not necessarily be limited to the following:
 - 1. Temporary Controls: Barriers, railings, enclosures, protection of work, progress cleaning, and safety.
 - 2. Construction Facilities: Parking, storage, toilets, equipment
- C. Remove temporary facilities when no longer needed, or that are replaced by permanent facilities.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 TEMPORARY UTILITIES

- A. Electric
 - 1. Coordinate available power locations with the Owner.
 - 2. The cost of the electric power shall be borne by the Owner.
- B. Water
 - 1. Coordinate available water locations with the Owner.
 - 2. The cost of the water shall be borne by the Owner.

3.02 CONSTRUCTION TOILET FACILITIES

- A. Contractors will be able to use a designated on site temporary portable toilet facility. The Contractor shall be responsible for furnishing and paying for the portable toilet. Include cleaning and removal of trash until completion of the project.

3.03 TRAFFIC CONTROL

- A. Conduct all operations with minimum interference to traffic and other facilities. Maintain streets adjacent to building site free of debris created by construction process.

2.04 BARRICADES & ENCLOSURES

- A. All barricades, fences, etc., that may be required by the Owner and authorities having legal jurisdiction in the area in which the work is located, shall be erected by this Contractor and shall be illuminated as directed. This Contractor shall at all times during the prosecution of the work, provide, erect, and maintain barricades, danger signs, detour signs, lights and the like at such locations as are necessary to reasonably protect the public.

- B. The Contractor shall erect suitable coverings over all passageways used by personnel if overhead danger exists. Each contractor is responsible for erecting barricades and warning lights on any excavations made by him to protect other workmen or vehicles from danger.
- C. Contractor shall display the proper danger signals at night, so long as he is occupying the building.

3.05 DUST PREVENTION

- A. The Contractor shall provide during the entire period of work, an effective means of keeping down the fugitive dust to the satisfaction of the Architect. He shall take all such reasonable measures to prevent fugitive dust and particulate matter from becoming air-borne, complying with all ordinances and standards of the City of Jamestown and Greene County.

3.06 MEANS OF EGRESS

- A. The Contractor shall maintain access to all means of egress and exit discharge during the course of the project. Provide temporary emergency lighting and exit signs if and as required to maintain a safe means of egress for the building occupants.
- B. Erect a protective covered walkway as required for passage of persons to the adjacent public streets. Comply with regulations of authorities having jurisdiction.

3.07 CURBS, PAVING AND LAWNS

- A. The Contractor shall protect all existing lawns, concrete curbs, sidewalks, fences, pavements, and appurtenances from damage that are not designated to be disturbed. Any damage occurring due to building operations will be the responsibility of the Contractor at fault, and shall be repaired or replaced at that Contractor's expense to the satisfaction of the Architect.

3.08 PROTECTION OF SURROUNDINGS

- A. The Contractor shall be held strictly responsible for any damages or trespassing by himself, any of his employees, or others delivering materials to the site, or any adjoining property. The Contractor shall see that the public streets and drives surrounding the site be kept clear of mud and debris, see paragraph "Cleaning Up" under Section 01300 of these General Requirements.

3.09 TEMPORARY FIRE PROTECTION

- A. Each trade contractor shall be responsible for providing fire safety equipment when performing specific tasks, i.e., cutting, welding, etc.

3.10 WATER IN THE BUILDING

- A. It shall be the responsibility of the Contractor to remove all water immediately, whether from rainfall or natural sources or otherwise, that may appear in the building due to construction operations and to keep the building dry at all times.

3.11 APPARATUS

- A. Each contractor shall provide for his own purposes temporary apparatus such as temporary stairs, ladders, ramps, scaffolding, chutes, hoists and the like as required for proper execution of his work, and while such apparatus remains on site, shall permit other contractors to utilize such apparatus. All equipment shall be constructed in compliance with all local and state laws, OSHA requirements and job conditions, and be properly grounded and operated.

3.12 REFUSE DUMPSTER

- A. The Contractor shall provide a dumpster for disposal of debris. Dumpster shall be emptied a minimum of once a week, prior to the weekend. Dumpster shall be located in an area easily accessible to the hauler, placed to prevent hauler from driving across lawns, walks, etc.

3.13 CONTRACTOR PARKING

- A. Parking will be discussed at the pre-construction meeting.

3.14 STORAGE

- A. Coordinate the location of all storage with the Architect and Owner. Storage will be discussed at the Pre-construction Meeting.

3.15 FIRST-AID FACILITIES

- A. Each contractor shall provide First-Aid Kits, properly stocked.

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Performance bond.
- E. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

- A. See Civil Engineering Drawings
- B. Section 03 30 00 - Cast-in-Place Concrete: Concrete for temporary and permanent erosion control structures indicated on drawings.

1.03 REFERENCE STANDARDS

- A. ASTM D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus; 2007.
- B. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 1999a (Reapproved 2009).
- C. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2011.
- D. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2008.
- E. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2004.
- F. ASTM D4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2002 (Reapproved 2009).
- G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; current edition.

1.04 PERFORMANCE REQUIREMENTS

- A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II, under requirements for the 2017 Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Also comply with all more stringent requirements of State of Ohio Erosion and Sedimentation Control Manual.
- C. Comply with all requirements of local municipalities for erosion and sedimentation control..
- D. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Owner will obtain permits and pay for securities required by authority having jurisdiction.

New Addition

Kettering Seventh-Day Adventist Church

Comm No. 61716

01 57 13 - 1 TEMPORARY EROSION AND SEDIMENT CONTROL

- E. Provide to Owner a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.
- F. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- G. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- H. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- I. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- J. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 - 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- K. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- L. Open Water: Prevent standing water that could become stagnant.
- M. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mulch: Use one of the following:
 - 1. Straw or hay.
 - 2. Wood waste, chips, or bark.
 - 3. Erosion control matting or netting.
- B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

New Addition

Kettering Seventh- Day Adventist Church
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- C. Bales: Air dry, rectangular straw bales.
 - 1. Cross Section: 14 by 18 inches (350 by 450 mm), minimum.
 - 2. Bindings: Wire or string, around long dimension.
- D. Bale Stakes: One of the following, minimum 3 feet (1 m) long:
 - 1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot (1.98 kg per linear m).
 - 2. Wood, 2 by 2 inches (50 by 50 mm) in cross section.
- E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
 - 1. Average Opening Size: 30 U.S. Std. Sieve (0.600 mm), maximum, when tested in accordance with ASTM D4751.
 - 2. Permittivity: 0.05 sec⁻¹, minimum, when tested in accordance with ASTM D4491.
 - 3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355 after 500 hours exposure.
 - 4. Tensile Strength: 100 lb-f (450 N), minimum, in cross-machine direction; 124 lb-f (550 N), minimum, in machine direction; when tested in accordance with ASTM D4632.
 - 5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632.
 - 6. Tear Strength: 55 lb-f (245 N), minimum, when tested in accordance with ASTM D4533.
 - 7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
- F. Silt Fence Posts: One of the following, minimum 5 feet (1500 mm) long:
- G. Gravel: See Section 32 11 23 for aggregate.
- H. Riprap: See Section 31 37 00.
- I. Concrete: See Section 03 30 00.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface.
 - 1. Width: As required; 20 feet (7 m), minimum.
 - 2. Length: 50 feet (16 m), minimum.
 - 3. Provide at each construction entrance from public right-of-way.
 - 4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Linear Sediment Barriers: Made of silt fences.
 - 1. Provide linear sediment barriers:
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
 - b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
 - c. Along the toe of cut slopes and fill slopes.
 - d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 200 feet (60 m) apart.
 - e. Across the entrances to culverts that receive runoff from disturbed areas.
 - 2. Space sediment barriers with the following maximum slope length upslope from barrier:
 - a. Slope of Less Than 2 Percent: 100 feet (30 m)..

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- b. Slope Between 2 and 5 Percent: 75 feet (23 m).
 - c. Slope Between 5 and 10 Percent: 50 feet (15 m).
 - d. Slope Between 10 and 20 Percent: 25 feet (7.5 m).
 - e. Slope Over 20 Percent: 15 feet (4.5 m).
- D. Storm Drain Curb Inlet Sediment Trap: As detailed on drawings.
- E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.
- F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- G. Soil Stockpiles: Protect using one of the following measures:
 - 1. Cover with polyethylene film, secured by placing soil on outer edges.
 - 2. Cover with mulch at least 4 inches (100 mm) thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches (150 mm) of straw or hay.
- H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
 - 1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.
- I. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

- A. Traffic-Bearing Aggregate Surface:
 - 1. Excavate minimum of 6 inches (150 mm).
 - 2. Place geotextile fabric full width and length, with minimum 12 inch (300 mm) overlap at joints.
 - 3. Place and compact at least 6 inches (150 mm) of 1.5 to 3.5 inch (40 to 90 mm) diameter stone.
- B. Silt Fences:
 - 1. Store and handle fabric in accordance with ASTM D4873.
 - 2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch (405 mm) high barriers with minimum 36 inch (905 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 4 inches (100 mm) in ground.
 - 3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch (710 mm) high barriers, minimum 48 inch (1220 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
 - 4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet (6 m), use nominal 32 inch (810 mm) high barriers with woven wire reinforcement and steel posts spaced at 4 feet (1220 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
 - 5. Install with top of fabric at nominal height and embedment as specified.
 - 6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches (460 mm), with extra post.
 - 7. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches (300 mm) high with post spacing not more than 4 feet (1220 mm).
- C. Straw Bale Rows:
 - 1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
 - 2. Install bales so that bindings are not in contact with the ground.
 - 3. Embed bales at least 4 inches (100 mm) in the ground.
 - 4. Anchor bales with at least two stakes per bale, driven at least 18 inches (450 mm) into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
 - 5. Fill gaps between ends of bales with loose straw wedged tightly.

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6. Place soil excavated for trench against bales on the upslope side of the row, compacted.
- D. Mulching Over Large Areas:
 1. Dry Straw and Hay: Apply 2-1/2 tons per acre (6350 kg per hectare); anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.
 2. Wood Waste: Apply 6 to 9 tons per acre (15,200 to 20,800 kg per hectare).
 3. Erosion Control Matting: Comply with manufacturer's instructions.
- E. Mulching Over Small and Medium Areas:
 1. Dry Straw and Hay: Apply 4 to 6 inches (100 to 150 mm) depth.
 2. Wood Waste: Apply 2 to 3 inches (50 to 75 mm) depth.
 3. Erosion Control Matting: Comply with manufacturer's instructions.
- F. Temporary Seeding:
 1. When hydraulic seeder is used, seedbed preparation is not required.
 2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
 3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft (0.5 kg per 100 sq m).
 4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft (6 to 8 kg per 100 sq m).
 5. Incorporate fertilizer into soil before seeding.
 6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep (12 to 25 mm) deep.
 7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
 8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE – As Detailed on Civil Engineering Drawings

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Ruetschle Architects.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

SECTION 01 60 00

SUBSTITUTIONS

PART 1 - GENERAL

1.01 PROCEDURAL REQUIREMENTS

- A. Provide the necessary quantity of each specified or required product, material or equipment from a single source; where not possible to do so, match separate procurements as closely as possible. When the selection process is under the Contractor's control, he shall provide compatible products, material and equipment. Where available and complying with requirements, provide products which have been used successfully in similar applications, and which are recommended by manufacturers for applications indicated. Procedures outlined as follows shall be satisfied, when applicable, prior to selection and incorporation of products, materials or equipment deemed compatible and acceptable by the contractor.

1.02 PRODUCT SELECTION LIMITATIONS

- A. Product Selections: Comply with the following for selection of products, materials and equipment:
 - 1. Two or More Products Named:
 - a. Selection from specified products is the bidder's option.
 - b. When the drawings and/or specifications state that the design is based on a particular specified product, and the bidder chooses to use a different specified product, then the bidder must include in his bid the cost for any additional work or modifications required to meet the intent of the design. No change orders will be allowed for work required to meet the intent of the design if a different specified product is used.
 - 2. "Or Approved Equal" Clause:
 - a. Bidders may submit to the Architect, written requests for approval of articles or materials which they guarantee equal or superior to those specified. Such request shall be accompanied by complete descriptions and technical data. It shall be the responsibility of the manufacturer to prove that the product proposed for substitution is equal for the purpose of this project. Submissions lacking such information will be rejected.
 - b. Requests for approved equal shall be made on the form included with this specification. Additional copies will be made available by the Architect. Requests for approved equal that do not include this form will be rejected.
 - c. Approval, if any, of a proposed equal will be made by the Architect in an addenda issued to all concerned bidders.
 - d. All requests for approved equals shall be submitted to the Architect no less than ten (10) working days prior to bids being received. Any request for approval submitted less than ten (10) working days prior to bids being received, will be rejected.
- B. **All bidders are cautioned to bid this project in strict accordance with the drawings and specifications. Unless alternate manufacturers and/or materials have been approved by the Architect, and listed in an addendum, no other materials or manufacturers will be accepted.**
- C. Verify that all materials and items being supplied are so specified or approved by addenda only. Shop drawings submitted that do not conform to this policy will be rejected.

1.03 SUBSTITUTIONS

- A. Requests by the Contractor for products or material substitutions after the bidding period will be considered when reasonable, timely, fully documented and qualifying under one or more of following circumstances:

1. The contractor shall submit with his "Request for Substitution" written verification from the supplier and manufacturer that the specified product cannot be supplied in time for compliance with the contract time requirements. Failure by the contractor to properly order and expedite the project will not be grounds for acceptance of substitute material.
 2. Required product is not acceptable to governing authority, or determined to be non-compatible, or cannot be properly coordinated, warranted or insured, or has other recognized disability as certified by Contractor.
- B. Submit full documentation, including product data, samples where appropriate, detailed performance comparisons and evaluation, testing laboratory reports where applicable, coordination information for effect on other work and time schedule, cost information for proposed change order, Contractor's general certification of recommended substitution, and similar information germane to circumstance.
- C. Substitutions made after the bidding period will be made only by a written change order approved by the Owner after evaluation by the Architect.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

CONTRACTOR'S REQUEST FORM FOR PRODUCT SUBSTITUTION

TO: (A/E)

PROJECT: _____

SPECIFIED ITEM: _____

Section

Page

Paragraph

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: _____

Attached data includes a complete product description, drawing, photographs, performance and test data, references, and other information necessary for evaluation and description of changes to the Contract Documents that the proposed substitution will require for its proper installation. Identify specific product numbers, finishes, options, etc.

A. Will changes be required to the building design in order to properly install the proposed substitution?

Yes _____ No _____ If yes, what changes? _____

B. Does substitution affect drawing dimensions? Yes _____ No _____

If yes, how? _____

C. Will the undersigned pay for changes to the building design, including A/E and drawing costs, caused by the requested substitution? Yes _____ No _____

D. List differences between the proposed substitution and specified item.

Specified Item

Proposed Substitution

E. What effect does substitution have on other trades? _____

F. Does manufacturer warranty of proposed substitution differ from that specified?

Yes _____ No _____ If yes, how? _____

G. Will substitution affect progress schedule? Yes _____ No _____

If yes, How _____

H. Will substitution require more license fee or royalties than specified product?

Yes _____ No _____

I. Will maintenance and service parts be locally available for substitution?

Yes _____ No _____

The undersigned further states that the function, appearance, and quality for the proposed substitution are equivalent or superior to the specified item.

Submitted by:

Signature: _____

Firm: _____

Address: _____

Date: _____

Telephone: _____

FAX: _____

For use by the A/E

____ Approved ____ Appr'd. as noted

____ Not Approved ____ Received too late

____ Incomplete Product information

By: _____

Date: _____

Remarks:

Attachments

SECTION 01 70 00

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 GENERAL

- A. The provisions of this section apply primarily to closeout of actual physical work, not to administrative matters such as final payment and changeover of insurances. Closeout requirements relate to both final completion and beneficial completion of work, and apply to individual portions of completed work as well as the total work. Specific requirements in other sections have precedence over general requirements of this section.
- B. Owner's acceptance of any specific work will be at Substantial Completion.

1.02 PROCEDURES AT SUBSTANTIAL COMPLETION:

- A. Prerequisites: Comply with General Conditions and complete the following before requesting the Owner's inspection of the work, or designated portion thereof, for beneficial completion.
 - 1. Submit executed warranties (as specified in each specification section) workmanship bonds, maintenance agreements, inspection certificates and similar required documentation for specific units of work, enabling the Owner unrestricted occupancy and use.
 - 2. Complete operating instruction to the Owner's personnel, and start-up of systems.
 - 3. Complete final cleaning, and removal of temporary facilities and tools.
- B. Inspection Procedures: Upon receipt of Contractor's request, the Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, Architect will either prepare certificate of beneficial completion, or advise Contractor of work which must be performed prior to issuance of certificate. Results of completed inspection will form initial "punch-list" for final acceptance.

1.03 WARRANTIES (GUARANTEES):

- A. Categories of Warranties required for work include:
 - 1. Special project warranty issued by contractor and, where required, countersigned by Installer or other recognized entity involved in performance of the work.
 - 2. Specified product warranty issued by a manufacturer or fabricator, for compliance with requirements in contract documents.
 - 3. Coincidental product warranty available on a product incorporated into the work, by virtue of manufacturer's publication of warranty without regard for application requirements (non-specified warranty). Refer to specification sections for requirements of specified warranties.
- B. Owner's Recourse:
 - 1. Warranties and warranty periods do not diminish implied warranties, and do not deprive the Owner of actions, rights and remedies otherwise available for contractor's failure to fulfill requirements of the contract documents. The Owner reserves the right to reject coincidental product warranties considered to be conflicting with or detracting from requirements of the contract documents.
- C. Warranties shall take effect when the work is substantially complete and accepted by the Owner.

1.04 PREREQUISITES TO FINAL ACCEPTANCE:

A. General

1. Prior to requesting Architect's final inspection for certification of final acceptance and final payment, as required by General Conditions, complete the following and list known exceptions (if any) in request.
 - a. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - b. Submit up-dated final statement, accounting for additional (final) changes to Contract Sum.
 - c. Submit certified copy of final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Owner.
 - d. Submit record drawings, maintenance manuals, damage or settlement survey, property survey and similar final record information.
 - e. Submit consent of surety.
 - f. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure

1. Upon receipt of Contractor's notice that the work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect will reinspect the work. Upon completion of reinspection, Architect will either prepare certificate of final acceptance, or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

1.05 RECORD DOCUMENTATION

A. Record Drawings

1. General Contractor shall maintain a complete set of blue/black-line prints of contract drawings and shop drawings for record mark-up purposes throughout the Contract Time.
2. Mark-up drawings during course of the work to show changes and actual installation conditions, sufficient to form a complete record for Owner's purposes.
3. Give particular attention to work which will be concealed and difficult to measure and record at a later date, and work which may require servicing or replacement during life of project. Require entities marking prints to sign and date each mark-up. Bind prints into manageable sets, with durable paper covers, appropriately labeled.

B. Provide Roof maintenance instructions and schedule of inspections.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 FINAL CLEANING

- A. At closeout time, clean or re-clean entire work to normal level for "first class" maintenance/cleaning to the satisfaction of the Architect and the Owner. Remove non-permanent protection and labels, clean exposed finishes, touch-up minor damage, remove debris and broom clean non-occupied spaces, sweep and wash paved areas, clean yards and grounds, and perform similar clean-up operations needed to produce a "clean" condition as judged by the Owner.

3.02 CLOSEOUT INFORMATION SCHEDULE

- A. This Schedule summarizes actions to be taken or submittals to be completed by the contractor prior to issuance of the Certificate of Substantial Completion.
- B. Additional information on these items occurs in the General Conditions and in applicable parts of the Specification.
- C. Basic Items
 - 1. As-Built Drawings
 - 2. Affidavit of Waiver of Lien
 - 3. Contract Completion Certificate
 - 4. Punch List Items

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL 1.01 SUMMARY

- A. This Section specifies 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.
 - 4. Suspended slabs.
- B. Related Sections include the following:
 - 1. Division 01 Section 01 81 13 for LEED submittal procedures and a copy of the LEED Product Data Sheet.
 - 2. Division 31 Section "Earthwork" for drainage fill under slabs-on-grade.
 - 3. Division 32 Section "Cement Concrete Pavement" for concrete pavement and walks.

1.02 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.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: For each type of product indicated.
 - 1. For vapor barrier, contractor shall submit information indicating that product meets requirements.
- C. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- D. 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.
- E. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.
 - 1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing reshoring. F. Samples: For waterstops.
- G. Welding certificates.
- H. Qualification Data: For Installer and manufacturer.
- I. 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.
- J. 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.
- 9. Bonding agents.
- 10. Adhesives.
- 11. Vapor retarders.
- 12. Semirigid joint filler.
- 13. Joint-filler strips.
- 14. Repair materials.
- K. Floor surface flatness and levelness measurements to determine compliance with specified tolerances.
- L. Field quality-control test and inspection reports.
- M. Refer to section 01 81 13 for LEED submittal procedures and for the LEED Product Data Sheet.
- N. Informational submittals
- a Slab Jointing Plan: Contractor to indicate location of slab-on-grade contraction joints and construction joints.
 - i Joints shall be spaced in a square or rectangular pattern with aspect ratio not to exceed 1.5:1.
 - ii Spacing shall not exceed 36 times the slab thickness (in inches).
- b Field quality-control reports, including floor surface flatness and levelness measurements indicating compliance with specified tolerances.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project:
 - 1. Personnel qualified as ACI-certified Flatwork Technician and Finisher.
 - a. At least 50% of the finishers working on the project must be ACI-certified.
 - 2. 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, as documented according to ASTM E 548.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 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. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- E. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code-Reinforcing Steel."

- F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specification for Structural Concrete, "Sections 1 through 5 and Section 7, "Lightweight Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- G. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following: a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 - 2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.05 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 2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Products: Subject to compliance with requirements, provide one of the products specified.
 - 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
 - 4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
 - 5. Materials and products shall be extracted, processed and manufactured within 500 miles of the project site.
 - 6. Recycled content: Provide a minimum 20% recycled content by value (post consumer plus 1/2 pre-consumer). The recycled content value shall be determined by weight. The recycled fraction of the assembly is multiplied by the cost of the assembly to determine the recycled content value.

2.02 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. Curved walls may be formed using forms no longer than 2'-0".

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. High-density overlay, Class 1 or better.
 - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
 - c. Structural 1, B-B or better; mill oiled and edge sealed.
 - d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
- 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. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- E. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.
- F. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- G. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- H. 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.

2.03 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.
- C. Epoxy-Coated Reinforcing Bars: ASTM A 615/A 615M, deformed bars, epoxy coated, with less than 2 percent damaged coating in each 12-inch (300-mm) bar length.
- D. Steel Bar Mats: ASTM A 184/A 184M, fabricated from ASTM A 615/A 615M, deformed bars, assembled with clips.
- E. Plain-Steel Wire: ASTM A 82, as drawn.
- F. Deformed-Steel Wire: ASTM A 496.
- G. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.
- H. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

2.04 FIBER REINFORCEMENT

- A. Synthetic Micro-Fiber: Monofilament or fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III, 1 to 2-1/4 inches (25 to 57 mm) long.

2.05 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut bars true to length with ends square and free of burrs.
- B. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, ASTM A 775/A 775M epoxy coated.
- C. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.
- D. 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. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.06 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. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class F
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
 - 2. Blended Hydraulic Cement: ASTM C 595, Type IS, Portland blast-furnace slag cement.
- B. Normal-Weight Aggregates: ASTM C 33, Class 3S 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.
- C. Lightweight Aggregate: ASTM C 330, 3/4-inch (19-mm) nominal maximum aggregate size.
- D. Water: ASTM C 94/C 94M and potable.

2.07 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- 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. 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 25mm).
 - 1. Products:
 - a. Colloid Environmental Technologies Company; Volclay Waterstop-R.X.
 - b. Concrete Sealants Inc.; Conseal CS-231.
 - c. Greenstreak: Swellstopal Corporation; Adeka Ultra Seal.

- d. Henry Company, Sealants Division; Hydro-Flex.
 - e. JP Specialties Inc.; Earthshield Type 20.
 - f. Progress Unlimited Inc.; Superstop.
 - g. TCMiraDRI; Mirastop.
- D. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch (10 by 19).
- 1. Products:
 - a. Deneef Construction Chemicals: Swellseal.
 - b. Greenstreak: Hydroite.
 - c. Mitsubishi International Corporation; Adeka Ultra Seal.
 - d. Progress Unlimited, Inc.; Superstop.

2.08 VAPOR RETARDERS

- A. Plastic Vapor Retarder beneath slabs on grade: ASTM E 1745, Class A, 15 mil at all locations:
- 1. Conforms to ASTM E 1745, Class A.
 - 2. Conforms to ASTM E 96 for Water Vapor Transmission Rate of 0.006 gr/sf/hr maximum.
 - 3. 15 mil thickness minimum.
 - 4. Permeance of 0.012 maximum per ASTM E 154 (Water Vapor Permeance After Conditioning), Sections 8,11,12 and 13.
 - 5. Products:
 - a. "Vaporblock VB15" by Raven Industries: www.vaporblock.com
 - b. "Stego Wrap" by Stego Industries: www.stegoindustries.com
 - c. "Viper Vapor Check II" by insulation Solutions, Inc.: www.insulationsolutions.com
 - d. "Iron Bar 15" by Flatiron Films: www.flatiron-films.com
 - e. "Eco Shield" by Epro Services: www.eproserv.com
 - 6. Provide vapor barrier accessories (seam tape and vapor-proofing mastic) for complete system installation.
 - 7. Vapor Barrier Installation: Install in accordance with manufacturer's instructions and per ASTM E 1643.
 - a. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement.
 - b. Lap vapor barrier over footings and seal to foundation walls.
 - c. Overlap joints a minimum of 6" and seal with manufacturer's seam tape.
 - d. Seal all penetrations (including but not limited to pipes, conduit, structural elements penetrating slab on grade, etc..) per manufacturer's instructions.
 - e. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities. Seal these penetrations per manufacturer's instructions.
 - f. Repair damaged areas by cutting patches of the vapor barrier material, overlapping the damaged areas by 6" and taping all sides.
 - g. The Constructor Manager and Architect shall inspect the vapor barrier installation prior to placement of concrete. Any items identified during the inspection for correction shall be completed by the contractor prior to placement of concrete.
- B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve. 4" to 6" below all slab-on-ground per soils report.
- C. Fine-Graded Granular Material: Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; ASTM D 448, Size 10, with 100 percent passing a 3/8-inch (9.5-mm) sieve, 10 to 30 percent passing a No. 100 (0.15-mm) sieve, and at least 5 percent passing No. 200 (0.075-mm) sieve; complying with deleterious substance limits of ASTM C 33 for fine aggregates.

2.09 CURING MATERIALS

- A. 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.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
 - 1. Products:
 - a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
 - b. Burke by Edoco; Aqua Resin Cure.
 - c. ChemMasters; Safe-Cure Clear.
 - d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; W.B. Resin Cure.
 - e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
 - f. Euclid Chemical Company (The); Kurez DR VOX.
 - g. Kaufman Products, Inc.; Thinfilm 420.
 - h. Lambert Corporation; Aqua Kure-Clear.
 - i. L&M Construction Chemicals, Inc.; L&M Cure R.
 - j. Meadows, W. R., Inc.; 1100 Clear.
 - k. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
 - l. Symons Corporation, a Dayton Superior Company; Resi-Chem Clear Cure.
 - m. Tamms Industries, Inc.; Horncure WB 30.
 - n. Unitex; Hydro Cure 309.
 - o. US Mix Products Company; US Spec Maxcure Resin Clear.
 - p. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.

2.10 RELATED MATERIALS

- A. Expansion and Isolation Joint Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Semi-rigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.
- C. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, $\frac{3}{4}$ by 1 inch (19 by 25mm).
 - 1. Products:
 - a. Colloid Environmental Technologies Company; Volclay Waterstop-R.X.
 - b. Concrete Sealants Inc.; Conseal CS-231.
 - c. Greenstreak: Swellstopal Corporation; Adeka Ultra Seal.
 - d. Henry Company, Sealants Division; Hydro-Flex.
 - e. JP Specialties Inc.; Earthshield Type 20.
 - f. Progress Unlimited Inc.; Superstop.
 - g. TCMiraDRI; Mirastop.
- D. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, $\frac{3}{8}$ by $\frac{3}{4}$ inch (10 by 19).
 - 1. Products:
 - a. Deneef Construction Chemicals: Swellseal.
 - b. Greenstreak: Hydroite.
 - c. Mitsubishi International Corporation; Adeka Ultra Seal.
 - d. Progress Unlimited, Inc.; Superstop.

- E. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- F. 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 IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- G. Reglets: Fabricate reglets of not less than 0.0217-inch- (0.55-mm-) thick, galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- H. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch (0.85 mm) thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.11 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 1/8 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 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 4,100 psi (29MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.12 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: 25 percent.
 - 2. Combined Fly Ash and Pozzolan: 25 percent.
 - 3. Ground Granulated Blast-Furnace Slag: 50 percent.
 - 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent Portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
 - 5. Silica Fume: 10 percent.

6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 8. Silica fume is not required. The contractor may elect to use Silica fume within the limits noted above.
- 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 high-range water reducing or plasticizing 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.

2.13 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 3000 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Slump Limit: 4 inches plus or minus 1 inch.
- B. Foundation Walls: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 4000 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio 0.45.
 3. Slump Limit: 4 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture, plus or minus 1 inch.
 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size for walls exposed to freeze/thaw.
- C. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 4000 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio 0.45 for interior slabs, 0.50 for exterior walks, stoops, steps, aprons, exterior concrete exposed to view, and exterior concrete not otherwise indicated.
 3. Slump Limit: 4 inches, plus or minus 1 inch.
 4. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.
 5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size for slabs exposed to freeze/thaw.
 6. Air Content: Do not allow air of troweled finished floors to exceed 3 percent.
 7. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd. (0.90 kg/cu. m).
- D. Slabs On Metal Deck: Proportion structural lightweight concrete mixture as follows:
1. Minimum Compressive Strength: 3500 psi at 28 days.
 2. Slump Limit: 4 inches plus or minus 1 inch.

2.14 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.15 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, 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 3.01 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 347R as abrupt or gradual, as follows:
 1. Class B, 1/4 inch (6 mm) for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar. The form facing material shall have an orderly and symmetric layout with a minimum of seams. The contractor shall submit layout to the architect for their review before erecting formwork.
- 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 where indicated.
- 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.

3.02 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.

3.03 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of 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, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
 - 1. Leave formwork for structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
- 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.

3.04 SHORES AND RESHORES

- A. Comply with ACI 318 (ACI 318M) and ACI 301 for design, installation, and removal of shoring and reshoring.

3.05 VAPOR RETARDERS

- A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 Section 07260, and manufacturer's written instructions.
 - 1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.
 - 2. Location above or below granular fill shall be in accordance with ACI 302-1R-96.
- B. Bituminous Vapor Retarders: Place, protect, and repair vapor retarders according to manufacturer's written instructions.

3.06 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, 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.
- F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

3.07 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 horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 4. Space vertical joints in walls 25'-0". Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 5. 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 Division 7 Section "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. Doweled 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.

3.08 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.

3.09 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 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.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, 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.

3.10 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.

- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process. For all non-public areas exposed to view.
 2. 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. For all surfaces exposed to view in public areas.
 3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part Portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white Portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- 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.

3.11 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces. Proper fog misting of the surface is acceptable to reduce the potential for "plastic shrinkage" cracking.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in 1 direction.
1. Apply scratch finish to surfaces to receive concrete floor toppings.
- C. 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 restraighening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces to receive trowel finish.
- D. 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.
1. Apply a trowel finish to surfaces exposed to view.
 2. Finish surfaces to the following tolerances, according to ASTM E 1155 (ASTM E 1155M), for a randomly trafficked floor surface:
 - a. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs-on-grade.
 3. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-foot- (3.05-m-) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/4 inch (6 mm).
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces 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.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.12 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete 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.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.13 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-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.
 2. 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. 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.
3. 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.

3.14 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 six 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 semi-rigid 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.

3.15 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 in solid concrete, but not less than 1 inch (25 mm) in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- 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.

3.16 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.
- B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports. C. 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.
- D. 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., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. 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. The testing agency shall take samples from the end of the pump line to ensure no less than 4.5% air after all losses from pumping.
 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 laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. 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.
 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.
- E. Measure floor and slab flatness and levelness according to ASTM E 1155 (ASTM E 1155M) within 48 hours of finishing.

END OF SECTION

SECTION 04 01 20.52
MASONRY CLEANING

PART 1 - GENERAL 1.01 SCOPE OF WORK

- A. Furnish all labor, equipment and material necessary to provide masonry cleaning where indicated on the drawings and as specified herein.

1.02 RELATED WORK

- A. Section 040513 - Mortar
- B. Section 040523 - Masonry Accessories
- C. Section 042100 - Clay Masonry
- D. Section 042200 - Concrete Unit Masonry
- E. Section 042700 - Multiple-Wythe Unit Masonry
- F. Section 047210 - Cast Stone Masonry

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Technical Data
 - 1. Submit manufacturer's product data, specifications and application instructions to the Architect for approval.
- C. Refer to Section 01 35 15 for LEED submittal procedures and for the LEED Product Information Form.

1.04 QUALITY ASSURANCE

- A. Contractor shall have a minimum five (5) years experience in masonry cleaning.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers.

PART 2 - PRODUCTS 2.01 SUBSTITUTIONS

- A. See Section 013300 for the proper procedure for submitting products not listed herein for approval by the Architect. Approval shall be by addendum only.
- B. It shall be the responsibility of the manufacturer to prove that the product proposed for substitution is equal for the purpose of this project. Submissions lacking such information will be rejected.

2.02 MATERIALS

- A. Masonry Cleaner:
 - 1. Florok Masonry Cleaner - Charger Corporation, Hamden, CT
 - 2. New Masonry Cleaners - Diedrich Technologies, Milwaukee, WI
 - 3. Sure-Klean - ProSoCo, Inc., Kansas City, KS
 - 4. Approved Equal
- B. Muriatic acid shall not be used.
- C. Masonry cleaner shall be appropriate for each type of masonry and concrete to be cleaned. Verify compatibility of cleaner with masonry building units prior to application.

PART 3 - EXECUTION 3.01 PREPARATION

- A. New face brick, mortar joints, etc., shall be properly prepared by masonry contractor prior to attempting final cleaning as specified under this Section.
- B. Contractor doing this cleaning work shall thoroughly mask-off and protect all adjacent materials and shall be responsible for any damage caused to same by the cleaning material

used. C. Allow 7 days for mortar to cure before final removal of stains and cleaning of masonry.

3.02 APPLICATION

- A. Masonry cleaner for each type of masonry to be cleaned, shall be prepared and applied in strict accordance with the manufacturer's recommendations.
- B. Water for rinsing shall be clean, potable and free from organic material and deleterious amounts of dissolved acids, alkalies and salts. Unless otherwise recommended by manufacturer of cleaner, water rinse with pressure equipment providing at least 400 psi with a 40° fan spray tip.
- C. When cleaning operation is considered complete by cleaning contractor, and cleaned surfaces have completely dried, call for an inspection of work by Architect. If, in the Architect's opinion, additional cleaning is necessary, the contractor shall repeat the process until accepted by both Architect and Owner.

3.03 CLEAN-UP

- A. Remove all masking materials after masonry has been cleaned and accepted by the Architect and Owner.
- B. Remove all empty containers, packaging, etc. and leave site in a neat, clean condition.

• **END OF SECTION**

SECTION 04 05 13
MORTAR AND GROUT

PART 1 - GENERAL 1.01 SCOPE OF WORK

- A. Work shall include, but not necessarily limited to the following:
 - 1. Mortar for interior and exterior clay masonry walls.

1.02 RELATED WORK

- A. Section 040523 - Masonry Accessories
- B. Section 042100 - Clay Masonry
- C. Section 042200 - Concrete Unit Masonry
- D. Section 042700 - Multiple-Wythe Unit Masonry

1.03 QUALITY ASSURANCE

- A. Mortar shall be tested by an independent testing agency for compressive strength in accordance with ASTM C780-02, "Standard Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit masonry".
- B. Provide certificates for materials used in masonry construction indicating compliance with the contract documents.
- C. Frequency of testing mortar shall be one test per day for the first three days. After that, take one test per week, one test for every 25 cubic yards of grout or 2,500 sf of wall area, whichever is most frequent.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Technical Data
 - 1. Submit manufacturer's technical data describing mortar, indicating types and physical properties.
- C. Mix Designs: For each type of mortar include description of type and proportions of ingredients.
 - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
 - 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- D. Samples
 - 1. Submit actual samples for approval.

PART 2 - PRODUCTS 2.01 MORTAR MATERIALS

- A. Cementitious Materials 1. Portland Cement:
 - a. Mortar - ASTM C150, Type I, except that Type III may be used for cold weather construction.
 - b. Provide natural color or white cement as required to produce mortar color indicated.
- 2. Hydrated Lime - ASTM C207, Type S
- 3. Masonry Cement - ASTM C91
- B. Aggregate - ASTM C144
- C. Masonry Sand - ASTM C144 . Sand shall be furnished from the same source throughout the duration of the project.
- D. Admixtures
 - 1. No air-entraining admixtures or material containing air-entraining admixtures shall be added to the mortar.
 - 2. No antifreeze compounds shall be added to the mortar.

3. No admixtures containing chlorides shall be added to the mortar.
 4. Admixtures used to accelerate the setting of the mortar may be used with permission by the Architect.
 - a. Accelerating admixture shall comply with ASTM C 494 / C494M, Type C and shall be recommended by the manufacturer for use in masonry mortar of composition indicated.
 - 1) Products: Subject to compliance with requirements, the following products may be used:
 - (a) Euclid Chemical Company - Accelguard 80
 - (b) Grace Construction Products - Morset
 - (c) Sonneborn Products - Trimix-NCA
 - (d) Substitutions: See Specification Section 016100 - Product Requirements
 - b. If used, admixtures shall be added at the same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- E. Water
1. Water for masonry mortar (ASTM C 270, ref 4f) must be clean & free of deleterious amounts of acids, alkalis, or organic materials. Mixing water shall be clean and potable
- F. Water Proofing Admixture - Required for all mortar used at clay masonry regardless of weather conditions or interior versus exterior application to ensure that mortar color is consistent.
1. Basis of Design: BASF - Rheopel Plus Mortar Admixture, (800) 628-9990.
 2. WR Grace - Darapel, (877) 423-6491
 3. Hycrete - M1000, (866) 492-7383
 4. Note: compatibility with mortar mixes and flashing materials shall be verified prior the use of this product.
 5. Coordinate amount of product needed in mortar mixes with the admixture manufacturer. Comply with temperature limitations as stated in the manufacturer's recommendations.

2.02 MORTAR MANUFACTURERS

- A. Mortar Type A
1. Standard gray mortar shall be:
 - a. Brixment - Essroc Materials Inc., Speed, IN
 - b. Lehigh Masonry Cement, Allentown, PA
 - c. Richmortar - Cemex, Houston, TX
 - d. Substitutions: See Section 01 60 00 - Product Requirements
 2. Standard gray mortar shall be used at all brick, stone and masonry block locations unless noted otherwise on the drawings.
- B. Mortar Type B
1. Colored mortar shall be:
 - a. Brixment in-Color - Essroc Materials Inc., Speed, IN
 - b. Lehigh Masonry Cement, Allentown, PA
 - c. Richcolor - Cemex, Houston, TX
 - d. Substitutions: See Section 01 60 00 - Product Requirements
 2. Mortar colors shall be selected by the Architect from manufacturers standard and non-standard colors.
 3. Colored mortar shall be used in the following locations:
 - a. Exterior brick as indicated on the drawings.

2.03 MORTAR MIXES

- A. Mortar shall be mixed in the proper proportions to conform to ASTM C270, Standard Specification for Concrete Unit Masonry for the following types:
1. For masonry below grade or in contact with the earth: Type M
 2. For reinforced masonry: Type S
 3. For exterior, above grade, load-bearing and non-load-bearing walls and parapet walls: Type S

4. For interior load-bearing and non-load-bearing walls: Type S
5. For application where another type is not indicated: Type S

PART 3 - EXECUTION 3.01 FIELD MORTAR MIXING

- A. All cementitious materials and aggregate shall be mixed between 3 and 5 minutes in a mechanical batch mixer with the maximum amount of water to produce a workable consistency without reducing the minimum compressive strength of the mortar. Mixing on the bare ground or on concrete slab will not be permitted.
- B. Control batching procedure to ensure proper proportions by measuring materials by volume. Sand measurement by shovel count shall not be permitted.
- C. Mortars to be mixed only as required for immediate use and shall be used as soon as possible after mixing. Any mortar left standing for a period exceeding 60 minutes that cannot regain its original plasticity by a single re-tempering shall not to be used under any circumstances.

3.02 HOT WEATHER PRECAUTIONS

- A. All mortar shall be used as rapidly as practicable. Mortar boards shall be kept damp and in the shade or covered when possible.
- B. Maintain temperature of mortar and grout between 70°F and 120°F. Cold water may be used when mixing mortar and grout.
- C. Where possible, store materials in a shaded area or shield from direct sunlight.

3.03 COLD WEATHER PRECAUTIONS

- A. Cold weather masonry construction relating to mortar shall comply with the International Masonry Industry All-Weather Councils "Guide Specification for Cold Weather Construction", Section 042200, Concrete Unit Masonry, Article 3.
- B. The use of accelerators, antifreeze and calcium chlorides shall not be permitted.
- C. Mixing water shall be heated to a temperature between 70°F and 120° F. Once a mortar temperature has been selected in this range, every effort shall be made to maintain this temperature for consecutive batches.
- D. Masonry sand shall be heated when the outside temperature is below freezing.
- E. The use of frozen or partially frozen material shall not be permitted.

END OF SECTION

SECTION 04 05 23
MASONRY ACCESSORIES

PART 1 - GENERAL 1.01 SCOPE OF WORK

- A. Items specified herein include masonry accessories for clay masonry assemblies.
- B. Work shall include, but not necessarily limited to the following:
 - 1. Wall reinforcement
 - 2. Wall anchors
 - 3. Control and expansion joint material
 - 4. Through wall flashing
 - 5. Flashing mastic
 - 6. Bond breaker
 - 7. Weeps and vents
 - 8. Mortar diverter

1.02 1.03 RELATED WORK

- A. Section 040120.52 - Masonry Cleaning
- B. Section 040513 - Mortar
- C. Section 042100 - Clay Masonry
- D. Section 042200 - Concrete Unit Masonry
- E. Section 042723 - Multiple-Wythe Unit Masonry

1.03 SUBMITTALS

- A. See Section 013300 - Administrative Requirements for submittal procedures.
- B. Technical Data
 - 1. Submit product and technical data describing all masonry accessories.

PART 2 - PRODUCTS 2.01 SUBSTITUTIONS

- A. See Section 01 61 00 for the proper procedure for submitting products not listed herein for approval by the Architect. Approval shall be by addendum only.
- B. It shall be the responsibility of the manufacturer to prove that the product proposed for substitution is equal for the purpose of this project. Submissions lacking such information will be rejected.

2.02 WALL REINFORCEMENT, TIES AND ANCHORS

- A. Reinforcing steel for lintels, bond beams and vertical reinforcement: ASTM A 615 / A 615M or A 996 / A 996M, Grade 60
 - 1. Shop fabricate reinforcement which is shown to be bent or hooked.
- B. Horizontal joint reinforcing: ASTM A 82 / A 82M, tensile strength of 80,000psi.
 - 1. Reinforcement shall consist of 9 gauge (.1483") deformed longitudinal wires with 9 gauge (.1483") cross wires butt-welded every 16" o.c. to form a truss pattern.
 - a. Reinforcing shall be hot-dip galvanized at a rate of 2.0 oz per sq ft in accordance with ASTM A153, Class B-1.
 - 1) Hot-dip galvanizing shall be done after fabrication.
 - 2. Walls that are vertically reinforced shall have cross wires butt-welded every 16" o.c. to form a ladder pattern.
 - 3. Unit width shall be 1-1/2" less than the thickness of the masonry unit.
 - 4. Provide reinforcement in 10'-0" lengths with prefabricated corners and tees at intersecting walls of same design and finish.
- C. Brick ties for multi-wythe walls: ASTM A 82 / A 82M, tensile strength of 80,000psi.

1. Provide vertically adjustable "eye and pintle" type joint reinforcement consisting of (2) - 9 gauge (.1483") rods with welded eye sections at 16" o.c. and 3/16" diameter, two-legged rectangular pintles.
 - a. Eye sections "eyes" shall not be more than 1/4" in diameter and extend beyond thickness of insulation.
 - b. Pintle legs shall have bends at 1-1/4" from top of leg.
 - c. Where there are brick wythes on both sides of the concrete block back-up, provide "eye" sections on both sides of joint reinforcement.
 - d. Ties shall be hot-dip galvanized at a rate of 2.0 oz per sq ft in accordance with ASTM A 153, Class B-1.
 - 1) Hot-dip galvanizing shall be done after fabrication.
2. Masonry contractor to verify lengths required prior to the start of work. D. Joint reinforcing shall be as manufactured by one of the following:
 1. Dur-O-Wall, Arlington Heights, IL
 2. Heckmann Building Products - Chicago, IL
 3. "Wire Bond" Masonry Reinforcing Corp. of America, Charlotte, NC.
 4. Substitutions: See Section 01 61 00 - Product Requirements
- E. Partition top anchors shall be 0.105 inch thick steel plate with 3/8 inch diameter steel rod 6 inches long welded to plate with closed-end plastic tube fitted over rod that allows rod to move in and out of tube.
 1. Corrosion protection: hot-dip galvanized after fabrication to comply with ASTM A 153 / A 153M.
- F. Rigid Anchors shall be fabricated from steel bars 1 1/2 inches wide by 1/4 inch thick by 24 inches long with ends turned up 2 inches turned up or with cross pins.
 1. Corrosion protection: hot-dip galvanized after fabrication to comply with ASTM A 153 / A 153M.

2.03 BRICK EXPANSION JOINTS

- A. Brick expansion joints shall be 3/8" thick by 3" wide neoprene filler strip.
- B. Brick expansion joint shall be one of the following:
 1. D/A 2015 Soft-Joint/ Expansion Joint - Dur-O-Wall Arlington Heights, IL
 2. NS Closed Cell Neoprene Sponge - Hohmann & Barnard, Inc., Hauppauge, NY
 3. #3300 - Masonry Reinforcing Corp. of America, Charlotte, NC
 4. Substitutions: See Section 01 61 00 - Product Requirements

2.04 FLASHING

- A. Unless indicated otherwise, base course, through-wall, head and sill flashing shall be 5 oz. copper coated on both sides with an asphalt bituminous coating.
 1. Furnish flashing material in width required to extend up wall the distance specified.
Flashing may not be lapped.
 2. Furnish prefabricated internal and external corners where required.
- B. Flashing shall be one of the following:
 1. Cop-R-Cote - Advanced Building Products, Springvale, ME
 2. Cop-A-Cote - AFCO Products, Inc., Somerville, MA
 3. Copperseal - York Manufacturing, Sanford, ME
 4. Substitutions: See Section 01 61 00 - Product Requirements
- C. Furnish 26 ga. (0.0187") austenitic stainless steel, type 2B/2D finish, drip edge flashing at basecourse, window and door heads and any other through wall flashing locations.
 1. Size shall be as recommended by flashing membrane manufacturer.

- D. Flashing at synthetic stone units shall be 26 ga. 0.0187" austenitic stainless steel. See drawings for locations and details.

2.05 MASTIC

- A. Mastic shall be a high grade asphalt-based cement approved by the flashing manufacturer.

2.06 BOND BREAKER

- A. Bond-breaker strips shall be asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

2.07 WEEP VENTS

- A. For brick veneer walls:
1. Weep vents shall polypropylene, honeycomb design by one of the following:
 - a. Cell Vent #85 - Heckman Building Products Inc., Melrose Park, IL
 - b. Quadro-Vent #QV - Hohmann & Barnard, Inc., Hauppauge, NY
 - c. Cell Vent D/A 1006 - Dur-O-Wall Masonry Accessories, Aurora, IL
 - d. Cell Vent #3601 - Masonry Reinforcing Corporation of America, Charlotte, NC
 - e. Substitutions: See Section 01 61 00 - Product Requirements
 2. Weep vents shall be sized to match the brick height.
 3. Color shall be selected by the Architect from manufacturer's standard colors.

2.08 BRICK VENTS

- A. Brick vents shall be painted aluminum or PVC, designed to be installed in vertical joint between bricks with a closure strip at the top to prevent mortar droppings from clogging the vent.
1. Louvers shall allow passage of air and moisture from cavity while preventing water from entering the cavity. B. Cavity vents shall be:
 1. #343W - Hohmann & Barnard, Inc., Hauppauge, NY
 2. Goodco Brick Vent - Williams Products, Inc., Troy, MI
 3. #3602 - Wire-Bond, Charlotte, NC
 4. Substitutions: See Section 01 61 00 - Product Requirements
- C. Color shall be selected by the Architect from manufacturer's standard colors.

2.09 MORTAR DIVERTERS

- A. Mortar diverters shall be installed at multiple-wythe masonry cavity walls.
- B. Mortar diverters shall be constructed of high density polyethylene with a minimum 90% open weave mesh.
1. Thickness shall be as required to fill cavity.
 2. Top of diverter shall be cut in an irregular shape to prevent build-up of waste mortar. C. Diverter shall be:
 1. Mortarstop, Polytite Construction Products, Aurora, IL
 2. Mortar Net USA, LTD, Highland, IN
 3. Mortar Break, Advanced Building Products, Springdale, ME
 4. Substitutions: See Section 01 61 00 - Product Requirements

PART 3 - EXECUTION 3.01 INSTALLATION

- A. See Section 04 27 23, Multiple Wythe Unit Masonry, for installation requirements.

END OF SECTION

SECTION 04 21 00

CLAY MASONRY

PART 1 - GENERAL 1.01 SCOPE OF WORK

- A. Furnish all labor, equipment and material necessary to furnish clay masonry units where indicated on the drawings and as specified herein.

1.02 RELATED WORK

- A. Section 04 01 29.52 - Masonry Cleaning
- B. Section 04 05 13 - Mortar
- C. Section 04 05 23 - Masonry Accessories
- D. Section 04 22 00 - Concrete Unit Masonry
- E. Section 04 27 73 - Multiple-Wythe Unit Masonry

1.03 QUALITY ASSURANCE

- A. Brick shall conform to ASTM C 216-89 "Standard Specification for Facing Brick", Grade SW, Type FBX.
- B. Obtain brick masonry from a single source with resources to provide specified materials of consistent quality.
- C. The brick masonry manufacturer shall have sufficient capacity to deliver the materials on schedule.
- D. Contractor shall submit a list of completed jobs giving evidence that he has a minimum of ten(10) years experience performing similar work. Contractor shall also show evidence that he has completed at least one (1) other project of equal size, scope and complexity within the twelve months prior to the bid date.
- E. Contractors not meeting the above outlined requirements will be subject to possible rejection. Rejection of any contractor, sub-contractor, etc., not meeting the above outlined requirements will provide no grounds for an extra cost to this contract.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Provide manufacturer's written certification that all clay masonry products conform to referenced standards below. C. Samples
 - 1. Sample strap of brick for initial brick selection.
 - 2. Furnish brick as required for sample panel. See Section 04 27 23 Multiple Wythe Unit Masonry.

1.05 MAINTENANCE

- A. The Owner shall view all left over brick and retain any for future repairs. The brick shall be delivered to a location designated by the Owner. All other material shall be removed by the Contractor.

PART 2 - PRODUCTS 2.01 FACE BRICK MATERIALS

- A. Face brick shall be first quality in the following sizes:
 - 1. Utility Face Brick: 3 5/8" w x 3 5/8" h x 11 5/8" L - 2 courses in 8"
- B. All bricks of each type supplied shall be from the same production run.
- C. Special shapes shall be as detailed on the drawings and shall be from the same production run as the type indicated.

- D. See drawings for locations and types of solid bricks. Solid bricks shall be from the same production run as the type indicated.

2.02 BRICK TYPES

A. Brick Type 1: Cost allowance \$ 1,575 per thousand. Glen Gery, Chateau Brown, utility size, running bond coursing. This brick is not final. Please use the allowance for estimating purposes.

B. Brick Type 2: Cost allowance: \$ 1,925 per thousand. Belden Quaker Blend Velour A 12-45, utility size. This brick is not final. Please use the allowance for estimating purposes.

C. Brick Type 3: Thin brick at interior, \$ 1,700 per thousand. Glen Gery, Chateau Brown, utility size, running bond coursing. Please use the allowance for estimating purposes.

PART 3 - EXECUTION 3.01 INSTALLATION

- A. See Section 04 27 23, Multiple Wythe Unit Masonry for installation requirements.
- B. In masonry construction the general trades / masonry contractor shall ensure that all built-in items including but not limited to electrical boxes remain plumb, level and flush to the face of all masonry walls. The general trades contractor / masonry contractor shall be responsible to fix all overcuts.

END OF SECTION

New Addition

Kettering Seventh Day Adventist Church

04 21 00 - 2

CLAY MASONRY

SECTION 04 22 00
CONCRETE UNIT MASONRY

PART 1 - GENERAL 1.01 SUMMARY

- A. Section Includes:
1. Concrete masonry units.
 2. Mortar and grout.
 3. Steel reinforcing bars.
 4. Masonry joint reinforcement.
 5. Ties and anchors.
 6. Miscellaneous masonry accessories.
- B. Related Sections:
1. Section 05 12 00 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural-steel frame.
 2. Section 07 62 00 "Sheet Metal Flashing and Trim" for sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.02 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Cleanouts: Openings that are sized and spaced to allow removal of debris from the bottom of the grout space.
- C. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.03 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Table 2 in ACI 530.1/ASCE 6/TMS 602.

1.04 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
1. Concrete Masonry Unit Test: For each type of unit required, according to ASTM C 140 for compressive strength.
 2. Grout Test (Compressive Strength): For each mix required, according to ASTM C 1019.

1.05 PREINSTALLATION MEETINGS

- A. This project requires a pre-installation meeting with the Construction Manager, General Contractor, Masonry Installer, Special Inspector responsible for masonry inspections, and the Registered Design Professional.
1. Meeting shall be held at the job site trailer or other mutually agreed upon location.
 2. Contact Registered Design Professional at least two (2) weeks prior to masonry installation to arrange meeting date.
 3. An approved Masonry Reinforcing Submittal shall be completed prior to arrangement of pre-installation meeting.

1.06 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
1. Reinforcing Steel:
 - a. Show elevations of reinforced walls at all CMU walls.
 - b. Coordinate openings (doors, windows, mechanical duct penetrations, etc.) with Architectural and Mechanical drawings. Show jamb reinforcing at openings.

- c. Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
 - d. Submit masonry reinforcing shop drawings at least 28 days prior to start of masonry work
- 2. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
- C. Two (2) hardcopies for masonry shop drawings shall be submitted for review. One (1) hardcopy will be redmarked by Shell + Meyer Associates, Inc. and one (1) electronic copy of this redmarked set will be submitted as the approved set. No allowance has been made for redmarking a quantity of hardcopies greater than that noted above. Fees for in-house duplication of structural steel redmarks will be an Additional Service and invoiced at an hourly rate using Shell + Meyer's Standard Rate Schedule.
- D. Submittals requiring more than TWO (2) reviews by SMA resulting from errors and omissions of the supplier's detailer will be an Additional Service and invoiced at an hourly rate. An invoice for these services will be attached to the final approved set of shop drawings.

1.07 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Material Certificates: For each type and size of the following:
 - 1. Masonry units.
 - a. Include data on material properties.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 - 2. Cementitious materials. Include brand, type, and name of manufacturer.
 - 3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 4. Grout mixes. Include description of type and proportions of ingredients.
 - 5. Joint reinforcement.
 - 6. Mechanical Couplers
 - 7. Anchors, ties, and metal accessories, including reinforcing bar positioners
- C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 1506 for water retention, and ASTM C 91 for air content.
 - 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 2 in ACI 530.1/ASCE 6/TMS 602.
- E. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.08 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.
- D. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.10 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS 2.01 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.
- B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.02 CONCRETE MASONRY UNITS

- A. Regional Materials: CMUs shall be manufactured within 500 miles of Project site from aggregates and cement that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.
- B. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide square-edged units for outside corners unless otherwise indicated.
 - 3. Provide double bullnose CMU and double corner CMU units where top of wall is exposed to view and a wood or other cap type has not been specified or indicated.
- C. CMUs: ASTM C 90.
 - 1. Density Classification: Normal weight unless otherwise indicated.
 - 2. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
- D. Concrete Building Brick: ASTM C 55.
 - 1. Density Classification: Normal weight.

2.03 CONCRETE AND MASONRY LINTELS

- A. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Section 03 30 41 "Precast Structural Concrete" and Section 03 30 00 "Cast-in-Place Concrete," with reinforcing bars as indicated in the Drawing Schedules.
- B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs with reinforcing bars placed as indicated and filled with coarse grout. Cure precast masonry lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.04 MORTAR AND GROUT MATERIALS

- A. Regional Materials: Aggregate for mortar and grout, cement, and lime shall be extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.
- B. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- E. Aggregate for Mortar: ASTM C 144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
 - 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- F. Aggregate for Grout: ASTM C 404.
- G. Water Repellant Admixture for Mortar:
- H. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - 1. Products : Subject to compliance with requirements, provide one of the following:
 - a. Euclid Chemical Company (The) ; Accelguard 80.
 - b. Grace Construction Products, W. R. Grace & Co. - Conn .; Morset.

- c. Sonneborn Products, BASF Aktiengesellschaft ; Trimix-NCA.
- I. Water: Potable.

2.05 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M, Grade 60.
 - 1. Bar size No.6 and Greater: Provide standard threaded ends for mechanical coupler attachment. Coupler specification may require tapered threads.
- B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.
 - 1. Interior Walls: Hot-dip galvanized, carbon steel.
 - 2. Exterior Walls: Hot-dip galvanized, carbon steel.
 - 3. Wire Size for Side Rods: 0.148-inch diameter.
 - 4. Wire Size for Cross Rods: 0.148-inch diameter.
 - 5. Wire Size for Veneer Ties: 0.148-inch diameter.
 - 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 - 7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.

2.06 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
 - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
 - 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 - 3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
 - 1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- diameter, hot-dip galvanized steel wire.
 - 2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.187-inch- diameter, hot-dip galvanized steel wire.
- C. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
 - 1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.060-inch- thick, steel sheet, galvanized after fabrication.
 - 2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.187-inch- diameter, hot-dip galvanized steel wire.
- D. Partition Top anchors: 0.105-inch- thick metal plate with 3/8-inch- diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

2.07 MISCELLANEOUS ANCHORS

- A. Anchor Bolts: Headed steel bolts complying with ASTM A 325; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.
- B. Postinstalled Anchors: As indicated on the Contract Drawings

2.08 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC.

- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I(No. 15 asphalt felt).
- D. Mechanical Reinforcing Couplers for Thread-Deformed Rebar: Designed to produce a fullstrength mechanical joint between reinforcing bars, replacing the need for lap splices. Reinforcement to splice connection shall meet or exceed 125% of the specified tensile strength of the rebar.
 - 1. Products : Subject to compliance with requirements. Do NOT use flanged or donut style couplers. Provide one of the following:
 - a. BarSplice Products, Inc.: BPI BARSPLICER POSITIONCOUPLER
 - b. Dayton Superior Corporation: TAPER LOCK Standard Coupler
 - c. Note: Above product requires tapered threads at reinforcing ends
 - d. Dywidag Systems International: GEWI® Threadbar System Static Coupler
- E. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
 - 1. Products : Subject to compliance with requirements, provide one of the following:
 - a. Dayton Superior Corporation, Dur-O-Wal Division ; D/A 810, D/A 812 or D/A 817.
 - b. Heckmann Building Products Inc .; No. 376 Rebar Positioner.
 - c. Hohmann & Barnard, Inc .; #RB or #RB-Twin Rebar Positioner.
 - d. Wire-Bond ; O-Ring or Double O-Ring Rebar Positioner.

2.09 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland cement-lime mortar unless otherwise indicated.
 - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide thefollowing types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 - 1. For masonry below grade or in contact with earth, use Type S.
 - 2. For reinforced masonry, including shear walls, use Type N.
 - 3. For mortar parge coats, use Type S or Type N.
 - 4. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
 - 5. For interior non-load-bearing, non-shear wall partitions, Type O may be used instead of Type N.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 7 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.

2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION 3.01 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.03 TOLERANCES

- A. Dimensions and Locations of Elements:
 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
 1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
 3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
 5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
- C. Joints:
 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
 2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
 3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.

4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.04 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4-inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Built in items shall include but not be limited to electrical boxes, door jamb anchors, structural steel, bearing plates, embed plates, recessed display cases, fire extinguisher cabinets, lockers, and other items requiring recesses within masonry construction.
 1. Built-in items shall be installed plumb and level.
 2. Fill in solidly with masonry around built-in items.
 3. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh or plastic mesh in the joint below and rod mortar or grout into core.
 4. Each trade contractor installing built-in items shall be responsible for installing said items level and plumb. The masonry contractor shall be responsible for maintaining all items installed in walls level and plumb as the wall erection proceeds.
 5. Bed anchors of metal door and glazed frames in mortar joints.
 - a. Fill pressed steel frame voids solid with mortar.
 - b. Fill masonry cores with grout and reinforcing as indicated on the Structural Drawings.
 6. Grout cores in hollow concrete masonry units under bearing plates, beams, lintels, posts and similar items as indicated on the structural drawings.
 7. In masonry construction the General Trades / Masonry Contractor shall ensure that all built-in items including electrical boxes remain plumb and flush to the face of all masonry walls. The General Trades / Masonry Contractor shall be responsible to fix all overcuts. F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated. G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 1. Install compressible filler in joint between top of partition and underside of structure above.
 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
 3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 07 84 00 "Fire Stopping."

3.05 MORTAR BEDDING AND JOINTING A.

Lay hollow CMUs as follows:

1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
 2. Wet joint surfaces thoroughly before applying mortar.
- D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- E. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.06 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
1. Space reinforcement not more than 16 inches o.c.
 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.07 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete where masonry abuts or faces structural steel or concrete to comply with the following:
1. Provide an open space not less than 1 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
 3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.08 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.

2. Install preformed control-joint gaskets designed to fit standard sash block.
3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.

3.09 LINTELS

- A. Provide concrete and masonry lintels where shown and where openings of more than 12 inches for brick-size units and 16 inches for block-size units are shown without structural steel or other supporting lintels.
- B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.10 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement:
 1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
 2. Use mechanical couplers for splicing No.6 bars and greater
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 2. Limit height of vertical grout pours to not more than 64 inches.

3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to meet specified requirements shall be done at Contractor's expense.
- B. Inspections: Level 2 special inspections according to the "International Building Code."
 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 3. Place grout only after inspectors have verified proportions of site-prepared grout. C.

Testing Prior to Construction: One set of tests.
- D. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
- E. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
- F. Mortar Test: For each mix provided, according to ASTM C 780. Test mortar for mortar air content.
- G. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

3.12 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in 2 uniform coats to a total thickness of 3/4 inch. Dampen wall before applying first coat and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot. Form a wash at top of parging and a cove at bottom.
- C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.13 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.14 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
 - 1. Crush masonry waste to less than 4 inches in each dimension.
 - 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 31 20 00 "Earth Moving."
 - 3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

SECTION 04 27 23
MULTIPLE-WYTHE UNIT MASONRY

PART 1 - GENERAL 1.01 SCOPE OF WORK

- A. Furnish all labor, material and equipment necessary to install clay masonry, concrete unit masonry and masonry accessories where indicated on the drawings and as specified within their respective sections.
- B. The Masonry Contractor shall receive, secure receipt for, be responsible for and set loose lintels, anchor bolts, reglets, etc., coming in connection with masonry.

1.02 RELATED WORK

- A. Section 04 01 20.52 - Masonry Cleaning
- B. Section 04 05 13 - Mortar
- C. Section 04 05 23 - Masonry Accessories
- D. Section 04 21 00 - Clay Masonry
- E. Section 04 22 00 - Concrete Unit Masonry

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Submit contractor's proposed procedures for hot and/or cold weather construction for approval prior to the start of work.

1.04 QUALITY CONTROL

- A. Masonry Standard: Comply with ACI 530.1 / ASCE 6 / TMS 602.
- B. Protection of Masonry: During erection, cover tops of walls, projections and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
 - 2. Where one wythe of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to un-constructed wythe and hold cover in place.

1.05 MOCK-UP PANEL

- A. Build mock-up panels(s) to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials, execution and workmanship.
- B. Mock-up panel(s) shall represent typical wall area(s) as shown on the Drawings including movement control joints (sealant filled) 1'-4" minimum length, air barrier, blocking for window opening, horizontal and vertical reinforcing, shelf angles and supports, bond beams and lintels, brick ties and anchors, through-wall flashing, end dams, weeps, vents, cavity drainage material (if required), window head, sill and jamb details.
 - 1. Include a sealant-filled joint at least 16 inches long in each exterior wall mock-up.
 - 2. Include lower corner of window opening at upper corner of exterior wall mock-up. Make opening approximately 12 inches wide by 16 inches high.
 - 3. Include through-wall flashing installed for a 24 inch length in corner of exterior wall mock-up approximately 16 inches down from the top with 12 inch length of flashing left exposed to view (omit masonry above half of flashing).
- C. Prior to starting general masonry cleaning, prepare mock-up for cleaning using the same cleaning materials and methods proposed for the Work.
- D. Protect accepted mock-up(s) from the elements with weather-resistant membrane.
- E. The construction of the mock-up shall be photographed or videotaped by the masonry contractor to be part of a presentation for groups of trades people as they join the project work force.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Precautions

1. Cold weather masonry construction practices shall be in compliance with the International Masonry Industry All-Weather Council's "Guide Specification for Cold Weather Construction".
2. Do not use frozen materials or materials mixed or coated with ice or frost.
3. Do not build on frozen substrates.
4. Remove and replace unit masonry damaged by frost or by freezing conditions.

B. Hot Weather Precautions

1. Hot weather construction practices shall be in compliance with Brick Institute of America Technical Note 1 Revised 1992.

1.07 FIELD QUALITY CONTROL

A. Testing and Inspecting

1. The Owner will engage a Testing Agency to perform tests and inspections and prepare reports.
2. Allow Testing Agency representatives access to scaffolding and work areas as needed to perform tests and inspections.
3. Re-testing of materials that fail to meet specified requirements shall be done at the Contractor's expense.

B. Level 1 Special Inspections shall be performed in accordance with the Ohio Building Code.

1. Verification of proportions of site-prepared mortar.
2. Verification of proportions of site-prepared grout.
3. Verification of compliance of grout spaces and sizes and locations of

reinforcement. C. Testing Frequency

1. Prior to construction: one set of tests.
2. During construction: one set of tests for each 5000 sq ft of wall area or portion

thereof. D. Tests Required

1. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
2. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
3. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

1.08 PRE-INSTALLATION MEETING

A. Hold a pre-installation meeting one week prior to beginning work.

1. Include all contractors who will be affected by the masonry installation including, but not limited to, the roofing, plumbing, mechanical, electrical and technology contractors.

PART 2 - PRODUCTS - NOT USED PART 3 -

EXECUTION 3.01 PREPARATION

- A. Verify that items provided under other sections are properly sized and located prior to the start of masonry work.
- B. Establish lines, levels, and coursing and protect from disturbance.
- C. Provide temporary bracing for free standing masonry walls until permanent bracing is in place.

3.02 MASONRY ACCESSORIES

A. General

1. Masonry accessories (including flashing, weeps, etc.) shall be located where indicated on the drawings. If drawings do not indicate a location, masonry accessories shall be located in accordance with the best practices of the trade.

2. Review accessory types and locations with Architect prior to the start of work.

3.03 REINFORCED UNIT MASONRY INSTALLATION A.

Temporary Formwork and Shores

1. Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - a. Construct formwork to provide shape, line and dimensions of completed masonry as indicated.
 - b. Make forms sufficiently tight to prevent leakage of mortar and grout.
 - c. Brace, tie and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.

B. Placing Reinforcement

1. Comply with requirements of ACI 530.1 / ASCE 6 / TMS 602.

C. Grouting

1. Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - a. Comply with requirements in ACI 530.1 / ASCE 6 / TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - b. Limit height of vertical pours to not more than 60 inches.

3.04 MASONRY REINFORCEMENT

- A. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere.
 1. Lap reinforcement a minimum of 6 inches.
 2. Space reinforcement not more than 16 inches o.c.
 3. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
- B. Interrupt joint reinforcement at control and expansion joints.
 1. Stop reinforcement 1" back from expansion and control joints and openings in masonry walls.

- C. Install prefabricated corner and tee reinforcement.

3.05 BRICK TIES

- A. Wall ties shall be located at 16 inches o.c. vertical (Max.) and 16 inches o.c. horizontal (max.) for all exterior locations unless noted otherwise.

3.06 LAYING OF MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns and offsets.
 1. Avoid using less-than-half-size units, particularly at corners, jambs and, where possible, at other locations.
- B. Use full-size units without cutting whenever possible.
 1. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven, table-mounted masonry saw with a carborundum wheel; provide clean, sharp, unchipped edges.
 2. Allow units to dry before laying unless wetting of units is specified.
 3. Install cut units with cut surfaces and, where possible, cut edges concealed.
- C. Lay units to line, plumb and true, in full bed of mortar with bed and head joints well-filled.
- D. All mortar joints of exposed work shall be neatly tooled to a concave joint using a sled runner/jointer as the work progresses.

1. Joints to be tooled to produce an even color in the mortar.
 2. Rub off all fins and tags before mortar sets.
 3. Cut joints flush for masonry walls to receive plaster or other direct applied finishes other than paint.
 4. Provide wash at bottom horizontal joints of recessed brick panels and where stone sill occurs.
 5. All concealed joints shall be struck to remove protruding mortar.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Built in items shall include but not be limited to electrical boxes, door jamb anchors, structural steel, bearing plates, embed plates, recessed display cases, fire extinguisher cabinets, lockers, and other items requiring recesses within masonry construction.
1. Built-in items shall be installed plumb and level.
 2. Fill in solidly with masonry around built-in items.
 3. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh or plastic mesh in the joint below and rod mortar or grout into core.
 4. Bed anchors of metal door and glazed frames in mortar joints.
 - a. Fill pressed steel frame voids solid with mortar.
 - b. Fill masonry cores with grout and reinforcing as indicated on the Structural Drawings.
 5. Grout cores in hollow concrete masonry units under bearing plates, beams, lintels, posts and similar items as indicated on the structural drawings.
 6. In masonry construction the General Trades / Masonry Contractor shall ensure that all built-in items including but not limited to electrical boxes remain plumb and flush to the face of all masonry walls. The General Trades / Masonry Contractor shall be responsible to fix all overcuts.

3.07 BLOCK LAYING

- A. 8" block coursing shall start where indicated on the drawings.
1. Provide courses less than 8" where required to maintain the coursing.
 2. All block coursing shall be horizontal.
- B. Lay to line, plumb and true.
- C. Block shall be laid in a running bond pattern unless noted otherwise on the drawings.
- D. Lay hollow concrete masonry units as follows:
1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 2. With webs fully bedded in mortar in all courses of piers, columns and pilasters.
 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- E. Lay solid masonry units with completely filled bed and head joints: butter ends with sufficient mortar to fill head joints and shove into place.
- F. All faces shall be free from broken corners and joints shall be tooled to match adjacent joints. Properly bond in an approved manner at intersections and break vertical joints.
- G. Load-bearing walls: build full height of story to underside of structure above. Grout juncture with structure solid with grout.
- H. Nonload-bearing walls: build full height of story to underside of structure above. Terminate full height nonload-bearing walls short of the structure to allow for deflection. See top of wall details on drawings.

3.08 BRICK LAYING

- A. All courses of brick work shall be kept level and the bonds shall be accurately preserved.
- B. Wet brick with absorption rates in excess of 20g/30 sq. in./min., as determined by ASTM C67 Methods of Sampling and Testing Brick and Structural Clay Tile, prior to laying.
 - 1. When the outside temperature is 40 degrees F or less, bricks shall be soaked in accordance with the International Masonry All - Weather Council's Guide Specification for Cold Weather Masonry Construction.
- C. Each brick shall be laid with a full joint in a full bed of mortar, all interstices to be thoroughly filled.
 - 1. When brick comes in contact with anchors, each shall be "brought home" to do all work possible.
- D. Brick shall be laid in the wall in a blend that will result in even color, without patchy areas.
- E. Brick shall generally be laid in a running bond pattern.
 - 1. See building elevations for special bond patterns, special shape brick requirements and recessed brick panels.
- F. Brick shall be laid with a full bed joint and full head joint.
- G. The cavity between the brick and back-up material shall be kept clean of mortar droppings and other foreign material.
 - 1. Contractor shall use a wooden or metal strip, slightly smaller than the cavity width to catch mortar droppings.
 - 2. The strip shall be removed from the cavity prior to installing the next course of reinforcing, cleaned and reinstalled on top of the reinforcing.
 - 3. Wall cavities not meeting the above outlined requirements will be subject to rejection.
 - 4. Contractor may submit alternative methods to the Architect for approval prior to beginning work.

3.09 GENERAL ERECTION REQUIREMENTS

- A. Mortar Joint Thickness
 - 1. Lay brick with 3/8 in. mortar joints, not to exceed 1/2 in. (12.7 mm).
- B. Construction Tolerances:
 - 1. Max. variation from plumb in vertical lines & surfaces of columns, walls and arises:
 - a. 1/4 in. (6.4 mm) in 10 ft. (3 m).
 - b. 3/8 in. (9.6 mm) in a story height not to exceed 20 ft. (6 m).
 - c. 1/2 in. (12.7 mm) in 40 ft. (12 m) or more.
 - 2. Maximum variation from plumb for external corners, expansion joints and other conspicuous lines:
 - a. 1/4 in. (6.4 mm) in any story or 20 ft. (6 m) maximum.
 - b. 1/2 in. (12.7 mm) in 40 ft. (12 m) or more.
 - 3. Maximum variation from level of grades for exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines:
 - a. 1/4 in. (6.4 mm) in any bay or 20 ft. (6 m).
 - b. 1/2 in. (12.7 mm) in 40 ft. (12 m) or more.
 - 4. Maximum variation from plan location of related portions of columns, walls and partitions:
 - a. 1/2 in. (12.7 mm) in any bay or 20 ft. (6 m).
 - b. 3/4 in. (19 mm) in 40 ft. (12 m) or more.
 - 5. Maximum variation in cross-sectional dimensions of columns and thickness of walls from dimensions shown on drawings:
 - a. Minus 1/4 in. (6.4 mm).
 - b. Plus 1/2 in. (12.7 mm).

3.10 REGLETS

A. Reglets will be furnished by the roofing contractor. B.

Install base portion of reglets at vertical walls.

1. Coordinate height of reglet with roofing contractor prior to beginning installation.
2. Lap end a minimum of 4" and seal.

C. Reglet base shall be installed before thru-wall flashing.

D. Lap thru-wall flashing over reglet and seal.

3.11 FLASHING

A. Provide concealed flashing in exterior masonry work where indicated on the drawings and as required to prevent infiltration of water.

B. Flashing shall be in contact with wall and supported on either masonry, grout or galvanized sheet metal where it runs horizontally.

1. Flashing shall terminate a minimum of 8 inches above lowest point of flashing or 6 inches above mortar diverter, whichever is higher.
2. Fully adhere flashing to all vertical and horizontal surfaces with curing adhesive approved by the flashing manufacturer.
3. Flashing shall terminate minimum 8 inches above lowest point of the flashing or 6 inches above mortar diverter in a bed joint or by use of a stainless steel termination bar mechanically fastened at 8" on center with anchor appropriate for substrate. Provide blocking a necessary for secure attachment to structure.

C. All joints in flashing shall be lapped a minimum of 4" and sealed with the flashing manufacturer's recommended asphalt mastic sealant.

D. Furnish end dams at locations where flashing terminates such as end of lintels, end of window sills, etc.

E. Flashing shall be continuous around corners.

F. Flashing shall be cut off flush with face of brick.

G. Metal drip edge, where required, shall be embedded within the bed joint a minimum of 3".

1. Flashing shall lap the metal drip edge a minimum of 2" and shall be sealed with flashing manufacturer's recommended asphaltic mastic sealant.

H. Where dissimilar metals come in contact, provide an isolation material.

3.12 WEEP VENTS

A. Weep vents shall be located in head joints in first course immediately above all flashing a maximum of 24" o.c.

B. Install weep vents per manufacturer's recommendation.

C. Keep weeps and area above flashing free of mortar droppings.

3.13 BRICK VENTS

A. Install brick vents in head joint at highest point of each uninterrupted cavity space. Brick vents shall have a maximum horizontal spacing of 24" installed per manufacturer's recommendation.

3.14 MORTAR DIVERTER

A. Install mortar diverter above flashing and weeps in air space of all cavity walls per manufacturer's recommendations.

3.15 LINTELS

A. Install loose steel lintels where indicated on the drawings.

1. Maintain minimum required bearing on each side of opening. See Structural Drawings.

3.16 CONTROL AND EXPANSION JOINTS

- A. Control joints and expansion joints shall be placed where indicated on the drawings and located in accordance with the standard practice of the trade.
 - 1. Verify all joint locations with the Architect prior to the start of construction.

3.17 PATCHING

- A. Cutting and patching of all masonry work due to omissions and errors of this Contractor shall be done by him at his expense and when due to omissions and errors of other Contractors, shall be done by this Contractor at the expense of the Contractor in error.

3.18 CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: See Section 04 01 20.52 for masonry cleaning requirements and procedures.

3.19 PROTECTION

- A. Protection of Work:
 - 1. During erection, cover top of unfinished walls with strong waterproof membrane at end of each day or shut-down. Drape covering at least 2'-0" down on all sides. Covering shall be held securely in place.
 - 2. Protect the base of walls from rain splashed mud or mortar droppings. Use straw, sand, sawdust, or plastic sheets spread 4 feet on the ground and 2 feet up the wall.
 - 3. Turn scaffold boards on edge at the end of each workday to prevent rain from splashing mortar or dirt onto the wall.
 - 4. Maintain protective boards at exposed external corners that may be damaged by construction.
 - 5. Provide protection without damaging completed work.

END OF SECTION

SECTION 04 73 00
MANUFACTURED STONE MASONRY

PART 1 - GENERAL 1.01 NOTICE

- A. Read the Legal Advertisement, Instructions to Bidders, Bidders Proposal, Form of Contract, Supplementary Conditions, and General Requirements which are hereby made a part of this Specification. This Contractor is cautioned to visit the site and determine the local conditions relative to the work.

1.02 SCOPE OF WORK

- A. Furnish all labor, materials and equipment necessary to install manufactured stone masonry units where indicated on the drawings and as indicated herein.

1.03 RELATED WORK

- A. Section 040513 - Mortar
- B. Section 040523 - Masonry Accessories
- C. Section 042700 - Multiple-Wythe Unit Masonry
- D. Section 040120.52 - Masonry Cleaning

1.04 WORK NOT INCLUDED

- A. Section 04210 - Brick Masonry B.
Section 04220 - Concrete Unit Masonry

1.05 REFERENCES

- A. ANSI A118.4 - Specifications for Latex-Portland Cement Mortar
- B. ASTM C 39 - Standard Test Method for Compressive Strength Cylindrical Concrete Specimens
- C. ASTM C 67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
- D. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar
- E. ASTM C 177 - Standard Test Method for Steady-State Head Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- F. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes
- G. ASTM C 270 - Standard Specification for Mortar for Unit Masonry
- H. ASTM C 482 - Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement
- I. ASTM C 567 - Standard Test Method for Determining Density of Structural Lightweight Concrete
- J. ASTM C 847 - Standard Specification for Metal Lath
- K. ASTM C 932 - Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering
- L. ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete
- M. ASTM C 1032 - Standard Specification for Woven Wire Plaster Base
- N. ASTM C 1059 - Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete
- O. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
- P. ASTM C 1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
- Q. ASTM C 1329 - Standard Specification for Portland Cement
- R. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation

- S. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
- T. ASTM E 2556 / E 2556M - Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment

1.06 SUBMITTALS

A. All submittals shall be in accordance with Section 013200 Submittals. B.

Technical Data

- 1. Submit technical data describing manufactured stone units.

C. Sample

- 1. 4' x 4' grouted sample panel representative of the completed work required for the project with respect to qualities of appearance, materials and construction. Locate panel on the site as directed by the Architect. Retain sample panel during construction as a standard for judging completed work. Sample panel shall not be removed until all masonry work is complete.

D. Quality Assurance / Control 1.

Qualifications:

- a. Proof of manufacturer qualifications
- b. Proof of installer qualifications - experienced mason familiar with installation procedures
- 2. Regulatory Requirements: Evaluation reports
- 3. Veneer manufacturer's installation instructions
- 4. Maintenance Instructions

1.07 PRODUCT DELIVERY, STORAGE & HANDLING

A. Stack units on timbers or platforms at least 3" above grade. Place plastic film between wood and other finished surfaces of units when stored for an extended period of time. B. Provide necessary means to prevent staining of units during storage.

C. Stock piles must be kept covered at all times with canvas or polyethylene tarpaulins to protect material from rain and snow.

1.08 WARRANTY

A. Manufactured stone manufacturer shall furnish to the Owner a warranty, guaranteeing the installation for 20 years against defective material or faulty manufacturing process with limitations as described by the manufacturer.

PART 2 - PRODUCTS 2.01 SUBSTITUTIONS

- A. See Section 012500 for the proper procedure for submitting products not listed herein for approval by the Architect. Approval shall be by addendum only.
- B. It shall be the responsibility of the manufacturer to prove that the product proposed for substitution is equal for the purpose of this project. Submissions lacking such information will be rejected.

2.02 MANUFACTURED STONE UNITS

A. Manufactured stone shall be:

- 1. Boardwalk Cliffstone Series - Eldorado Stone, LLC, San Marcos, CA 92078; www.eldoradostone.com
- 2. Approved Equal

B. Precast veneer units consists of portland cement, lightweight aggregates, and mineral oxide pigments.

- 1. Compressive Strength: ASTM C192 and ASTM C39; average greater than 1,800 psi
- 2. Shear Bond: ASTM C482; 50 psi
- 3. Water Absorption: UBC Standard 15-5; Less than 22 percent

4. Freeze-Thaw Test: ASTM C67; Less than 3 percent weight loss and no disintegration.
5. Thermal Resistance: ASTM C177; 0.473 at 1.387 inches thick
- C. Moisture Barrier: ASTM D226; Type 1, No. 15, non-perforated asphalt-saturated felt paper.
- D. Reinforcing: ASTM C847; 2.5lb/sy, galvanized expanded metal lath.
- E. Mortar:
 1. Cement: Any cement complying with ASTM C270
 2. Lime: ASTM C207
 3. Sand: ASTM C144, natural or manufactured sand
 4. Color Pigment: ASTM C979, mineral oxide pigments
 5. Water: Potable
 6. Pre-Packaged Latex-Portland Cement Mortar: ANSI A118.4 F. Bonding Agent: Exterior integral bonding agent meeting ASTM C932
- G. Sealer: Water based silane or siloxane masonry sealer - clear.
- H. Provide accessory pieces as detailed on the drawings.
- I. Color and finish of manufactured stone shall be selected by the Architect.

2.03 MORTAR MIXES

- A. Standard installation - grouted joints
 1. Mix mortar in accordance with manufacturers mortar preparation instructions.
 2. Add color pigment in grout joint mortar in accordance with pigment manufacturer's instructions.

PART 3 - EXECUTION 3.01 EXAMINATION

- A. Examine substrates upon which work will be installed.
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
- C. Commencement of work by installer is acceptance of substrate.

3.02 PREPARATION

- A. Protection: Protect adjacent work from contact with mortar.
- B. Surface Preparation: Prepare substrate in accordance with manufacturer's installation instructions for the type of substrate being covered.

3.03 INSTALLATION

- A. Install and clean stone in accordance with manufacturer's installation instructions for Standard Installation for Grouted Joint installation as specified above.
- B. Apply sealer in accordance with sealer manufacturer's installation instructions.

3.04 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Manufacturer's Field Service Representative shall make two periodic site visits for installation consultation and inspection as requested by the General Contractor.

3.05 CLEANING

- A. Remove protective coverings from adjacent work upon completion of work covered by this specification.
- B. Cleaning Stone Veneer Units:
 1. Wash with soft bristle brush and water/granulated detergent solution.
 2. Rinse immediately with clean water.
- C. Removing Efflorescence:
 1. Allow veneer to dry thoroughly.

2. Scrub with soft bristle brush and clean water.
3. Rinse immediately with clean water, allow to dry.
4. If efflorescence is still visible, repeat above procedure using a solution of 1 part household vinegar and 5 parts water.
5. Rinse immediately with clean water. **END OF SECTION**