

Sealed bids for the construction of "Site Grading & Drainage for CTE Welding Building" will be received at the office of:

Purchasing Department
Anderson County Courthouse
100 North Main Street, Room 214
Clinton, TN 37716

until October 25, 2023 @ 2:30 p.m., at which time and place they will be publicly opened and read.

Drawings and Specifications and other Contract Documents may be examined at the following locations:

The office of the Architect – MBI Companies, Inc.; 299 N. Weisgarber Road, Knoxville, TN 37919
Knoxville Builders Exchange of Tennessee, Tel: 866-941-BXTN (2986)
Dodge Data & Analytics, Tel: 877-784-9556
Bid Clerk by Construct Connect, Tel: 877-737-6482

The official repository for the bid documents, including any addenda, is Vendor Registry. Bid deposit is not required. Subcontractors, vendors, and others who desire individual drawings and specification sections may obtain them from Knoxville Blueprint, Knoxville, Tennessee, 546-7601, by paying the costs of reproduction, which is not refundable.

Bid Bond shall not be required. The successful bidder will be required to execute a performance bond in an amount equal to one hundred percent (100%) of the Contract Sum and a payment bond covering and including labor and materials in an amount equal to one hundred percent (100%) of the Contract Sum. Performance and Labor and Material Payment Bond shall be on AIA Form A312.

All bidders must be licensed contractors as required by the contractors Licensing Act of 1976, enacted by the General Assembly of the State of Tennessee on March 18, 1976 and as amended to date as codified by Tennessee Code Annotated (TCA) Sections §62-6-119. Bidder's name, license number, date of expiration of license, license limit, and that part of license classification applying to the bid must be placed on the envelope containing the bid, otherwise the bid cannot be opened or considered. As applicable by Tennessee Annotated Code and/or TDEC regulations, the names of the Mechanical, Plumbing, Electrical, Masonry, Roofing and/or Geothermal Subcontractors, License numbers, date of expiration of their licenses, license limit, and license classification must also be on the bid envelopes otherwise the bid cannot be opened or considered. General Contractors performing Mechanical, Plumbing, Electrical, Masonry, Roofing and/or Geothermal work must designate this information on the outside of the envelope.

Each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not a person included within or on the list created pursuant to TCA §12-12-106.

No bidder will be permitted to withdraw his bid within sixty (60) days after the date of opening of bids. The Owner reserves the right to reject any or all bids and to waive any informalities therein.

Upon award of the construction contract to the successful bidder, construction shall commence on a date to be specified in the "Notice to Proceed" to the Contractor and shall be completed on or before the completion date specified in the Contract Documents as time is of the essence in the performance of the contract for construction.

Upon receipt of Notice to Proceed, the Contractor will complete the work regularly, diligently, and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified on the Bid Form.

The Owner reserves the right to waive any information in or to reject any or all bids and to accept the bid deemed favorable to the interest of the Owner.

END OF SECTION

PART 1 GENERAL:

1.01 GENERAL:

A The following amendments modify, change, delete from or add to the Instructions to Bidders (AIA Document A701, 2018 Edition). Where any part of the Instructions to Bidders is modified or voided by these amendments, the unaltered provisions of that part shall remain in effect.

1.02 BID SECURITY: N/A

SUBMISSION OF BIDS:

1.03

A In addition to the information listed in Subparagraph 4.3.1, the email containing the bid shall include the plainly marked bid envelope PDF with the bidding contractor's license number, date of expiration of the license, license limitation, and that part of license classification applying to the bid. If this information is not marked on the bid envelope PDF, the Architect and the Owner are prohibited from considering the bid by the requirements of The contractor's Licensing Act of 1976 enacted by the General Assembly of the State of Tennessee, as amended by Chapter 9 and Chapter 406 of the Public Acts of 1977. The names of the Masonry, Roofing, Geothermal, Plumbing, Mechanical, and Electrical Subcontractors, License numbers and date of expiration of their licenses must also be on the bid envelope PDF.

B Notes: Bidders' attention is called to the provisions of the Contractor's Licensing Act that particular subcontractors (Electrical, Mechanical, HVAC, Masonry, Roofing, Geothermal, etc.) must have a contractor's license if the aggregate amount of their subcontract is equal to or exceeds monetary limits enumerated in that Act for each subcontractor's trade.

CONTRACT FOR CONSTRUCTION:

1.04

A The Contract for Construction of the Project will be executed on AIA Document A101, current version.

PERFORMANCE AND LABOR AND MATERIALS PAYMENT BOND:

1.05

A The successful bidder will be required to furnish a Performance Bond and a Labor and Materials Payment Bond in the amount of one hundred percent (100%) of the contract sum. Bonds shall be executed on AIA Document A312.

DEFINITIONS:

1.06

A All definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201 - 2017 Edition, are applicable to these Instructions to Bidders.

B Bidding documents include the Invitation to Bid, Instructions to Bidders, the Bid Forms, Agreement between Owner and Contractor and the proposed Contract Documents including any Addenda issued prior to receipt of Bids.

C Addenda are written or graphic instruments issued prior to the execution of the Contract which modify or interpret the bidding documents, including Drawings and Specifications, by additions, deletions, clarifications or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed.

D All correspondence concerning the bid process shall be addressed to the Architect.

- E A Bid is a complete and properly signed proposal to do the Work or designated portion thereof for the sums stipulated therein, submitted in accordance with the Bidding Documents.
 - F The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which work may be added or from which work may be deleted for sums stated in any Alternate Bids.
 - G A Bidder is a person or entity who submits a Bid.
 - H A Sub-Bidder is a person or entity who submits a bid to a Bidder for materials or labor for a portion of the Work.
- 1.07 EXAMINATION OF DOCUMENTS AND SITE:
- A. Each Bidder, by making his Bid, represents that he has read and understands the Bidding Documents.
 - B. Each Bidder, by making his Bid, represents that he has visited the site and familiarized himself with the local conditions under which the Work is to be performed.
 - C. Each Bidder, by making his Bid, represents that his Bid is based upon the materials, systems and equipment required by the Bidding Documents unless exceptions are noted on the Bid Form.
- 1.08 BIDDING PROCEDURES:
- A. All Bids shall be prepared on the included forms and submitted in accordance with the Instructions to Bidders.
 - B. A Bid is invalid if it has not been received prior to the time and date for receipt of bids indicated in the Invitation to Bid, or prior to any extension thereof issued to the Bidders.
 - C. Unless otherwise provided in any supplement to these Instructions to Bidders, no bidder shall modify, withdraw or cancel his Bid or any part thereof for sixty (60) days after the time designated for the receipt of Bids in the Invitation to Bid.
 - D. Prior to the receipt of Bids, Addenda will be emailed to each person or firm recorded by the Architect and Engineer as having received the Bidding Documents. Addenda issued after receipt of Bids will be mailed or delivered only to the selected Bidder.
 - E. Bids shall not contain any recapitulation of the Work (except as noted on the Bid Form) to be done and no oral or telephone proposals or modifications will be considered.
 - F. The Bidder shall make no additional stipulations on the Bid Form or limit or qualify his Bid in any other manner. Bids so qualified will be subject to disqualification.
 - G. Only written instructions will be binding. The Architect or Engineer will not be responsible for any oral, or telephonic instructions.
 - H. The names of all Subcontractors and material suppliers proposed to be employed shall be submitted for approval by the Owner before they are employed, and all such Subcontractors and material suppliers must be known to perform work of a high standard in their respective trades. If the Owner has reasonable objection to any such proposed person or entity, and notifies the Bidder in writing of such objection, the Bidder shall provide an acceptable substitute person or entity in accordance with Article 5.2 of the General Conditions.

1.09 DISCREPANCIES AND AMBIGUITIES:

- A. Each Bidder shall examine the Bidding Documents carefully and, not later than ten (10) days prior to the date for receipt of Bids, shall make written request to the Architect or Engineer via email only, for interpretations or correction of any ambiguity, inconsistency or error therein which he may discover. The Architect or Engineer will issue any interpretation or correction as an Addendum. Only a written interpretation or correction by Addendum shall be binding. No Bidder shall rely upon any interpretation or correction given by any other method.

1.10 SUBSTITUTIONS:

- A. Each Bidder represents that his Bid is based upon the materials and equipment described in the Bidding Documents.
- B. Where products or systems are specified by naming only one manufacturer and no provisions for substitutions are listed, no substitutions are allowed. Where substitution provisions are listed, they will only be considered if approved by Addenda prior to Bidding.

1.11 QUALIFICATION OF BIDDERS:

- A. A Bidder shall submit to the Owner a properly executed Contractor's Qualification Statement, AIA Document A305 and/or properly documented experience record, if requested.
- B. Bidders may be disqualified, and their Bids not considered for any of the following specific reasons:
 - 1. Reason for believing collusion exists among Bidders.
 - a. Submit Non-Collusion Affidavit of Subcontractors after bid. Completion of this form by each subcontractor is required before issuance of Notice to Proceed.
 - 2. The Bidder being interested in any litigation against the Owner.
 - 3. The Bidder being in arrears on any existing contract or having defaulted on a previous contract.
 - 4. Lack of competency as revealed by the financial statement, experience and equipment, questionnaires, or qualification statement.
 - 5. Uncompleted work which in the judgment of the Owner will prevent or hinder the prompt completion of additional work if awarded.
- C. A Bidder shall submit to the Owner a confidential Financial Statement in a sealed envelope, if requested.

END OF SECTION

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not a person included within the list created pursuant to Tennessee Code Annotated §12-12-106.

Authorizing Signature: _____

(Sign in BLUE ink)

END OF SECTION

TO: Purchasing Department
Attention: Katherine Ajmeri
Anderson County Courthouse
100 North Main Street, Room 214
Clinton, TN 37716

DATED: _____, 2023

Having carefully examined the Invitation and Instructions to Bidders, the General Conditions of the Contract and Specifications entitled "Site Grading & Drainage for CTE Welding Building" and the Drawings similarly entitled, as well as the premises and conditions affecting the work, the Undersigned proposes to furnish all materials and labor called for by them for the work in accordance with said documents for the sum of:

_____ Dollars (\$_____).

hereinafter referred to as the Base Bid.

Allowance: Discretionary Fund of 3% of the Base Bid is included in Base Bid.

The Bidder hereby acknowledges that the following documents are attached to and made a condition of this Bid:

- a) Required Bid Security in the form of: 5% Bid Bond - N/A
- b) Attachment 1: Vendor Information Form
- c) Attachment 2: Non-Collusion Affidavit
- d) Attachment 3: Diversity Business Information
- e) Attachment 4: Insurance Requirement Acknowledgement
- f) Attachment 5: Conflict of Interest Affidavit/Statement
- g) Attachment 6: Background Check Compliance Form
- h) Attachment 7: Drug-Free Workplace Affidavit Form
- i) Authorization to do Business in Tennessee
- j) Specification Compliance Form

If written notice of the acceptance of this bid is mailed, emailed, or delivered to the Undersigned within sixty (60) days after the date of receipt of bids or at any time thereafter before this bid is withdrawn, the Undersigned agrees that he will execute and deliver a Contract on the forms which will be provided him in accordance with bid as specified; and that he will give performance and payment bonds as specified with good and sufficient surety or sureties all within ten (10) days, unless a longer period is allowed after the prescribed forms are presented to him for signature.

The Bidder proposes to complete the work within _____ consecutive calendar days from the Notice to Proceed. The Bidder, by submitting this Bid, agrees to furnish labor, materials, equipment, etc., necessary to complete the work by the above stated dates and to accept the conditions for liquidated damages in the amount of **Five Hundred Dollars (\$500.00)** per calendar day. The above stated dates for completion of this project are of utmost importance to the Owner.

The Undersigned hereby acknowledges receipt of all Contract Documents including all pages of the Specifications, all sheets of the Drawings, and the following Addenda:

| | |
|-------------------------------|-------------------------------|
| Addendum No. ____ Date: _____ | Addendum No. ____ Date: _____ |
| Addendum No. ____ Date: _____ | Addendum No. ____ Date: _____ |
| Addendum No. ____ Date: _____ | Addendum No. ____ Date: _____ |

Sincerely,

Bidder (If by a Corporation, this Bid must have the Signature Required by its By-Laws)

Title

Firm Name

State of Incorporation

State License No.

Official Address

END OF BID FORM

THIS FORM MUST BE FIRMLY ATTACHED TO THE OUTSIDE OF THE ENVELOPE CONTAINING THE BID. NO BID WILL BE CONSIDERED IF THIS FORM IS INCOMPLETE OR NOT ATTACHED TO THE OUTSIDE OF THE BID ENVELOPE.

| | | | |
|------------------|--|-----------------|---|
| To: | Purchasing Department Attention: Katherine Ajmeri Anderson County Courthouse 100 North Main Street, Room 214 Clinton, TN 37716 | PROJECT: | Site Grading & Drainage for CTE Welding Building 411 Douglas Ln Clinton, TN 37716 |
| DATE: | | TIME: | |
| LOCATION: | | | |

| | | | |
|------------------------|--|---|--|
| NAME OF BIDDER: | | BIDDER'S LICENSE CLASSIFICATION: | |
| LICENSE NO.: | <i>(If bidder is licensed in more than one classification that applies to work being bid, include the license number, classification & expiration date of all classifications)</i> | EXPIRATION DATE: | |
| | | MONETARY LIMITS: | |

PART II: IF THE BID INVOLVES: (1) ELECTRICAL WORK, (2) PLUMBING WORK, (3) HEATING, VENTILATION OR AIR CONDITIONING WORK, (4) MASONRY WORK, (5) ROOFING WORK OR (6) GEOTHERMAL WORK, THE BIDDER MUST COMPLETE PART II. IF NOT, ENTER "NONE" IN THE SPACE FORM ITEM (A) BELOW.

| Electrical | Plumbing | HVAC | Masonry | Roofing | Geothermal |
|--|--|--|---|---|---|
| A. Name of Sub holding electrical license: | A. Name of Sub holding plumbing license: | A. Name of Sub holding HVAC license: | A. Name of Sub holding Masonry license: | A. Name of Sub holding Roofing license: | A. Name of Sub holding Geothermal license: |
| B. License No. of Contractor holding electrical license: | B. License No. of Contractor holding plumbing license: | B. License No. of Contractor holding HVAC license: | B. License No. of Contractor holding Masonry license: | B. License No. of Contractor holding Roofing license: | B. TDEC Lic.No. of Contractor holding Geothermal license: |
| C. License classification and limits: | C. License classification and limits: | C. License classification and limits: | C. License classification and limits: | C. License classification and limits: | C. TDEC License classification and limits: |
| D. Expiration date of electrical license: | D. Expiration date of plumbing license: | D. Expiration date of HVAC license: | D. Expiration date of Masonry license: | D. Expiration date of Roofing license: | D. Expiration date of Geothermal license: |

Attachment 1
BID NUMBER: 2406 – Site Grading & Drainage for CTE Welding Building

SECTION 1 - BID INFORMATION

Acknowledgment of Addenda:
(Write "Yes" if received)

Addenda 1 _____ Addenda 2 _____
Addenda 3 _____ Addenda 4 _____

SECTION 2 - VENDOR INFORMATION

Vendor Name _____

Vendor Address _____

City _____

State _____ Zip _____

Telephone Number _____

Contact Person *(Please Print)* _____

E-Mail Address _____

Taxpayer Identification Number, Social Security or
Employer Identification Number:

State of Tennessee Business License Number:
License # _____

I agree to abide by all Terms and Conditions of this Invitation to Bid and certify that I am authorized to sign this bid for the vendor. Failure to include any information mentioned in the bid or to comply with these bid instructions may result in rejection of your entire bid. Signing this form affirms that the original Invitation for Bid document has not been altered in any way.

Authorizing Signature:

(Please sign original in blue ink)

Attachment 2

Non-Collusion Affidavit

- This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid.
- This Non-Collusion Affidavit must be executed by the member, officer, or employee of the bidder who makes the final decision on prices and the amount quoted in the bid.
- Bid rigging and other efforts to restrain competition and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the affidavit should examine it carefully before signing and assure himself or herself that such statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval, or submission of the bid.
- In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an affidavit must be submitted separately on behalf of each party.
- The term "complementary bid" as used in the affidavit has the meaning commonly associated with that term in the bidding process and includes the knowing submission of bids higher than the bid of another firm, an intentionally high or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.
- Failure to file an affidavit in compliance with these instructions may result in disqualification of the bid.

Non-Collusion Affidavit

STATE OF _____

COUNTY OF _____

I state that I am (Title) _____ of (Name of My Firm) _____ and that I am authorized to make this affidavit on behalf of my firm and its owners, directors, and officers. I am the person responsible in my firm to the price(s) and the amount of this bid.

I STATE THAT:

- The price(s) and amount of this bid have been arrived at independently and without consultation, communication, or agreement with any other contractor, bidder, or potential bidder.
- Neither the price(s) nor the amount of this bid and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.
- No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.
- The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.
- (Name of My Firm) _____, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last three years been convicted or found liable for any act prohibited by State of Federal law in any jurisdiction involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

I state that (Name of My Firm) _____ understands and acknowledges that the above representation are material and important and will be relied on by Anderson County in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from Anderson County of the true facts relating to submission of bids for this contract.

Representative's Signature

Title

Sworn to and subscribed before me this _____ day of _____, _____.

Notary Public

My commission expires: _____

Attachment 3



DIVERSITY BUSINESS INFORMATION

Definitions for Determining Minority, Women And Small-Owned Firms

The guidelines for determining minority, women and small-owned firms are defined as follows:

"MINORITY" means a person who is a citizen or lawful permanent resident of the United States and who is:

- o Black (a person having origins in any of the black racial groups of Africa);
- o Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
- o Asian American (a person having origins in any of the original peoples of the Far East, Southeast
- o Asia, the Indian subcontinent, or the Pacific Islands); or
- o American Indian and Alaskan Native (a person having origins in any of the original peoples of North America).

"MINORITY BUSINESS ENTERPRISE" shall mean a minority business:

A continuing, independent, for profit business which performs a commercially useful function, and is at least 51 percent owned and controlled by one or more minority individuals; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned and controlled by one or more minorities. Whose management and daily business operations are controlled by one or more of minority individuals. "Control" as used in the above clause, means exercising the power to make policy decision. "Operate," as used in the above clause, means being actively involved in the day-to-day management of the business.

"WOMEN BUSINESS ENTERPRISE" shall mean women business:

A continuing, independent, for profit business which performs a commercially useful function, and which is at least 51 percent owned and controlled by one or more women; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned and controlled by one or more women. Whose management and daily business operations are controlled by one or more of such individuals. "Control" as used in the above clause, means exercising the power to make policy decision. "Operate," as used in the above clause, means being actively involved in the day-to-day management of the business.

Attachment 3

**DIVERSITY BUSINESS INFORMATION
ANDERSON COUNTY GOVERNMENT**

NOTE: This form is to be submitted only by those who qualify. Bidders do not have to be a minority business to be considered.

IMPORTANT! NOTARY AND COPY OF CERTIFICATION REQUIRED

SECTION 6 – DIVERSITY INFORMATION

VENDOR/CONTRACTOR NAME: _____

Type of Company: (Check One)

(____) Corporation (____) Partnership (____) Limited Liability (____) Sole Proprietor

Is your company 51% Owned or Operated by a Minority Group? Yes ___ No___

If yes, check the ethnic category and indicate % of ownership:

- American Indian/Alaskan Native ____%
- African American ____%
- Hispanic ____%
- Asian/Pacific Islander ____%
- Other ____% _____(please indicate)

Please name the entity of certification: _____

Please provide copy of certification letter or certificate

I, HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Signature: _____ **OFFICER OF THE COMPANY**

Name: _____ **Title:** _____

NOTARY ACKNOWLEDGEMENT:

STATE OF _____)

COUNTY OF _____)

ON _____, 20____, BEFORE ME, _____,

PERSONALLY APPEARED _____, PERSONALLY KNOWN TO ME (OR PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE) TO BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE/ THEY EXECUTED THE SAME IN HIS/HER/THEIR AUTHORIZED CAPACITY(IES), AND THAT BY HIS/HER/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON (S) ACTED, EXECUTED THE INSTRUMENT.

WITNESS MY HAND AND OFFICIAL SEAL.

SIGNATURE OF NOTARY: _____

PRINTED FULL NAME OF NOTARY: _____

MY COMMISSION EXPIRES: _____

**Attachment 4
Insurance Requirement Acknowledgment**

The bidder awarded this bid or contract will maintain, at their expense adequate insurance coverage to protect them from claims arising under the Worker's Compensation Act, any and all claims for bodily injury and property damage to the Bidder and to Anderson County Government while delivery and service are being done. A certificate of insurance must be on file in the Purchasing Department before work may begin and must be maintained until work is completed.

Only the items marked with an "X" are applicable to this bid and or contract.

- | | | | |
|----|-------------------------------------|--|---|
| 1. | <input checked="" type="checkbox"/> | Workers Compensation Employers Liability | Statutory limits 100,000/100,000/500,000 |
| 2. | <input checked="" type="checkbox"/> | Commercial General Liability | \$500,000 per occurrence \$1,000,000 aggregate |
| | <input checked="" type="checkbox"/> | Occurrence Form Only | |
| | <input checked="" type="checkbox"/> | Include Premises Liability | |
| | <input checked="" type="checkbox"/> | Include Contractual | |
| | <input checked="" type="checkbox"/> | Include XCU | |
| | <input checked="" type="checkbox"/> | Include Products and Completed Operations | |
| | <input checked="" type="checkbox"/> | Include Personal Injury | |
| | <input checked="" type="checkbox"/> | Include Independent Contractors | |
| | <input checked="" type="checkbox"/> | Include Vendors Liability | |
| | <input checked="" type="checkbox"/> | Include Professional or E&O Liability | |
| 3. | <input type="checkbox"/> | Business Auto | |
| | <input type="checkbox"/> | Include Garage Liability | |
| | <input type="checkbox"/> | Include Garage Keepers Liability | |
| | <input type="checkbox"/> | Copy of Valid Driver's License | |
| | <input type="checkbox"/> | Copy of Current Motor Vehicle Record | |
| | <input type="checkbox"/> | Copy of Current Auto Liability Declarations Page | |
| 4. | <input type="checkbox"/> | Crime Coverages | |
| | <input type="checkbox"/> | Employee Dishonesty | |
| | <input type="checkbox"/> | Employee Dishonesty Bond | |
| 5. | <input type="checkbox"/> | Property Coverages | |
| | <input type="checkbox"/> | Builders Risk | |
| | <input type="checkbox"/> | Inland Marine | |
| | <input type="checkbox"/> | Transportation | |
| 6. | <input checked="" type="checkbox"/> | Performance Bond Required – A <u>One Hundred Percent (100%)</u> performance or an irrevocable letter of credit in favor of Anderson County Government at a federally insured financial institution in accordance with T.C.A. 12-4-201. This <u>MUST</u> be submitted before purchase order issued. REQUIRED IF BID IS OVER \$100,000. | |

Certificate Holder Shall Be: Anderson County Government, Clinton, Tennessee, and shall show the bid number and title. Anderson County Government shall be named as an additional insured on all policies except worker's compensation and auto. Insurance carrier ratings shall have a Best's rating of A-VII or better, or its equivalent. Cancellation clause on certificate should strike out "endeavor to" and include a 30-day notice of cancellation where applicable. Any deviations from the above requirements must be disclosed to the Anderson County Purchasing Agent. Any liability deductibles or exclusions must also be disclosed. Exceptions can be granted if applicable.

Bidders Statement and Certification

I understand the insurance requirements of these specifications and will comply in full within 21 (twenty-one) calendar days if awarded this bid and or contract. I agree to furnish the county with proof of insurance for the entire term of the bid and or contract.

Vendor Name

Authorized Signature

Bid Representative Name (Please Print)

Date

Attachment 5
ANDERSON COUNTY GOVERNMENT
PURCHASING DEPARTMENT

CONFLICT OF INTEREST AFFIDAVIT/STATEMENT

NOTE: PLEASE SIGN AND RETURN PAGE TWO IN YOUR BID PACKET.

T. C. A. 5-14-114. Conflicts of interest -- Illegal payments.

(a) Neither the county purchasing agent, nor members of the county purchasing commission, nor members of the county legislative body, nor other officials of the county, shall be financially interested, or have any personal beneficial interest, either directly or indirectly, in any contract or purchase order for any supplies, materials, equipment or contractual services used by or furnished to any department or agency of the county government.

(b) Nor shall any such persons accept or receive, directly or indirectly, from any person, firm or corporation to which any contract or purchase order may be awarded, by rebate, gift or otherwise, any money or anything of value whatsoever, or any promise, obligation or contract for future reward or compensation.

(c) A violation of this section is a Class D felony.

T. C. A. 12-4-101 Personal interest of officers prohibited.

(a) (1) It is unlawful for any officer, committee member, director, or other person whose duty it is to vote for, let out, overlook, or in any manner to superintend any work or any contract in which any municipal corporation, county, state, development district, utility district, human resource agency, or other political subdivision created by statute shall or may be interested, to be directly interested in any such contract. "Directly interested" means any contract with the official personally or with any business in which the official is the sole proprietor, a partner, or the person having the controlling interest. "Controlling interest" includes the individual with the ownership or control of the largest number of outstanding shares owned by any single individual or corporation. This subdivision (a)(1) shall not be construed to prohibit any officer, committee person, director, or any person, other than a member of a local governing body of a county or municipality, from voting on the budget, appropriation resolution, or tax rate resolution, or amendments thereto, unless the vote is on a specific amendment to the budget or a specific appropriation or resolution in which such person is directly interested.

(2) (A) Subdivision (a)(1) shall also apply to a member of the board of directors of any not-for-profit corporation authorized by the laws of Tennessee to act for the benefit or on behalf of any one (1) or more counties, cities, towns and local governments pursuant to title 7, chapter 54 or 58.

(B) Subdivision (a)(2)(A) does not apply to any county with a metropolitan form of government and having a population of four hundred thousand (400,000) or more, according to the 1980 federal census or any subsequent federal census.

(b) It is unlawful for any officer, committee member, director, or other person whose duty it is to vote for, let out, overlook, or in any manner to superintend any work or any contract in which any municipal corporation, county, state, development district, utility district, human resource agency, or other political subdivision created by statute shall or may be interested, to be indirectly interested in any such contract unless the officer publicly acknowledges such officer's interest. "Indirectly interested" means any contract in which the officer is interested but not directly so, but includes contracts where the officer is directly interested but is the sole supplier of goods or services in a municipality or county.

Attachment 5
ANDERSON COUNTY GOVERNMENT
PURCHASING DEPARTMENT

CONFLICT OF INTEREST AFFIDAVIT/STATEMENT

(c) (1) Any member of a local governing body of a county or a municipality who is also an employee of such county or municipality and whose employment predates the member's initial election or appointment to the governing body of the county or municipality may vote on matters in which the member has a conflict of interest if the member informs the governing body immediately prior to the vote as follows: "Because I am an employee of (name of governmental unit), I have a conflict of interest in the proposal about to be voted. However, I declare that my argument and my vote answer only to my conscience and to my obligation to my constituents and the citizens this body represents." The vote of any such member having a conflict of interest who does not so inform the governing body of such conflict shall be void if challenged in a timely manner. As used in this subdivision (c)(1), "timely manner" means during the same meeting at which the vote was cast and prior to the transaction of any further business by the body.

(2) Any member of a local governing body of a county or a municipality who is also an employee of such county or municipality and whose employment began on or after the date on which the member was initially elected or appointed to serve on the governing body of the county or municipality shall not vote on matters in which the member has a conflict of interest.

(3) (A) In the event a member of a local governing body of a county or a municipality has a conflict of interest in a matter to be voted upon by the body, such member may abstain for cause by announcing such to the presiding officer.

(B) (i) Any member of a local governing body of a municipality who abstains from voting for cause on any issue coming to a vote before the body shall not be counted for the purpose of determining a majority vote.

(ii) This subdivision (c)(3)(B) shall in no way be construed to apply to any county having a metropolitan form of government and having a population in excess of five hundred thousand (500,000), according to the 1990 federal census or any subsequent federal census.

(d) This section shall apply to a member of the board of directors or officer of any nonprofit corporation required under § 8-44-102(b)(1)(E) to conduct all meetings of its governing body as open meetings.

I have read and understand both T.C. A. 5-14-114 and T. C. A. 12-4-101, and will comply.

NOTE: PLEASE SIGN AND RETURN PAGE TWO IN YOUR BID PACKET.

Contractor or Company Owner (signature)

Date

Contractor or Company Name (print)

BACKGROUND CHECK COMPLIANCE FORM

ANDERSON COUNTY GOVERNMENT

PURCHASING DEPARTMENT
 100 N. MAIN STREET, ROOM 214 or 218
 CLINTON, TN 37716
 (865) 457-6251
 (865) 457-6252 (Fax)

BID NUMBER _____

CONTRACT NUMBER _____

BACKGROUND CHECKS Contractors shall comply with Public Chapter 587 of 2007, as codified in Tennessee Code Annotated Section 49-5-413, which requires all contractors to facilitate a criminal history records check conducted by the Tennessee Bureau of Investigation and the Federal Bureau of Investigation for each employee prior to permitting the employee to have contact with students or enter school grounds when students are present.

Any person, corporation or other entity who enters or any employee of any person, corporation or entity who enters into or renews a contract with a local board of education or child care program on or after September 1, 2007, must:

- (1) Provide a fingerprint sample
- (2) Submit to a criminal history records check to be conducted by the Tennessee Bureau of Investigations and the Federal Bureau of Investigations.

Contact the Anderson County School's Human Resources Department at (865) 463-2800 ext. 2811 for fingerprint instructions.

Company or Individuals (Name) _____

Address _____

City, State, Zip Code _____

Telephone Number _____

()

Contractor License Number (If Applicable) _____

I agree to abide by Public Chapter 587 of 2007, as codified in Tennessee Code Annotated Section 49-5-413, and certify that I am authorized to sign. The undersigned further agrees if this bid or contract is accepted, to furnish any and all of the Background Check Information on himself and all of his employees as required by law, at the request of Anderson County Government. I hereby agree to release all criminal history and other required information to Anderson County Government, the Tennessee Bureau of Investigation and the Federal Bureau of Investigation in accordance with Tennessee law and I further certify that all information supplied by me regarding this inquiry is true and accurate. I agree to release and hold harmless the above-mentioned governmental entities for the use of this information related to the purposes mandated under Tennessee law. I further certify that I have obtained acceptable criminal history information on all current employees and will obtain said information on future employees associated with the performance of the work defined in this bid or contract, pursuant to Tennessee Code Annotated 49-5-413 and that neither I nor any employee of mine is prohibited from direct contact with school children for the reasons enumerated in Tennessee Code annotated Section §§ 49-5-401 et seq.

Signature _____ **Title** _____

Printed Name: _____ **Date** _____

(Please Print Clearly)

(Month, Day, Year)

INTERNAL OFFICE USE ONLY

Notes _____

Attachment 7

DRUG-FREE WORKPLACE AFFIDAVIT

STATE OF _____

COUNTY OF _____

The undersigned, principal officer of _____, an employer of five (5) or more employees contracting with _____ County Government to provide construction services, hereby states under oath as follows:

1. The undersigned is a principal officer of _____ (hereinafter referred to as the "Company"), and is duly authorized to execute this Affidavit on behalf of the Company.
2. The Company submits this Affidavit pursuant to T.C.A. 50-9-113, which requires each employer with no less than five (5) employees receiving pay who contracts with the state or any local government to provide construction services to submit an affidavit stating that such employer has a drug-free workplace program that complies with Title 50, Chapter 9 of the *Tennessee Code Annotated*.
3. The Company is compliance with T.C.A. 50-9-113

Further affiant saith not.

Principal Officer

STATE OF _____

COUNTY OF _____

Before me personally appeared _____, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and who acknowledged that such person executed the foregoing affidavit for the purpose therein contained.

Witness my hand and seal office this _____ day of _____, 20_____.

Notary Public

My commission expires: _____, 20_____.

General Terms and Conditions

BID ENVELOPE SUBMISSION INSTRUCTIONS:

Bids are to be received in a sealed envelope/package with the bid number, company name and opening date clearly marked. Failure to comply may result in rejection of the entire bid. Anderson County will not be responsible for any lost or misdirected mail. Late bids, e-mailed bids and faxed bids will not be considered nor returned. It is the sole responsibility of the bidder to ensure their bid is delivered to the Purchasing Department.

Please note that Anderson County Government does not receive a guaranteed delivery time for express mail and/or packages. PLEASE MAIL ACCORDINGLY.

**ANDERSON COUNTY FINANCE DEPARTMENT
100 NORTH MAIN STREET, SUITES 214 AND 218
CLINTON, TN 37716**

Email: purchasing@andersoncountyttn.gov

Website: <http://andersontn.org/purchasing>

(865) 457-6218 Phone

(865) 457-6252 Fax

**Bid documents must be completed in ink or typed, signed in ink,
and free from alterations, erasures or mark-throughs.**

SECTION 1 - GENERAL TERMS AND CONDITIONS

1.1 ALTERATIONS OR AMENDMENTS: Alterations, amendments, changes, modifications or additions to this solicitation shall not be binding on Anderson County without prior written approval.

1.2 NO CONTACT POLICY: After vendor receives a copy of this bid, any contact initiated by any vendor with any Anderson County representative, other than the Purchasing Department, concerning this invitation for bid is prohibited and agreements made thereto will not be considered binding on Anderson County. Any such unauthorized contact may cause the disqualification of the bidder from this procurement transaction.

1.3 QUESTIONS: Pursuant to TCA §12-4-113, questions regarding the specifications or bid procedures must be received by the Purchasing Agent and/or designer no less than ninety-six (96) hours before the bid opening date. No addenda within less than forty-eight (48) hours of the bid opening date shall be permitted. Any questions concerning the bid document must be submitted to purchasing@andersontn.org no less than ninety-six (96) hours before bid opening date.

1.4 BID CLOCK: The bid/time clock in the Anderson County Purchasing office will be the time of record.

1.5 TAXES: Anderson County is not liable for Federal excise or State sales tax. Tax exemption certificates will be provided upon request.

1.6 CONFLICT OF INTEREST: If requested by the Purchasing Agent, vendors must complete and submit a "Conflict of Interest Affidavit Statement" prior to contract award, see T.C.A. 5-14-114 and T. C. A. 12-4-101.

1.7 NON-COLLUSION: Vendors, by submitting a signed bid, certify that the accompanying bid is not the result of, or affected by, any unlawful act of collusion with any other person or company engaged in the same line of business or commerce, or any other fraudulent act punishable under Tennessee or United States law.

1.8 NON-DISCRIMINATION: Contracted vendors will not discriminate against any employee or applicant for employment because of race, religion, sex, national origin or disability except where religion, sex, national origin or disability is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor.

1.9 SAME AS OR EQUIVALENT TO: Vendors are to bid as specified herein or propose an approved equal. Determination of equality is solely Anderson County's responsibility. Any designated brands are for reference purpose only, not a statement of preference. When an alternate manufacturer, brand, model or make is bid, Anderson County will determine if the item bid meets or exceeds the items as specified. If the bidder does not indicate that an alternate manufacturer, brand, model or make is being bid, it is understood that the item(s) bid are the same manufacturer, brand, model or make as requested in the Invitation to Bid. Comparable products of other manufacturers will be considered if proof of comparability is contained in the bid submission. It shall be the responsibility of the vendors, including vendors whose product is referenced to furnish upon request catalog pages, brochures or other data to provide an adequate basis for determining the quality and functional capabilities of the product offered. Failure to provide this data may be considered valid justification for rejection of bid.

1.10 MULTIPLE BIDS/AWARDS: Anderson County may consider multiple bid awards.

1.11 STATE OF TENNESSEE CONTRACTORS' LICENSE LAW (T.C.A. 62-6-119) b): Bids for which the total cost of the project is twenty-five thousand dollars (\$25,000) or more, the outside of the sealed bid envelope/package containing the bid provides the following information: the Company Name, the Contractor's license number, license classification, the date of the license expiration and that part of each license classification applying to the bid. In addition, each heating ventilation or air conditioning, plumbing and electrical subcontractor's license number, date of the license expiration and that part of each classification applying to the bid if the value of the work is \$25,000 or greater, must be notated. If the value of either the contractor or the subcontractor's work is less than \$25,000, the bid envelope/package containing the bid is to be notated with the phrase "Contractor or Subcontractor's Bid is Less than \$25,000" after each appropriate heading. In the case of joint ventures, each party submitting the bid must provide this information. If no subcontractors are being used, the outside of the envelope/package containing the bid must state, "No Subcontractors are being used on this project."

1.12 ACCEPTANCE: Vendors shall hold their price firm and subject to acceptance by Anderson County for a minimum period of sixty (60) working days from the date of the bid opening, unless otherwise indicated in their bid. Any or all bids may be rejected for good cause.

1.13 BID AWARDS: Bids will be awarded to the lowest and best bidder, taking into consideration the qualities of the articles to be supplied, their conformity with specifications and their suitability to the requirements of Anderson County and the delivery terms. Anderson County also reserves the right to not award this bid.

1.14 BIDDER'S MINIMUM QUALIFICATIONS: Bidders must have the resources and capability to provide the materials and services as described in the solicitation. Anderson County reserves the right to request additional information and/or material not specified as a bid requirement from any bidder to confirm qualifications.

1.15 DEBARMENT: By submitting a response to this solicitation, bidders are certifying that bidder is not currently debarred from doing business with any local or state Government or the Federal Government. Bidders shall provide documentation relating to any and all debarments that occurred within the last ten

years. The County will search the "System for Award Management" for federally excluded vendors before awarding a bid.

1.16 PROTEST: Any vendor wishing to protest the bid award shall notify in writing the Anderson County Purchasing Agent and the County Law Director, 101 S. Main Street, Suite 310, Clinton, TN 37716. No protest will be accepted, except those protests made in writing and received within (10) ten calendar days of the bid award. Protests must be in writing and envelopes/package containing protest must be clearly marked with bid number and words "BID PROTEST". The Purchasing Agent, in conjunction with the Purchasing Committee, and with the advice and counsel of the County Law Director, shall review and make a final decision as to any bid protest. Appeals shall be filed in the Circuit or Chancery Courts of Anderson County within sixty (60) days of the final decision.

VENDORS PLEASE NOTE: ANDERSON COUNTY WILL NOT STOP THE PURCHASE PROCESS. THE PURCHASE MAY BE COMPLETED OR THE PROJECT MAY BE RE-BID WHILE THE PROTEST PROCEDURE IS STILL IN OPERATION. IF A RE-BID IS MADE, THE PROTESTING VENDOR SHOULD SUBMIT A NEW BID. OTHERWISE, THEY WILL BE WITHOUT A BID ON THE RE-BID. FURTHER, THE RE-BIDDING WILL NOT END THE APPEALS PROCESS. IT WILL CONTINUE UNTIL A FINAL DECISION IS REACHED OR THE COMPLAINANT WITHDRAWS THE APPEAL.

1.17 DELIVERY: Bid pricing is to include complete supply and delivery to Anderson County, Tennessee. Vendors are to state the delivery time in the bid. Anderson County requires that vendors deliver all products "free on board" to final destination unless indicated otherwise in the bid requirements.

1.18 PROOF OF FINANCIAL AND BUSINESS CAPABILITY: Bidders must, upon the request of Anderson County, provide satisfactory evidence of their ability to furnish products or services in accordance with the terms and conditions of these specifications. Anderson County will make the final determination as to the bidder's ability.

1.19 VENDOR'S DEFAULT: Anderson County reserves the right, in case of vendor default, to procure the articles or services from other sources and hold the defaulting vendor responsible for any excess costs occasioned thereby.

1.20 DUPLICATE COPIES: Vendors are to submit one original and at least one exact copy of their bids, including brochures; unless additional copies are requested in bid specifications.

1.21 DRUG-FREE WORKPLACE: Under the provisions of Tennessee Code Annotated §50-9-113 enacted by the General Assembly effective 2001, all employers with five (5) or more employees who contract with either the state or a local government to provide construction services are required to submit an affidavit stating that they have a drug free workplace program that complies with Title 50, Chapter 9, in effect at the time of submission of a bid at least to the extent required of governmental entities. The statute imposes other requirements on the contractor and contractors should consult private legal counsel if legal questions arise under this section or any other provision of this document. All contractors with five (5) or more employees that will be providing construction services are to return the provided written affidavit signed by the principal officer of a covered employer acknowledging that the contracting entity is in compliance with the Drug Free Workplace laws of State of Tennessee.

1.22 COMPETITION INTENDED: It is the responsibility of the bidder to review the entire Invitation to Bid document and to notify the Purchasing Department if the Invitation to Bid is formulated in a manner that would unnecessarily restrict competition or if it is ambiguous in what is being requested. The Purchasing Agent must receive questions regarding the specifications or bid procedures no less than ninety-six (96) hours prior to the time set for the bid opening.

1.23 SCHOOL CAFETERIA BIDS: If this bid is for Anderson County School's Cafeteria Food Service Department, bidders must be in compliance with Section 104(d) of the William F. Goodling Child Nutrition Reauthorization Act of 1998 which requires school and institutions participating in the National School Lunch Program (NSLP) and School Breakfast Program (SBP) to "Buy American" to the maximum extent practicable.

1.24 TERMINATION: Anderson County reserves the right to terminate contracts in whole or in part with thirty (30) days written notification to the contractor. In the event of termination, the County shall not be liable for any costs other than the cost of services performed and materials delivered and accepted prior to termination date.

1.25 OSHA SAFETY: The Vendor is responsible for training their employees in Safety and Health Regulations for the job, assuring compliance with Tennessee Occupational Safety and Health regulations and any other Regulatory Agency.

1.26 PERFORMANCE BOND: A standard surety or performance bond or an irrevocable letter of credit in favor of Anderson County Government at a federally insured financial institution will be required to be submitted with bid, if indicated in section four, item six insurance requirement checklist.

1.27 BACKGROUND CHECKS: Contractors shall comply with Public Chapter 587 of 2007, as codified in Tennessee Code Annotated Section 49-5-413, which requires all contractors to facilitate a criminal history records check conducted by the Tennessee Bureau of Investigation and the Federal Bureau of Investigation for each employee prior to permitting the employee to have contact with students or enter school grounds when students are present.

1.28 AWARD RESULTS: As soon as practicable after proposal or bid evaluations, Anderson County shall post the award decision to Vendor Registry at www.vendorregistry.com. Individual notices are normally not mailed or e-mailed except to the successful vendor.

1.29 INDEMNIFICATION/HOLD HARMLESS: Vendor shall indemnify, defend, save and hold harmless Anderson County and, its officers, agents and employees from all suits, claims, actions or damages of any nature brought because of, arising out of, or due to breach of the agreement by Vendor, its subcontractors, suppliers, agents, or employees or due to any negligent act or occurrence or any omission or commission of Vendor, its subcontractors, suppliers, agents or employees.

1.30 DECLARATIVE STATEMENT: Any statement or words (i.e.: must, shall, will, etc.) are declarative statements and the proposer must comply with the condition. Failure to comply with any such condition may result in their bid being non-responsive and disqualified.

1.31 WAIVING OF INFORMALITIES: Anderson County reserves the right to waive minor informalities or technicalities when it is in the best interest of Anderson County.

1.32 APPROPRIATION: Funding for multi-year contracts are subject to budget appropriations. In the event no funds are appropriated by Anderson County for the goods or services in any fiscal year or insufficient funds exist to purchase the goods or services of a contract, then that contract shall expire upon the expenditure of previously appropriated funds or the end of the current fiscal year, whichever occurs first, with no further obligations owed to or by either party.

1.33 ASSIGNMENT: Vendor shall not assign or sub-contract any agreement, its obligations or rights hereunder to any party, company, partnership, incorporation or person without the prior written specific consent of Anderson County.

1.34 QUANTITIES: Anderson County does not guarantee quantities to be purchased off this bid.

1.35 UNIT PRICE: In case of discrepancy between any unit price and an extended price, the unit price will be presumed to be correct, subject, however, to correction to the same extent and in the same manner as any other mistake.

1.36 MODIFICATION OR WITHDRAWAL OF BIDS: When it is certain that a mistake has been made in the preparation of the bid, a request will be made to the bidder to confirm the bid. Provisions must be made so that mistakes can be taken care of and the ambiguity resolved satisfactorily. Bids may be modified or withdrawn by written notice received in the Purchasing Department prior to the time and date set for the bid

opening. The changes or withdrawal of the bids shall be in writing and signed by an official of the company. The envelope containing the modification should clearly state "modification to bid." Either the entire bid or a particular item may be withdrawn or modified in this manner.

1.37 PRE-BID CONFERENCES: Attendance at Pre-bid Conferences is strongly encouraged. When deemed necessary a Mandatory Pre-bid Conference will be held. A company representative **MUST** be in attendance and sign the Pre-bid sign-in sheet in order to be considered for bid award.

1.38 ADDENDUM: § T.C.A. 12-14-113 Anderson County Government reserves the right to amend this solicitation by addendum. Addenda will be posted to the vendor registry up to 48 hours in advance of the bid/proposals due date and time. It is the bidder's responsibility to check the website for addendum. If in the County's opinion revisions are of such a magnitude, the deadline for this solicitation may be extended in an addendum. Addenda may change specifications, reply sheets, and times and dates for pre-bid meetings as well as due dates/deadlines for questions and bids/proposals.

1.39 OWNERSHIP: All bids, once received, become property of Anderson County Government and will not be returned.

1.40 WEATHER AND COURTHOUSE CLOSINGS: In the event of a situation severe enough to necessitate the closing of Anderson County Government offices during a planned bid opening, vendors will receive notification of the new date and time upon re-opening of county government offices. No bids will be opened until the rescheduled date for bid opening and all bidders/proposers whose submissions meet the extended deadline will be given equal consideration at that time. Anderson County shall not be liable for any commercial carrier's decision regarding deliveries during inclement weather.

1.41 IRAN DIVESTMENT ACT OF 2014: Pursuant to the Iran Divestment Act of 2014, Tenn. Code Ann. § 12-12-106 requires the State of Tennessee Chief Procurement Officer to publish, using creditable information freely available to the public, a list of persons it determines engage in investment activities in Iran, as described in § 12-12-105. Inclusion on this list makes a person ineligible to contract with Anderson County; if a person ceases its engagement in investment activities in Iran, it may be removed from the list. The State of Tennessee list is available here: [http://tennessee.gov/generalservices/article/ Public-Information-library](http://tennessee.gov/generalservices/article/Public-Information-library).

1.42 ANTI-BOYCOTT OF ISRAEL: By responding to this bid the Bidder certifies that it is not currently engaged in and agrees for the duration of this Agreement not to engage in, the boycott of Israel.

Non-Tennessee resident companies wishing to do business with Anderson County must have proof of a current Certificate of Authority from the Tennessee Secretary of State office before entering into any acquisition agreement or contract with the County per Tennessee Code Annotated 48-11-309. Application forms for this certificate can be downloaded from the Secretary of State web site at www.state.tn.us/sos or by phoning 615-741-2286.

TO: Anderson County Schools
101 S. Main
Clinton, TN 37716

PROJECT: Clinton High School Welding and Agriculture Building
411 Douglas LN
Clinton, TN 37716

Having carefully and thoroughly examined the Project Manual, including all Specifications, and all Drawings for the above referenced project, the Undersigned proposes to perform all Work contained therein in strict compliance with ALL included requirements.

The undersigned certifies that the following statements are correct and acknowledges each by initially the space adjacent to each:

_____ I understand that manufacturers and products provided on the Drawings and in the Project Manual ARE NOT specified as such to only provide a standard of quality but are, in fact, specified as such to also indicate the exact manufacturer and/or product intended by the Owner, Architect and/or Engineer for use in the construction of the above referenced project.

_____ I will not at any time use or install products that have not been approved in compliance with Division 1 requirements.

_____ I understand that I, nor any of those in my employ, have the authority to determine whether or not a product is "equal" to the specified product or basis of design.

_____ The proposed Base Bid includes all specified manufacturers, products and materials or manufacturers, products and materials which were approved in compliance with Division 1 requirements prior to submission of Bid proposal.

_____ I understand that my bid may be rejected if I did not bid all aspects of the project as specified.

Having certified the above to best of my knowledge, I further certify, by signature below, that failure(s) to comply with the specified products, procedures and/or requirements and the subsequent correction thereof, by course determined by the Architect or Engineer, shall not be grounds for additional compensation of time or monies whether or not such failures were intentional.

Signature & Date _____

Print Name _____

Title _____

Contractor Company Name _____

Contractor's License No. _____

Date of Expiration _____

License Classification _____

Address _____

At your request, MBI Companies, Inc. (MBI) will provide electronic files for your convenience and use in the preparation of documents related to Clinton High School Welding and Agriculture Building, subject to the following terms and conditions:

Electronic File(s) Transfer Fees are based on the following:

- Adobe PDF format:** \$60.00 for the first drawing/file and \$30.00 for each additional drawing/file will be required. This fee is payable in advance and by credit card only.
- Autodesk DWF format:** \$60.00 for the first drawing/file and \$30.00 for each additional drawing/file will be required. This fee is payable in advance and by credit card only.
- Autodesk AutoCAD DWG format:** \$80.00 per drawing/file. This fee is payable in advance and by credit card only.
- Autodesk Revit RVT format (if available):** \$1500.00 Architectural model/file \$1000.00 Structural model/file \$1000.00 Mechanical model/file \$1000 Plumbing model/file \$1000.00 Electrical model/file \$1000.00 Fire protection model \$4000.00 all model sets. This fee is payable in advance and by credit card only.
Large requests will be evaluated for the effort required to bundle and transfer the information and will be assessed on a case by case basis.

MBI makes no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced software.

Data contained on these electronic files is part of MBI's instruments of service and shall not be used by you or anyone else receiving this data through or from you for any purpose other than as a convenience in the preparation of documents pertaining to the referenced project. Any use by you or others, will be your sole risk and without liability or legal exposure to MBI. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against MBI, its officers, directors, employees, agents or sub-consultants which may arise out of or in connection with your use of the electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold harmless MBI from all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from your use of these electronic files.

These electronic files are not Contract Documents. Significant differences may exist between these electronic files and corresponding hard copy Contract Documents due to addenda, change orders or other revisions. MBI makes no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed Contract Documents prepared by MBI and Electronic Files, signed Contract Documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the Contract Documents, including and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other Contractors for the project.

The fees listed above are for costs to un-archive, gather and transmit files only, and under no circumstances shall delivery of the electronic files for use by you be deemed a sale of the file(s) by MBI and MBI makes no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall MBI be liable for any loss of profit or any consequential damages. Usage by any parties of the data contained in the electronic files released shall constitute agreement to these terms.

Any requests for updated electronic files shall incur additional charges.

Please return this completed form by email: mbi@mbicompanies.com, or by facsimile at the following number (865) 584-5213. Once the fees have been paid, the file(s) will be transferred to the indicated e-mail address and a receipt will be returned by mail.

Transfer Fee Amount: _____

Email Address: _____ Phone Number: _____

Method of Payment: _____ VISA _____ MasterCard _____ AMEX

Visa Code (Last 3 digits on back of card) _____ AMEX (4 digits on front of card) _____

Credit Card Number and Expiration Date: _____

Name & Address of Cardholder: _____

Cardholder Signature & Date _____

| | | | |
|---|---------------|-------|----------|
| Contractor's Request for Information (RFI) | | | |
| Project Name: | Contract No.: | Date: | RFI No.: |
| Contractor's Name: | To: | | |
| Subject: | | | |

References

| |
|---|
| Area(s): |
| Specification Section(s): |
| Drawing No.: |
| Other References: |
| Problem / Information Requested: <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> |

Information Requested by:

Reply needed by:

| |
|---|
| Contractor's Interpretation and Proposed Resolution: <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> |
|---|

| |
|---|
| Architect's / Engineer's Evaluation and Response <hr/> <hr/> <hr/> |
|---|

| | | | |
|--------------|--------------------|-------------------|------------|
| Disposition: | Clarification Only | Sketch or Drawing | Other |
| Approval: | Project Manager | Owner | Contractor |

| |
|------------------------|
| To: |
| Attn: |
| Specified Item: |

| |
|-----------------------------|
| Project: |
| Proposed Substitute: |

1. The following are attached (Mark all that apply):

Complete Description

Laboratory Tests

Information on the availability of maintenance services and replacement materials for proposed substitute(s)

Catalog

Spec Data

Names, addresses, and phone numbers of fabricators and suppliers for proposed substitute(s)

2. This substitution will have the following effects on dimensions, gauges, weights, etc.:

3. This substitution will have the following effects on wiring, piping, ductwork, etc.:

4. This substitution will have the following effects on other trades:

5. This substitution will have the following effect on construction Schedules:

6. The proposed substitute(s) differs from the specified product(s) in quality and performance as follows:

7. Manufacturers guarantees for the substitute(s) and the specified product(s) are (check one):

the same

different (if different, explain below)

8. If the proposed substitution is accepted, it will result in:
 no cost impact **a cost increase of**
 a cost decrease of _____
 (If change in cost is indicated, itemization on specified Cost Itemization Form is attached)

9. License fees or royalties are pending on the proposed substitute.
 No **Yes** (if yes, explain below)

10. The undersigned or the firm represented shall pay for additional studies, investigations, submittals, redesign, and analysis by the Designer necessitated by this substitution request.

Substitutions must be requested in accordance with applicable Contract requirements. After bidding, substitutions are to be submitted only by Contractor. Substitute products should not be ordered or installed without written acceptance.

Submitted by: _____ **Date:** _____
 Sign here: _____
Name: _____ **Telephone:** _____
 type or print: _____
for: _____
 Name of firm: _____
Address: _____
 Street address: _____
 and mailing address _____
 if different: _____
 City, State, _____
 and Zip Code: _____

Designer's Review Comments:

- | | |
|---|---|
| <input type="checkbox"/> Accepted | <input type="checkbox"/> Rejected |
| <input type="checkbox"/> Accepted as noted | <input type="checkbox"/> Rejected (received too late) |
| | <input type="checkbox"/> Rejected (submittal incomplete) |

Additional comments:

For the Designer: _____ **Date:** _____
 Signature here: _____



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Clinton High School Welding and Agriculture Building
411 Douglas LN
Clinton, TN 37716

MBI Comm. No.: 220042.02

THE OWNER:

(Name, legal status and address)

Anderson County Schools
Contact: Clay McCamey
101 S. Main
Clinton, TN 37716

THE ARCHITECT:

(Name, legal status and address)

MBI Companies Inc.
299 N. Weisgarber Road
Knoxville, TN 37919

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Init.

14 TERMINATION OR SUSPENSION OF THE CONTRACT

15 CLAIMS AND DISPUTES



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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 or proposal 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. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 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.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 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 retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and 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 the 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 suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, 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 suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

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 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 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.

§ 2.3.2 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.

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

§ 2.3.4 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.

§ 2.3.5 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.

§ 2.3.6 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.

§ 2.4 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.

§ 2.5 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 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 default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for 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. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

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 its 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 2.3.4, 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 submit 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, subject to Section 15.1.7, 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. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be 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 notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative 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 approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 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

§ 3.5.1 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.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 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 14 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 that an equitable adjustment be made 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, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim 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 notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice 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 and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably 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, or fails to provide submittals in accordance with the approved 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 make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

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 how 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 the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect 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 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.

§ 3.12.10.1 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 be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately 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 and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and 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.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 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, 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, or patching shall be restored to the condition existing prior to the cutting, fitting, or 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 construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its 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 and 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 the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with 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 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 an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the 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 Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 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.

§ 4.2 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.

§ 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 promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) 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

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 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 13.4.2 and 13.4.3, whether or not the 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, 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 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 order 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 Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 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 the 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, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice 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 for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, 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 that the Contractor, by these Contract 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; 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 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 term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 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 any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its 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 or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has 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 notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work 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. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 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 that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor 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. The Contractor shall proceed promptly with changes in the Work, 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 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine 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 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .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, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 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.

§ 7.3.7 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.

§ 7.3.8 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 may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

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, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 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 (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended 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

§ 9.1.1 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.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent 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. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and 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 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, suppliers, or other persons or entities that 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 (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole 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 in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. 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. 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 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 suppliers 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 either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 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 supplier 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 Contractor shall reflect such payment on its next Application 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 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 and suppliers 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 or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to 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 or provided by 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, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 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' 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 shutdown, 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; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and 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 the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the 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 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 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. 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 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, (3) a written statement that the Contractor knows of no 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, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and 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, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance 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 the lien, claim, security interest, or encumbrance, 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, corrected, 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 the 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;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a 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, a Subcontractor, or a Sub-subcontractor; 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 implement, 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 the owners and users of adjacent sites and utilities of the safeguards.

§ 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. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is 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, notice of the 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 and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. 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 notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's 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 the material or substance or who are to perform the task of removal or safe containment of the 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 by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 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.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous 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 hazardous 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 reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 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 Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 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.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act

or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 **Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 **Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 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; (2) the Architect and Architect's consultants; and (3) Separate Contractors, 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 those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 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, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

Init.

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The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement 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 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

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, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before 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 any 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 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 2.5.

§ 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 of the Owner or Separate Contractors, whether completed or partially completed, 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, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make 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 the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 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.

§ 13.3.2 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 thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 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 tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 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 13.4.1, 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 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 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.

§ 13.4.4 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.

§ 13.4.5 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.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties 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.

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, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, 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 reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, 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' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work 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' 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 or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .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 reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner 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' 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 under 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 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 Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

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, a change in the Contract Time, 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. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the 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 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by 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 under this Section 15.1.3.1 shall 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.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 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.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 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.

§ 15.1.6.2 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.

§ 15.1.7 Waiver of 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 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, 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. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a 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 the 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 receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation 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.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 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.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. 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.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party 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.

§ 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 those of the Owner and Contractor under this Agreement.



PART 1 GENERAL:

- 1.01 The following amendments modify, change, delete from or add to the General Conditions of the Contract for Construction (AIA Document A201, 2017 Edition), hereinafter referred to as the General Conditions. Where any part of the General Conditions is modified or voided by these amendments the unaltered provisions of that part shall remain in effect.
- 1.02 INTENT OF CONTRACT DOCUMENTS:
- A. Add the following Subparagraphs 1.2.4 and 1.2.5 at the end of Paragraph 1.2, Correlation and Intent of the Contract Documents:
- 1.2.4 **If there is any conflict or discrepancy within or between any of the Contract Documents involving the quality or quantity of work required, it is the intention of the Contract that the work of highest quality or greatest quantity shown or specified shall be furnished**, unless such conflict or discrepancy shall have been brought to the Architect's attention and clarified by Addendum prior to the opening of bids.
- 1.2.5 Whether or not the word "ALL" is used in the specifications, coverage is intended to be complete, except where partial coverage is specifically and expressly noted. In all cases where an item is referred to in the singular number, it is intended that the reference shall apply to as many such items as are required to complete the work. **Words such as "Install", "Provide", "Furnish", and "Supply" shall be construed as meaning complete furnishing, installing, and constructing unless modified by additional information.**
- 1.03 DOCUMENTS FURNISHED TO THE CONTRACTOR:
- A. Revise Subparagraph 1.5.2 to read as follows:
- Copies of the Drawings and Specifications can be obtained by the General Contractor at the cost of reproduction from the print house of their choice subject to the provisions of Paragraph 1.5, Ownership and use of Drawings, Specifications, and other Instruments of Service. All Drawings and Specifications acquired by the Contractor shall be subject to the provisions of Paragraph 1.5, Ownership and use of Drawings, Specifications, and other Instruments of Service.
- B. Add Subparagraph 2.3.7 at the end of Paragraph 2.3, Information and Services Required of the Owner:
- 2.3.7 Electronic data files produced by the Architect containing information about the project are instruments of service and shall be subject to the provisions of Paragraph 1.5, Ownership and Use of Drawings, Specifications, and Other Instruments of Service. Electronic data files are not Contract Documents and differences may exist between these electronic files and the hard copy documents issued as Contract Documents. These files may be made available to the Contractor for convenience in preparing documents relating to the project upon execution of an electronic files release and payment of transfer fees as stated in the electronic files release.
- 1.04 REVIEW OF CONTRACT DOCUMENTS:
- A. Add the following Subparagraph 3.2.5 at the end of Paragraph 3.2, Review of Contract Documents and Field Conditions by Contractor:
- 3.2.5 **Should discrepancies or conflicts in the requirements of the Drawings and Specifications be discovered after the work has started, the Contractor shall report such discrepancies or conflicts to the Architect immediately and no work affected thereby shall be started, or if started, shall be stopped immediately until the Contractor and the Architect agree upon clarification of the discrepancy or conflict.**

1.05 PERMITS, FEES AND NOTICES:

- A. Add the following Subparagraph 3.7.6 at the end of Paragraph 3.7, Permits, Fees, Notices, and Compliance with Laws:

3.7.6 The Contractor shall obtain a Certificate of Occupancy from the Building Inspection Department having jurisdiction for each phase of the project as it is completed and ready for occupancy and shall deliver such certificate to the Architect.

1.06 SUBMITTALS:

- A. Add the following Subparagraphs 3.12.11 and 3.12.12 at the end of Paragraph 3.12, Shop Drawings, Product Data and Samples:

3.12.11 Additional provisions pertaining to shop drawings and samples are included in Division 1, General Requirements.

3.12.12 Submittals that have not been marked as reviewed, signed, and dated by the Contractor may be returned by the Architect without action.

1.07 SUBCONTRACTURAL RELATIONS:

- A. Add the following Subparagraphs 5.3.1 and 5.3.2 to Paragraph 5.3, Subcontractual Relations:

5.3.1 The Contractor shall be directly responsible for all of the work included in the Contract, whether performed by his own forces or by his subcontractors. Except in extreme emergencies, all instructions, clarifications, and approvals will be given by the Architect to subcontractors only through the Contractor and all shop drawings, samples, and correspondence from the subcontractor shall be submitted to the Architect through the Contractor.

5.3.2 Insofar as it does not affect the quality of workmanship or materials, the Contractor shall settle all questions of responsibility arising among his various subcontractors and shall determine the extent of work and responsibility of each of the subcontractors.

1.08 CHANGES IN THE WORK:

- A. Change Sub-subparagraph .5 of Subparagraph 7.3.4 to the following:

.5 Overhead and profit of which the maximum amount of allowable given in this Subparagraph shall be considered to include, but is not limited to, job-site staff and office expense, incidental job burdens, small tools, bonds, insurance and home office overhead allocation. The percentages for overhead and profit shall not exceed the following:

To Contractor on work performed by other than its own forces - 5% profit;

To first-tier Subcontractor on work performed by its Sub-subcontractors - 5% profit; and

To Contractor and/or Subcontractors for that portion of the work performed with their respective forces - 10% overhead and 5% profit.

- B. Add the following Subparagraph 7.4.1 to Paragraph 7.4, Minor Changes in the Work:

7.4.1 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and subcontractors. **Where major cost items are subcontracts, they shall be itemized also. In no case will a change involving over \$500.00 be approved without such itemization.**

1.09 APPLICATIONS FOR PAYMENT:

- A. Add the following Clauses 9.3.5, in Paragraph 9.3, Applications for Payment:

9.3.5 The Contractor is to use the 1992 Edition of AIA Document G702, Application and Certificate for Payment. **Beginning with the second Application for Payment, the Contractor shall verify that he has paid all subcontractors and major material suppliers those respective amounts representing all work and materials which have formed the basis of previous progress payments.** The application shall be submitted in three notarized copies.

PROGRESS PAYMENTS:

1.10

- A. Revise Subparagraph 9.6.1, to read as follows:

Unless otherwise provided in the agreement, the Owner will make progress payments to the Contractor on or about the fifteenth (15th) day of each calendar month on the basis of a duly certified and approved estimate of the work performed during the preceding calendar month. In preparing estimates, materials delivered to and properly stored on the site shall be given consideration. **Materials stored off-site shall not be paid for by the Owner unless the Contractor furnishes a certificate of insurance for that material showing the Owner as the Owner of said material.**

- 1.11 Add Subparagraph 9.6.9 at the end of Subparagraph 9.6, Progress Payments.

9.6.9 Upon commencement of the work, an escrow account as provided by Tennessee Code Annotated, Section 4-15-102; Section 66-11-144 and Title 66, Chapter 34, shall be established in a financial institution chosen by the Contractor and approved by the Owner. The escrow agreement shall provide that the financial institution will act as escrow agent, will pay interest on funds deposited in such account in accordance with provisions of the escrow agreement and will disburse funds from the account upon the direction of the Owner as set forth below. Compensation to the escrow agent for establishing and maintaining the escrow account shall be paid from interest accrued to the escrow account.

1.12 COSTS FOR DELAYS IN SUBSTANTIAL COMPLETION:

- A. Add the following Subparagraph 9.8.6 at the end of Paragraph 9.8, Substantial Completion:

9.8.6 As actual damages for any delay in completion are impossible of determination, the Contractor and his sureties shall be liable for and shall pay to the Owner the sum of Two Hundred Fifty Dollars (\$250.00) as fixed, agreed, and liquidated damages for each calendar day of delay until a Certificate of Substantial Completion is executed by the Owner, Architect, and Contractor.

1.13 FINAL PAYMENT:

- A. In Subparagraph 9.10.2, item (6), delete the words "if required by the Owner"; and replace the words "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" with the following: "Contract Close Out Submittals as enumerated in Section 01 33 00 Submittal Procedures and as reviewed and approved by the Architect.

1.14 COSTS FOR DELAYS IN FINAL COMPLETION

- A. Add the following Subparagraph 9.10.6 at the end of Paragraph 9.10, Final Completion and Final Payment:

9.10.6 If after Substantial Completion of the work and issuance of the Punch List, Final Completion of the Work is delayed beyond the time allotted for completion of the Punch List through no fault of the Owner or the Architect, the Contractor shall be liable for such ongoing costs as the Architect shall incur on the Project. Such costs shall be computed and billed to the Contractor at the Architect's standard hourly rates in effect at the time the work is executed. Payment shall be required within thirty (30) days of invoice. Interest shall accrue at one percent (1%) per month on past due amounts. Contractor shall be liable for all legal fees if legal action is required for collection of unpaid amounts.

1.15 CONTRACTOR'S LIABILITY INSURANCE:

A. In Subparagraph 11.1.1 in the second line, following the phrase "in the jurisdiction where the Project is located", insert the following clause: ", and to which the Owner has no reasonable objections,".

1.16 LIMITS OF CONTRACTOR'S LIABILITY INSURANCE:

Add the following Clause 11.1.2.1 to Subparagraph 11.1.2:

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:

A. Workmen's Compensation:

- 1. State: Statutory
- 2. Employer's Liability:
 - \$100,000.00 Each Accident
 - \$500,000.00 Disease - Policy Limit
 - \$100,000.00 Disease - Each Employee

B. Comprehensive General Liability (including Premises-Operations; Independent Contractors' Products/Completed Operations; Contractual; Personal injury):

- 1. Bodily Injury & Property Damage, combined single limit:
 - Each Occurrence: \$1,000,000.00
 - Annual Aggregate: \$1,000,000.00
- 2. Products/Completed Operations to be maintained for One Year after Final Payment.
 - \$5,000,000.00 Aggregate
- 3. Property Damage Liability Insurance shall provide X, C, and U Coverage, and Coverage for any Special Hazards such as Blasting.

C. Comprehensive Automobile Liability (including Owned, Hired and Non-Owned):

- 1. Bodily Injury/Property Damage Combined: \$500,000

D. Umbrella Liability: \$2,000,000

1.17 OWNER'S LIABILITY INSURANCE:

A. Replace Paragraph 11.2.1 with the following:

The Contractor shall take out and furnish to the Owner and maintain during the life of this Contract complete Owner's Protective Liability Insurance in amounts as specified in the limits of Contractor's Liability Insurance for Bodily Injury and Property Damage. This policy shall be made out in the name of the Owner and the Architect.

1.18 PROPERTY INSURANCE (BUILDER’S RISK)

- A. Use 11.2: Owner to provide property insurance.

1.19 PERFORMANCE BOND

- A. Change Subparagraph 11.1.2 to read as follows:

11.1.2 The Contractor shall execute a performance bond in an amount equal to one hundred percent (100%) of the Contract Sum and a payment bond covering and including labor and materials in an amount equal to one hundred percent (100%) of the Contract Sum. Bond shall be executed on AIA Document A311 and A312. Such bond shall be from a surety Company authorized to transact business in the State of Tennessee and Company shall be registered in Federal Register, Department of the Treasury, Fiscal Service, Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies; Notice. Attorneys in Fact who sign any bonds must file with each instrument a certified and effective dated coy of their power of attorney.

- B. Add the following Subparagraph 11.1.2.1 to the end of Subparagraph 11.1.2:

11.1.2.1 Mechanical, Plumbing and Electrical Subcontractors shall execute a performance bond in an amount equal to one hundred percent of the Contract Value of their portion of the work and a payment bond covering and including labor and materials in an amount equal to one hundred percent (100%) of the Contract Value of their portion of the work. Performance and Labor and Material Payment Bonds shall be executed on AIA Form A311 and A312. Such bond shall be from a surety Company authorized to transact business in the State of Tennessee and Company shall be registered in Federal Register, Department of the Treasury, Fiscal Service, Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies; Notice. Attorneys in Fact who sign any bonds must file with each instrument a certified and effective dated coy of their power of attorney.

1.20 INSPECTIONS AND CORRESPONDENCE:

- A. Add the following Subparagraph 13.4.7 to the end of Paragraph 13.4, Tests and Inspections:

13.4.7 Inspections and or correspondence by the Architect required due to failure by the Contractor to obtain inspections and approval from the Public Authorities having jurisdiction are beyond the scope of Construction Contract Administration for the Architect. As additional services, the Contractor will be billed a minimum fee of Five Hundred Dollars (\$500.00) per occurrence plus the Architect’s time at the Architect’s standard hourly rate for the personnel required to perform these functions.

1.21 INTEREST:

- A. Revise Paragraph 13.5 to read as follows:

“Payments due and unpaid for thirty (30) days under the Contract Documents shall bear interest from the date thirty (30) days after payment is due at the rate of 1/2% (0.5 percent) per month; 6% APR.

1.22 ARBITRATION:

- A. Delete Paragraph 15.4 Arbitration, entirely and delete all references to arbitration elsewhere in the General Conditions.

1.23 TIME:

- A. Time is an essential consideration of the Contract and work shall commence on the date to be specified in a written notice to the Contractor to proceed and shall progress with a proper and sufficient force of workmen and ample supply of materials and equipment to complete the Contract within the time limit agreed to in the Contract for Construction.

1.24 SUBSTITUTIONS:

- A. All requests shall be submitted to the Architect in writing with a fully executed substitution request form and shall clearly define and describe materials, methods or equipment for which approval is requested.
- B. Prior to Execution of a Contract for Construction:
 - 1. If any Contractors desire to substitute any firms, materials, brands, methods, etc., other than specified, he may have the privilege at any time prior to ten days before bidding, of submitting these matters to the Architect for approval.
 - 2. Requests shall be submitted by the General Contractor. Direct requests by manufacturer or material suppliers will not be considered.
 - 3. If such submissions are approved by the Architect or if the Architect shall decide to enlarge the scope of the Specifications, such approvals or additional information will be made by Addendum to the Contractor.
- C. After Execution of a Contract for Construction:
 - 1. Substitutions after execution of a Contract for Construction will, generally, not be considered, except under unusual circumstances, such as strikes, lockouts, bankruptcy, discontinuing of a product, etc.
 - 2. Requests for substitutions shall be made in writing to the Architect within ten (10) days of the date that the Contractor ascertains that he cannot obtain the material or equipment specified.
 - 3. Requests shall be accompanied by complete description of the material or apparatus to be submitted. On request from the Architect, samples of any of all such items shall be submitted and/or set up as directed for inspection and consideration. The amount of credit or extra cost to the Owner on account of the substitution shall be a part of this request.
 - a. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - i. Statement indicating why specified material or product cannot be provided.
 - ii. The amount of credit or extra cost to the Owner on account of the substitution
 - iii. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - iv. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - v. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - vi. Samples, where applicable or requested.
 - vii. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - viii. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

- ix. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
- x. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
- xi. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

D. "Or Approved Equal" or "Or Approved Substitution"

- 1. Where the phrase "or approved equal" or "approved substitution" occurs in the Contract Documents, do not assume that material, equipment, or methods will be approved as equal by the Architect unless the item has been specifically approved for this work by the Architect
 - a. Color choices will be one of the determining factors for approval.
- 2. The decision of the Architect will be final.

1.01 STANDARDS:

- A Any material or other work specified by reference to the number, symbol, or title of a specific standard, such as American National Standards Institute (ANSI) Standard, a Federal Specification, a trade association standard, or other similar standard, shall conform to the requirements in the latest revision thereof or any amendment or supplement thereto in effect on the date of the drawings and specifications, except as limited to type, class or grade, or as modified in such reference.
- B The standards referred to, except as modified in the specification, shall have full force and effect as though recited for the reason that the manufacturers and trades involved are assumed to be familiar with their requirements. The Architect will furnish, upon request, information as to how copies of the standards referred to may be obtained.
- C Where material or work is specified by reference to conform to standards such as listed in Paragraph A above, or to Codes, Laws, and Regulations, but specific provisions of the Contract Drawings or Contract Specifications exceed the requirements of such references, the Contract Drawings and Specifications shall govern.

1.02 MANUFACTURER'S DIRECTIONS:

- A All manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's instructions and recommendations. Any conflicts between such manufacturer's instructions and recommendations and the specifications shall be brought to the attention of the Architect and the procedures reconciled before proceeding with the work.

1.03 GUARANTEE:

- A All work under this Contract shall be guaranteed for a period of one (1) year after execution of Certificate of Substantial Completion against defects caused by the use of inferior materials or workmanship. Guarantee period of incomplete items at time of execution of Certificate of Substantial Completion shall commence on date of installation into building. Repair and/or replace all such defective materials or equipment and any work damaged thereby or make any other adjustment necessary without additional cost to the Owner.

1.04 LAYING OUT WORK:

- A The Contractor shall, immediately upon entering the projects for the purpose of beginning work, locate all general reference points and be responsible for all lines, elevations, and measurements.

PART 2 PRODUCTS:

NOT USED

PART 3 EXECUTION:

NOT USED

END OF SECTION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, materials, and equipment, and perform all work to construct, as specified herein and as shown on the accompanying drawings entitled "A New 9,000 SF welding and agriculture building for Clinton High School." The building shall be constructed complete and ready for occupancy except for the items specifically excluded in "Work Not Included".
- B. The work shall include site preparation, building construction, plumbing, heating, ventilating and air conditioning; electrical work; special equipment as specified; and site improvements as shown and specified.
- C. Patch any existing work damaged by construction.

1.02 WORK NOT INCLUDED

- A. The following items of work will be provided by the Owner or by others under separate contracts:
 - 1. Wayfinding signage.
 - 2. Toilet accessories not included on drawings: OFCI.
 - 3. Movable furniture unless specifically shown on the drawings and specifications.
 - 4. Security System Equipment.
 - 5. Telephone System Equipment.
 - 6. Computer System Equipment.
 - 7. Any other items noted on the drawings as Not in Contract (NIC); or Owner Furnished Contractor Installed (OFICI).
- B. The following work in connection with the items listed in paragraph 1.02A preceding shall be part of the General Contract work:
 - 1. Verification of correct location of electrical receptacles, telephone outlets, water and waste connections and similar outlets to suit equipment arrangement.
 - 2. Provision of telephone outlet boxes and conduit turned out above ceiling for use by owner's telephone contractor.

1.03 OCCUPANCY OF THE BUILDING DURING CONSTRUCTION

- A. The Contractor shall schedule and organize his work in such a manner and use such methods that will interfere as little as possible with other work in progress on the site and with the operation of adjacent buildings.

1.04 CONTRACTOR'S USE OF PREMISES

- A. Before construction is started the Contractor shall confer with the Architect and the Owner and arrange for available trucking and storage space for the delivery of materials, storage space for materials and equipment, and parking space for his workmen.
- B. Construction operations and storage of materials and equipment shall be restricted to areas of the site mutually agreed upon and in such a manner as not to block access of fire fighting equipment to the building and facilities.
- C. Construction vehicular traffic and the operation of construction equipment such as cranes, bulldozers, and other similar equipment shall be carefully supervised and controlled to avoid damage to existing structures and facilities which are to remain in place.

1.05 VERIFICATION OF DIMENSIONS

- A. Dimensions, elevations, and locations shown on the drawings in reference to existing structures and utilities are the best available data obtainable but are not guaranteed by the Architect or the Owner and the Architect and the Owner will not be responsible for their accuracy.
- B. Before proceeding with any work dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, line levels, or other conditions of limitations at the site and building to avoid construction errors. If any work is performed by the Contractor or by his Subcontractors prior to adequate verification of applicable data, any resultant extra cost for adjustment of work to conform to existing limitations shall be borne by the Contractor without reimbursement or compensation by the Owner.

1.06 CONTROL POINTS AND LAYOUT

- A. The initial lines, grades, and dimensions necessary for the location and control of the work under the Contract are shown on the Contract Drawings.
- B. The Contractor shall provide for himself all additional and supplementary lines and grades as may be necessary to layout the work and ensure proper control of the work until completed. It shall be the Contractor's responsibility to satisfy himself as to the accuracy of all measurements before construction.

1.07 SUBSTANTIAL COMPLETION OF THE WORK

- A. Upon substantial completion of any phase of the work, the Owner shall assume complete responsibility for the maintenance and operation of the heating, ventilating and air conditioning system and service utilities in that portion of the project.
- B. The Owner shall also become responsible for all other maintenance and damage and ordinary wear and tear and, with the exception of items under guarantee, the cost of repairs or restoration during the period between substantial and final completion.
- C. The Owner shall have the responsibility to have in effect all necessary insurance for protection against any losses not directly attributable to the Contractor's negligence.
- D. Upon substantial completion, payments for work in the substantially complete portion of the work shall be released to the Contractor, except for an amount to cover the cost of the incomplete or deficient items included in the punch list made at the inspection to determine substantial completion. This amount shall be approximately the value of the punch list items as estimated by the Architect.
- E. The Contractor shall arrange a schedule so that punch list items are completed in the designated time by working during regular working hours. The Contractor shall be afforded access to the occupied portion of the building to perform this work during regular working hours.

1.08 ENVIRONMENTAL HAZARDOUS PRODUCTS, MATERIALS, WASTE

- A. Do not incorporate in the Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended, unless the Contract Documents give no other option than to provide a material or product which contains a hazardous material, component, constituent, waste, or leachate. In studying the Contract Documents and carrying out the Work, report at once to the Designer the discovery of a product or material which contains hazardous materials, components, constituents, waste, or leachate.

- B. Do not incorporate in the Work a product or material which contains concentrations of a constituent, component, or material above the threshold levels which would require adherence to hazardous waste disposal regulations as currently defined, or could cause a release or threat of release of a hazardous substance at a level that would require a remedial response or removal action as currently defined by RCRA, CERCLA, or the EPA.
- C. Select materials and products meeting specified requirements which comply with EPA requirements as regards hazardous materials content. In making requests for substitutions, determine that materials and products proposed for substitution comply with RCRA, CERCLA, and EPA requirements.

1.09 BUILDING PRODUCTS USE

- A. It is the responsibility of the Contractor to inform himself concerning the application of the products he uses to follow the directions of the Architect and manufacturer.
- B. In the event of disagreement between the Contract Documents and the manufacturer's directions, the Contractor will obtain written instructions from the Architect before proceeding with the installation.
- C. If the Contractor has knowledge of or reason to believe the likelihood of failure, he will transmit such knowledge to the Architect, and ask for written instructions before proceeding with the work.

1.10 OWNERSHIP OF REMOVED MATERIALS AND EQUIPMENT

- A. All removed existing materials and equipment designated to be removed which are not to remain the property of the Owner or are not noted to be reused in the new work shall become the property of the Contractor and shall be removed from the premises and site and disposed of by him.

1.11 SEPARATE CONTRACTS

- A. The Owner may award separate contracts in connection with the project. The work in any such separate contracts may proceed simultaneously with the execution of this Contract. The Contractor shall coordinate operations with any separate contractors. The Contractor will be required in the arrangement for the storage of materials and in the detailed execution of the work. The Contractor, including his subcontractors, shall keep himself informed of the progress and the detailed work of separate contractors and shall notify the Architect immediately of the lack of progress or defective workmanship that will interfere with his own operations. Failure of the Contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by separate contractors shall be construed as acceptance of him of the state of the work as being satisfactory for proper coordination with his own work.
- B. The separate contractors will provide competent foremen or supervisors for the installation of their equipment and they are to confer with the Contractor and his subs and other separate contractors where required in regard to connections and installations.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes administrative and procedural requirements governing Allowances and Unit Prices.
- B. Allowances included on the drawings or in individual specification sections not specifically listed herein shall be bound by the procedures described herein. The Schedule of Allowances may not be a comprehensive list of all Allowances to be included in the Bid.

1.02 RELATED DOCUMENTS

- A. Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1 General Requirements apply to the work under this section.

1.03 ALLOWANCES

- A. Types of allowances include the following:
 - 1. Discretionary Fund/Contingency Allowance.
- B. Selection and Purchases:
 - 1. At the earliest practical date after award of the Contract, advise the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
 - 2. At the Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
 - 3. Purchase products and systems selected by the Architect from the designated supplier.
- C. Submittals:
 - 1. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
 - 2. Submit invoices or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.
 - 3. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit costs, and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.
 - 4. Schedule: A "Schedule of Allowances" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials described under each Allowance.
- D. Discretionary Fund/Contingency Allowance:
 - 1. Use the discretionary fund only as directed by the Architect for the Owner's purposes and only by Field Orders Construction Change Directive (AIA Document G714) which indicate amounts to be charged to the allowance.
 - 2. The Contractor's related costs for products and equipment ordered by the Owner under the discretionary fund are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
 - 3. Field Orders Construction Change Directive (AIA Document G714) authorizing use of funds from the discretionary fund will include Contractor's related costs and reasonable overhead and profit margins.
 - 4. At Project closeout, credit unused amounts remaining in the discretionary fund to the Owner by Change Order.
- E. Unused Materials:
 - 1. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.

2. When requested by the Architect, prepare unused material for storage by Owner where it is not economically practical to return the material for credit. When directed by the Architect, deliver unused material to the Owner's storage space. Otherwise, disposal of unused material is the Contractor's responsibility.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Discretionary Fund Allowance
 1. Description: Allowance included in Base Bid for use at the discretion of the Owner and the Architect according to Section 01 10 00 Summary of the Work.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A This Section includes administrative and procedural requirements for submittal and approval of substitutions.

1.02 RELATED DOCUMENTS

A Applicable provisions of the General Conditions, Supplementary Conditions, and other Division 1, General Requirements, apply to the work under this section.

1.03 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.04 SUBMITTALS

A. Substitution Requests: Submit a PDF of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use form provided in the Project Manual.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - i. Operational efficiency and energy consumption for equipment and appliances.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations if requested, for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.

- k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
- l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven (7) days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.06 PROCEDURES

- A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 PRODUCTS

2.01 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 - 2. Submit confirmation of the above requirements on 00 63 25 - Substitution Request Form included in this project manual.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 10 days prior to the date of the Bid. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction if applicable.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
2. Submit confirmation of the above requirements on 00 63 25 - Substitution Request Form included in this project manual.

PART 3 EXECUTION - NOT USED

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
 2. Section 01 21 00 - Allowances and Unit Prices: For procedural requirements governing the handling and processing of allowances.
 3. Section 01 32 00 - Construction Progress Documentation: For administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.02 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.03 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
 4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
 5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract, as described in Section 01 10 00 - Summary.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's Project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange schedule of values consistent with format of AIA Document G703.
 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
 5. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 6. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.

7. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
8. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
9. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
10. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.04 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Submit Application for Payment to Architect by the last day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
 1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
 1. Other Application for Payment forms proposed by the Contractor shall be acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued and signed, or authorized, before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- G. Transmittal: Submit a PDF of each Application for Payment to Architect by email. Include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
 5. Products list (preliminary if not final).
 6. Sustainable design action plans, including preliminary project materials cost data.
 7. Schedule of unit prices.
 8. Submittal schedule (preliminary if not final).
 9. List of Contractor's staff assignments.
 10. List of Contractor's principal consultants.
 11. Copies of building permits.
 12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 13. Initial progress report.
 14. Report of preconstruction conference.
 15. Certificates of insurance and insurance policies.
 16. Performance and payment bonds.
 17. Data needed to acquire Owner's insurance.
- J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706.
 5. AIA Document G706A.
 6. AIA Document G707.
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.

MBI #220042.02

SECTION 01 29 00
PAYMENT PROCEDURES

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Contractor's daily reports.
- F. Progress photographs.
- G. Submittals for review, information, and project closeout.
- H. Number of copies of submittals.
- I. Requests for Information (RFI) procedures.
- J. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 00 72 00 - General Conditions: Dates for applications for payment.
- B. Section 00 73 00 - Supplementary Conditions: Duties of the Construction Manager.
- C. Section 01 32 16 - Construction Progress Schedule: Form, content, and administration of schedules.
- D. Section 01 60 00 - Product Requirements: General product requirements.
- E. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.
- F. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 REFERENCE STANDARDS

- A. AIA G716 - Request for Information.
- B. AIA G810 - Transmittal Letter.
- C. CSI/CSC Form 12.1A - Submittal Transmittal; Current Edition.
- D. CSI/CSC Form 13.2A - Request for Interpretation; Current Edition.

1.04 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to MBI Companies:
 - 1. Requests for Information (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. MBI Companies will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. MBI Companies.
 - 3. Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Submission of initial Submittal schedule.
 - 6. Designation of personnel representing the parties to Contract, and MBI Companies.
 - 7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 8. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to MBI Companies, Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Attendance Required:
 - 1. Contractor.
 - 2. Owner.
 - 3. MBI Companies.
- C. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede, or will impede, planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of RFIs log and status of responses.
 - 7. Review of off-site fabrication and delivery schedules.
 - 8. Maintenance of progress schedule.
 - 9. Corrective measures to regain projected schedules.
 - 10. Planned progress during succeeding work period.
 - 11. Coordination of projected progress.
 - 12. Maintenance of quality and work standards.
 - 13. Effect of proposed changes on progress schedule and coordination.
 - 14. Other business relating to work.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to MBI Companies, Owner, participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE

- A. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - 1. Include written certification that major contractors have reviewed and accepted proposed schedule.

- C. Within 10 days after joint review, submit complete schedule.
- D. Submit updated schedule with each Application for Payment.

3.04 DAILY CONSTRUCTION REPORTS

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. In addition to transmitting electronically a copy to Owner and MBI Companies, submit two printed copies at weekly intervals.
 - 1. Submit in format acceptable to Owner.
- C. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
 - 1. Date.
 - 2. High and low temperatures, and general weather conditions.
 - 3. Safety, environmental, or industrial relations incidents.
 - 4. Meetings and significant decisions.
 - 5. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
 - 6. Testing and/or inspections performed.
 - 7. Signature of Contractor's authorized representative.

3.05 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Photography Type: Digital; electronic files.
- C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to MBI Companies.
- D. In addition to periodic, recurring views, take photographs of each of the following events:
- E. Views:
 - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
 - 2. Consult with MBI Companies for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 1. Delivery Medium: Via email.
 - 2. File Naming: Include project identification, date and time of view, and view identification.
 - 3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.06 REQUESTS FOR INFORMATION (RFI)

- A. Definition: A request seeking one of the following:
 - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
 - 2. A resolution to an issue which has arisen due to field conditions and affects design intent.

- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 - 1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subs and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.
 - 2. Prepare using an electronic version of the form appended to this section.
 - 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
 - 1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
 - 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
 - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
 - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
 - 3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 - 4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
 - a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the MBI Companies, and any of its consultants, due to processing of such RFIs.
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
 - 1. Official Project name and number, and any additional required identifiers established in Contract Documents.
 - 2. Owner's, MBI Companies', and Contractor's names.
 - 3. Discrete and consecutive RFI number, and descriptive subject/title.
 - 4. Issue date, and requested reply date.
 - 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 - 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
 - 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
 - 1. Indicate current status of every RFI. Update log promptly and on a regular basis.
 - 2. Note dates of when each request is made, and when a response is received.
 - 3. Highlight items requiring priority or expedited response.
 - 4. Highlight items for which a timely response has not been received to date.
 - 5. Identify and include improper or frivolous RFIs.

- H. Review Time: MBI Companies will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
 - 1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
 - 1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
 - 2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
 - 3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
 - 4. Notify MBI Companies within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.07 SUBMITTAL SCHEDULE

- A. Submit to MBI Companies for review a schedule for submittals in tabular format.
 - 1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
 - 2. Coordinate with Contractor's construction schedule and schedule of values.
 - 3. Format schedule to allow tracking of status of submittals throughout duration of construction.
 - 4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
 - 5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
 - a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.08 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Submit to MBI Companies for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.09 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.

- B. Submit for MBI Companies' knowledge as contract administrator or for Owner.

3.10 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
 1. Project record documents.
 2. Operation and maintenance data.
 3. Warranties.
 4. Bonds.
 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.11 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by MBI Companies.
 1. After review, produce duplicates.
 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.12 SUBMITTAL PROCEDURES

- A. General Requirements:
 1. Use a separate transmittal for each item.
 2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
 3. Transmit using approved form.
 4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 7. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Deliver submittals to MBI Companies at business address.
 8. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving MBI Companies' consultants, Owner, or another affected party, allow an additional 7 days.
 - c. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to MBI Companies' approval, allow an additional 30 days.
 9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 10. Provide space for Contractor and MBI Companies review stamps.
 11. When revised for resubmission, identify all changes made since previous submission.
 12. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 13. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.

14. Submittals not requested will not be recognized or processed.
15. The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Architect's approval of submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for error or omissions in the submittals by the Architect's approval thereof.

B. Product Data Procedures:

1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Submit concurrently with related shop drawing submittal.
4. Do not submit (Material) Safety Data Sheets for materials or products.

C. Shop Drawing Procedures:

1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
2. Do not reproduce Contract Documents to create shop drawings.
3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:

1. Transmit related items together as single package.
2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
3. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

3.13 SUBMITTAL REVIEW

- A. Submittals for Review: MBI Companies will review each submittal, and approve, or take other appropriate action.
 1. The Architect shall provide 2 reviews of submittals as part of the scope of work. Additional reviews required by failure of the Contractor to make indicated corrections or submit an acceptable product will be billed to the Contractor at the Architect's standard hourly rate.
- B. Submittals for Information: MBI Companies will acknowledge receipt and review. See below for actions to be taken.
- C. MBI Companies' actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. MBI Companies' and consultants' actions on items submitted for review:
 1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved", or language with same legal meaning.
 - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
 - 1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
 - 2) Non-responsive resubmittals may be rejected.
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".
 - 1) Resubmit revised item, with review notations acknowledged and incorporated.
 - 2) Non-responsive resubmittals may be rejected.
 - b. "Rejected".
 - 1) Submit item complying with requirements of Contract Documents.
- E. MBI Companies' and consultants' actions on items submitted for information:
 1. Items for which no action was taken:

- a. "Received" - to notify the Contractor that the submittal has been received for record only.
2. Items for which action was taken:
 - a. "Reviewed" - no further action is required from Contractor.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
 - 2. Section 01 32 00 - Construction Progress Documentation: For preparing and submitting Contractor's construction schedule.
 - 3. Section 01 70 00 – Execution and Closeout Requirements: For procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.02 DEFINITIONS

- A. BIM: Building Information Modeling.
- B. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.03 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities, list addresses and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of list in project meeting room, in temporary field office, in web-based Project software directory, and in prominent location in built facility. Keep list current at all times.

1.04 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.

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

1.05 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted

- devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor-control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 9. Review: Architect will review coordination drawings to confirm that in general the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
 10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 01 33 00 - Submittal Procedures.

1.06 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Architect.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Form: Form bound in Project Manual.
1. Attachments shall be electronic files in PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal.
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.07 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings may be provided by Architect for Contractor's use during construction.
1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project record Drawings.
 2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 3. Digital Drawing Software Program: Contract Drawings are available in current version of Revit.
 4. Contractor shall execute a data licensing agreement in the form of MBI Companies' Electronic Release Form included in this Project Manual.
 - a. Subcontractors, and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of MBI Companies' Electronic Release Form included in this Project Manual.

- B. Web-Based Project Software: Provide, administer, and use web-based Project software site for purposes of hosting and managing Project communication and documentation until Final Completion.
1. Web-based Project software site includes, at a minimum, the following features:
 - a. Compilation of Project data, including Contractor, subcontractors, Architect, architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
 - b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
 - c. Document workflow planning, allowing customization of workflow between project entities.
 - d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
 - e. Track status of each Project communication in real time, and log time and date when responses are provided.
 - f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
 - g. Processing and tracking of payment applications.
 - h. Processing and tracking of contract modifications.
 - i. Creating and distributing meeting minutes.
 - j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
 - k. Management of construction progress photographs.
 - l. Mobile device compatibility, including smartphones and tablets.
 2. Provide web-based Project software user licenses for use of Owner, Architect, and Architect's consultants. Provide software training at Architect's office for web-based Project software users.
 3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.
 4. Provide one of the following web-based Project software packages under their current published licensing agreements:
 - a. Autodesk; Buzzsaw or Constructware.
 - b. Corecon Technologies, Inc.
 - c. Meridian Systems; Prolog.
 - d. Newforma, Inc.
 - e. Procure Technologies, Inc.
 - f. Smartsheet, Inc.
 - g. Viewpoint, Inc.; Viewpoint for Project Collaboration.
- C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
1. Assemble complete submittal package into a single bookmarked file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.08 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Sustainable design requirements.
 - o. Preparation of Record Documents.
 - p. Use of the premises.
 - q. Work restrictions.
 - r. Working hours.
 - s. Owner's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for moisture and mold control.
 - v. Procedures for disruptions and shutdowns.
 - w. Construction waste management and recycling.
 - x. Parking availability.
 - y. Office, work, and storage areas.
 - z. Equipment deliveries and priorities.
 - aa. First aid.
 - bb. Security.
 - cc. Progress cleaning.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Sustainable design requirements.
 - i. Review of mockups.
 - j. Possible conflicts.
 - k. Compatibility requirements.
 - l. Time schedules.
 - m. Weather limitations.
 - n. Manufacturer's written instructions.

- o. Warranty requirements.
 - p. Compatibility of materials.
 - q. Acceptability of substrates.
 - r. Temporary facilities and controls.
 - s. Space and access limitations.
 - t. Regulations of authorities having jurisdiction.
 - u. Testing and inspecting requirements.
 - v. Installation procedures.
 - w. Coordination with other work.
 - x. Required performance results.
 - y. Protection of adjacent work.
 - z. Protection of construction and personnel.
3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for completing sustainable design documentation.
 - f. Requirements for preparing operations and maintenance data.
 - g. Requirements for delivery of material samples, attic stock, and spare parts.
 - h. Requirements for demonstration and training.
 - i. Preparation of Contractor's punch list.
 - j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - k. Submittal procedures.
 - l. Coordination of separate contracts.
 - m. Owner's partial occupancy requirements.
 - n. Installation of Owner's furniture, fixtures, and equipment.
 - o. Responsibility for removing temporary facilities and controls.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at regular intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's

construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- 1) Review schedule for next period.
- b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Status of sustainable design documentation.
 - 6) Deliveries.
 - 7) Off-site fabrication.
 - 8) Access.
 - 9) Site use.
 - 10) Temporary facilities and controls.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Status of RFIs.
 - 16) Status of Proposal Requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

F. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.

- 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Work hours.
 - 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Status of RFIs.
 - 15) Proposal Requests.
 - 16) Change Orders.
 - 17) Pending changes.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Unusual event reports.
- B. Related Requirements:
 - 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.03 INFORMATIONAL SUBMITTALS

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

- B. Startup construction schedule.
 - 1. Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
 - C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
 - D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.
 - E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
 - 3. Total Float Report: List of activities sorted in ascending order of total float.
 - 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
 - F. Construction Schedule Updating Reports: Submit with Applications for Payment.
 - G. Daily Construction Reports: Submit at monthly intervals.
 - H. Material Location Reports: Submit at monthly intervals.
 - I. Site Condition Reports: Submit at time of discovery of differing conditions.
 - J. Unusual Event Reports: Submit at time of unusual event.
 - K. Qualification Data: For scheduling consultant.
- 1.04 QUALITY ASSURANCE
- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.
 - B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 - Project Management and Coordination. Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review schedule for work of Owner's separate contracts.
 - 6. Review submittal requirements and procedures.
 - 7. Review time required for review of submittals and resubmittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review procedures for updating schedule.

1.05 COORDINATION

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

1.06 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
 - ~~1.~~ Use Microsoft Project, Primavera, Meridian Prolog, Scheduling component of Project website software specified in Section 01 31 00 - Project Management and Coordination, or other approved software.
- B. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.
 - 1. In-House Option: Owner may waive requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
 - 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- C. Time Frame: Extend schedule from date established for the Notice of Award to date of Substantial Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- D. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
 - 1. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 2. Submittal Review Time: Include review and resubmittal times indicated in Section 01 30 00 – Administrative Requirements in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 - 3. Startup and Testing Time: Include days for startup and testing.
 - 4. Commissioning Time: Include days for commissioning.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 - 6. Punch List and Final Completion: Include days for completion of punch list items and final completion.
- E. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in the schedule and show how the sequence of the Work is affected.
 - 1. Phasing: Arrange list of activities on schedule by phase.
 - 2. Work under More Than One Contract: Include a separate activity for each contract.
 - 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 - 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 01 10 00 - Summary. Delivery dates indicated stipulate the earliest possible delivery date.
 - 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 01 10 00 - Summary. Delivery dates indicated stipulate the earliest possible delivery date.
 - 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use-of-premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.

- h. Environmental control.
 - 7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Building flush-out.
 - m. Startup and placement into final use and operation.
 - n. Commissioning.
 - 8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
- F. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, final completion, and other important milestones:
- G. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- 1. See Section 01 29 00 - Payment Procedures: For cost reporting and payment procedures.
- H. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and the Contract Time.
- I. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
- 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.
- J. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

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

1.07 STARTUP CONSTRUCTION SCHEDULE

- A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice of Award.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.08 GANTT-CHART SCHEDULE REQUIREMENTS

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.
 - 1. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1.09 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 7. Testing and inspection.
 - 8. Accidents.
 - 9. Meetings and significant decisions.
 - 10. Unusual events.
 - 11. Stoppages, delays, shortages, and losses.
 - 12. Meter readings and similar recordings.
 - 13. Emergency procedures.
 - 14. Orders and requests of authorities having jurisdiction.
 - 15. Change Orders received and implemented.
 - 16. Construction/Work Change Directives received and implemented.
 - 17. Services connected and disconnected.
 - 18. Equipment or system tests and startups.
 - 19. Partial completions and occupancies.
 - 20. Substantial Completions authorized.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- C. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating,

responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Work Included: Prepare and submit request for extensions of Time based on weather conditions.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not limited to General Conditions, Supplementary General Conditions and Sections in Division 1 of these Specifications.
 - 2. Applications for Payment.

1.02 EXTENSIONS OF CONTRACT TIME

- A. If the basis exists for an extension of Time in accordance with the General Conditions and Supplementary General Conditions, an extension of time on the basis of weather may be granted only for the number of Weather Delay Days in excess of the number of days listed in the standard Baseline for that month.

1.03 STANDARD BASELINE FOR AVERAGE CLIMATIC RANGE

- A. The State of Tennessee has reviewed weather data available from the National Oceanic and Atmospheric Administration and determined a Standard Baseline of average climatic range for the State of Tennessee.
- B. Standard Baseline shall be regarded as the normal and anticipatable number of calendar days for each month during which construction activity shall be expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month as listed in the Standard Baseline is included in the Work and is not eligible for extension of Contract Time.
- C. Standard Baseline for each month of the year is as follows (the anticipatable delay days follow the month):

| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 12 | 11 | 8 | 7 | 7 | 6 | 7 | 5 | 4 | 5 | 6 | 11 |

1.04 ADVERSE WEATHER AND WEATHER DELAY DAYS

- A. Adverse Weather is defined as the occurrence of one or more of the following conditions, substantiated by NOAA data, which prevents exterior construction activity or access to the site within twenty-four (24) hours:
 - 1. Precipitation threshold (rain, snow, or ice) in excess of one-tenth inch (0.10") liquid measure. Snow to liquid measure ration is 10:1.
 - 2. Standing snow in excess of one inch (1.00").
- B. Additional extension of Time may be granted for drying days following periods of two or more consecutive days of precipitation for the following conditions:
 - 1. At a rate of one day extension of Time for each period of two or more consecutive days of precipitation of 1.0 inch or more (liquid measure).
 - 2. Only if there is a hindrance to site access or site work, such as excavation, backfill and footings and the like and then only when no such work is performed.
- C. A Weather Delay Day may be counted only if adverse weather prevents work on the Project for fifty percent (50%) or more of the contractor's scheduled, critical path work, including a weekend day or holiday if Contractor has scheduled construction activity that day.

1.05 DOCUMENTATION AND SUBMITTALS

- A. Contractor shall submit on a monthly basis daily job site work logs (daily reports) showing which, and to what extent, construction activities have been adversely affected by weather.

- B. Submit actual weather data, if requested by Architect to support claim for time extension, as obtained from NOAA weather reporting station nearest the project site.
- C. Use Standard Baseline data provided in this Section when documenting actual delays due to weather in excess of the average climatic range.
- D. Organize claim and documentation to facilitate evaluation of a basis of calendar month periods and submit in accordance with the procedures for Claims established in the General Conditions.
- E. Extensions of Time requested by the Contractor and approved by the Architect on the basis of conditions stated above shall be acknowledged and communicated in writing to the Contractor periodically.
- F. For extensions of Contract Time granted, a modification shall be issued in accordance with the provisions of the General Conditions, and the applicable General requirements. Modifications for extensions of Time may be issued quarterly or held to the end of the Project as appropriate based on Architect's approval of such extensions as noted in E above.
- G. Extensions of Time not requested in a timely manner by the Contractor will not be granted at a later time.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

Submittal Cover Sheet

Submittal No.: _____

Contractor: _____

Date: _____

Phone: _____

Fax: _____

Project Manager: _____

Email: _____

Project Title: _____

Architect's Comm. No.: _____

Spec Section Title: _____

Section No.: _____

Sub / Supplier: _____

Phone: _____

YES

NO

Product is as Specified

If not as specified attach Substitution Request Form

Contractor's Review Stamp

Remarks: _____

PART 1 GENERAL

1.01 PROGRESS SCHEDULE

- A. In addition to the progress schedule required by the General Conditions, the Contractor shall also submit his proposed scheme of work for approval, describing proposed methods and sequences of work from beginning to completion of the work and their correlation with the Owner's requirements.
- B. When the Contractor's proposed sequence of work has been approved by the Owner, it shall become the time schedule for the work and shall be adhered to as closely as possible by both the Contractor and the Owner, except that mutually agreeable modifications may be made from time to time to meet unforeseen exigencies.

1.02 TIME OF PERFORMING WORK

- A. Generally, the Contractor will be permitted to conduct his work in the building and on the premises during his regular working hours.
- B. The building must have the HVAC system operational and maintained at a constant temperature prior to installing any building finishes, except metal support systems.

1.03 OBSTRUCTIONS

- A. All obstructions encountered during the construction of the Contract work shall be overcome by the Contractor by removal or alteration of work in place, by adjustments in the new work, or by temporary removal and reinstallation of existing work.

1.04 CLEANING UP

- A. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- B. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- C. Exposed Surfaces in Finished Areas: Clean exposed surfaces
- D. Upon completion of the work, remove spots, stains, dirt, and dust from finished surfaces, both new and existing, including the surfaces of all existing machinery, equipment, and exposed piping that have been soiled by the construction. Protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- E. Clean and mop hard surface flooring and resilient flooring and vacuum clean carpet flooring
- F. Wash all glass and clean plumbing fixtures, lighting fixtures, and mechanical equipment.
- G. Comply with all special cleaning instructions contained in the various other sections of the specifications.
- H. Protect new and existing surfaces from the growth and spread of mold and mildew. If mold and mildew occur, notify Architect prior to proceeding. Retain qualified testing agency to document and direct remediation. Remediate or replace surfaces to stop the growth and spread of mold and mildew as deemed necessary by a qualified testing agency acceptable to the Contractor, Owner and Architect.
 - 1. Pay for necessary testing and perform all abatement work required to remedy condition.

1.05 INSPECTION OF WORK IN PLACE

- A. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities. The architect is to be given advanced notification for inspection of Structural, Mechanical, Plumbing, and Electrical work prior to said work being covered.
- B. Contractor shall give architect advanced notification for final inspection punch list prior to Owner occupying space.

1.06 SMOKING AND FIRE PRECAUTIONS

- A. No fire, or use of any fire, or explosion-producing tools or equipment will be permitted on the property
- B. This facility is a designated non-smoking facility. Smoking will not be permitted in the facility or within 20 feet of any entrance.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Document 00 72 00 - General Conditions: Inspections and approvals required by public authorities.
- B. Section 01 30 00 - Administrative Requirements: Submittal procedures.

1.03 REFERENCE STANDARDS

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

1.04 DEFINITIONS

- A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.
- B. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.
 - 1. Design Services Types Required:
 - a. Construction-Related: Services Contractor needs to provide in order to carry out the Contractor's sole responsibilities for construction means, methods, techniques, sequences, and procedures.
 - b. Design-Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.

- C. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.05 CONTRACTOR'S CONSTRUCTION-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:
 1. Temporary sheeting, shoring, or supports.
 2. Temporary scaffolding.
 3. Temporary bracing.
 4. Temporary falsework for support of spanning or arched structures.
 5. Temporary foundation underpinning.
 6. Temporary stairs or steps required for construction access only.
 7. Temporary hoist(s) and rigging.
 8. Investigation of soil conditions to support construction equipment.

1.06 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Base design on performance and/or design criteria indicated in individual specification sections.
 1. Submit a Request for Information to MBI Companies if the criteria indicated are not sufficient to perform required design services.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:
 1. Structural Design of Reinforcement Splices: As described in Section 03 01 00 - Maintenance of Concrete.
 2. Structural Design of Formwork: As described in Section 03 10 00 - Concrete Forming and Accessories.
 3. Structural Design of Formwork: As described in Section 03 11 19 - Insulating Concrete Forming.
 4. Concrete Mix Design: As described in Section 03 30 00 - Cast-in-Place Concrete. No specific designer qualifications are required.
 5. Structural Calculations and Design: As described in Section 03 38 00 - Post-Tensioned Concrete.
 6. Structural Calculations and Design: As described in Section 03 41 00 - Precast Structural Concrete.
 7. Concrete Mix and Structural Design: As described in Section 03 41 13 - Precast Concrete Hollow Core Planks.
 8. Concrete Mix and Structural Design: As described in Section 03 45 00 - Precast Architectural Concrete.
 9. Concrete Mix and Structural Design: As described in Section 03 47 13 - Tilt-Up Concrete.
 10. Concrete Mix and Structural Design: As described in Section 03 49 00 - Glass-Fiber Reinforced Concrete.
 11. Structural Design of Steel Connections: As described in Section 05 12 00 - Structural Steel Framing.
 12. Structural Design of Steel Connections: As described in Section 05 21 00 - Steel Joist Framing.
 13. Structural Design of Steel Decking: As described in Section 05 31 00 - Steel Decking.
 14. Structural Design of Metal Framing: As described in Section 05 40 00 - Cold-Formed Metal Framing.
 15. Structural Design of Steel Trusses: As described in Section 05 44 00 - Cold-Formed Metal Trusses.
 16. Structural Design of Formwork: As described in Section 05 45 00 - Metal Support Assemblies.
 17. Structural Design of Metal Fabrications: As described in Section 05 50 00 - Metal Fabrications.
 18. Structural Design of Stairs: As described in Section 05 51 00 - Metal Stairs.
 19. Structural Design of Railings: As described in Section 05 52 13 - Pipe and Tube Railings.
 20. Structural Design of Gratings and Plates: As described in Section 05 53 05 - Metal Gratings and Floor Plates.
 21. Structural Design of Spiral Stairs: As described in Section 05 71 13 - Fabricated Metal Spiral Stairs.
 22. Structural Design of Insulated Panels: As described in Section 06 12 19 - Structural Insulated Panels.
 23. Structural Design of Heavy Timber Framing: As described in Section 06 13 23 - Heavy Timber Framing.
 24. Structural Design of Wood Decking: As described in Section 06 15 00 - Wood Decking.
 25. Structural Design of Metal-Web Wood Joists: As described in Section 06 17 36 - Metal-Web Wood Joists.
 26. Structural Design of Wood Trusses: As described in Section 06 17 53 - Shop-Fabricated Wood Trusses

27. Structural Design of Glued-Laminated Construction: As described in Section 06 18 00 - Glued-Laminated Construction.
28. Structural Design of Fabrications: As described in Section 06 82 00 - Composite Trim.
29. Structural Calculations: As described in Section 07 42 13.23 - Metal Composite Material Wall Panels.
30. Fire Protection Design: As described in Section 07 87 00 - Smoke Containment Barriers.
31. Structural Design: Include physical characteristics, engineering calculations, and resulting dimensional limitations as described in Section 08 44 35 - Protective Framed Glazing Assemblies.
32. Structural Design Calculations for Exterior Assemblies: As described in Section 08 41 26 - All-Glass Entrances and Storefronts.
33. Structural Design: Include physical characteristics, engineering calculations, and resulting dimensional limitations as described in Section 08 43 13 - Aluminum-Framed Storefronts.
34. Structural design: Include calculations for resisting wind loads, anchor locations, and loads at points of attachment as described in Section 08 43 27 - Channel Glass Storefronts.
35. Structural Design: Include calculations for resisting wind loads, anchor locations, loads at points of attachment to building structure, physical characteristics, resulting dimensional limitations as described in Section 08 44 13 - Glazed Aluminum Curtain Walls.
36. Structural Design: Include calculations for resisting wind loads, anchor locations, loads at points of attachment to building structure, physical characteristics, resulting dimensional limitations as described in Section 08 44 18 - Glazed Steel Curtain Walls.
37. Structural Design: Include calculations for resisting wind loads, anchor locations, loads at points of attachment to building structure, physical characteristics, resulting dimensional limitations as described in Section 08 44 26 - Structural Glass Curtain Walls.
38. Structural Design: Include calculations for resisting wind loads, physical characteristics, resulting dimensional limitations as described in Section 08 45 00 - Translucent Wall and Roof Assemblies.
39. Structural Design: Include calculations for resisting wind loads, physical characteristics, resulting dimensional limitations as described in Section 08 63 00 - Metal-Framed Skylights.
40. Structural Calculations for Framing System: As described in Section 08 88 36.16 - Electrochromic Tintable Glass.
41. Structural Design for Seismic Loads: As described in Section 09 54 23 - Linear Metal Ceilings.
42. Structural Design of Floor System: As described in Section 09 69 00 - Access Flooring.
43. Structural Design of Pallet Storage Racks System: As described in Section 10 56 29.16 - Pallet Storage Racks.
44. Structural Design and Calculations: As described in Section 10 71 13.43 - Fixed Sun Screens.
45. Structural Design of Canopy: As described in Section 10 73 16.13 - Metal Canopies.
46. Structural Design of Foundation: As described in Section 10 75 00 - Flagpoles.
47. Structural Design and Calculations: As described in Section 10 82 13 - Exterior Grilles and Screens.
48. Structural Design and Calculations: As described in Section 10 82 23 - Interior Grilles and Screens.
49. Control System Design. As described in Section 11 14 00 - Pedestrian Control Equipment.
50. Structural Design of Pool Tank Supports: As described in Section 13 11 00 - Swimming Pools.
51. Structural Design of Cold Storage Room Roof: As described in Section 13 21 26 - Cold Storage Rooms
52. Design of Structural Components: Include development of shop drawings, and performing shop and site work, as described in Section 13 34 19 - Metal Building Systems.
53. Corrosion Protection Design: As described in Section 13 47 13 - Cathodic Protection.
54. Design of Structural Components: As described in Section 14 12 00 - Electric Dumbwaiters.
55. Design of Structural Components: As described in Section 14 20 20 - Freight Elevators.
56. Design of Structural Components: As described in Section 14 21 00 - Electric Traction Elevators.
57. Design of Structural Components: As described in Section 14 24 00 - Hydraulic Elevators.
58. Design of Structural Components: As described in Section 14 31 00 - Escalators.
59. Structural Design of Seismic Controls: As described in Section 21 05 48 - Vibration and Seismic Controls for Fire Suppression Piping and Equipment.
60. Sprinkler Layout: Coordinate with ceiling installation, detailed pipe layout, and hydraulic calculations as described in Section 21 13 00 - Fire-Suppression Sprinkler Systems.
61. System Design: Include calculations, detailed layout, component locations, control diagrams, wiring diagrams, and sequences of operation as described in Section 21 22 00 - Clean-Agent Fire-Extinguishing System.

62. System Design: Include calculations, detailed layout, component locations, control diagrams, wiring diagrams, and sequences of operation as described in Section 21 23 00 - Wet-Chemical Fire-Extinguishing System.
63. System Design: Include calculations, detailed layout, component locations, control diagrams, wiring diagrams, and sequences of operation as described in Section 21 24 00 - Dry-Chemical Fire-Extinguishing System.
64. System Design and Detailed Layout: As described in Section 21 30 00 - Fire Pumps.
65. Structural Design of Seismic Controls: As described in Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment.
66. System Design: As described in Section 23 09 13 - Instrumentation and Control Devices for HVAC.
67. System Design: As described in Section 23 09 23 - Direct-Digital Control System for HVAC.
68. System Design: As described in Section 23 09 43 - Pneumatic Control System for HVAC.
69. Written Sequence of Operation: Include entire HVAC system and each piece of equipment, as described in Section 23 09 93 - Sequence of Operations for HVAC Controls.
70. Piping System Design: As described in Section 23 23 00 - Refrigerant Piping.
71. Engineering Calculations Indicating Maximum Room Sound Levels Are Not Exceeded: As described in Section 23 33 19 - Duct Silencers.
72. Structural Design: As described in Section 23 51 00 - Breechings, Chimneys, and Stacks.
73. Structural Design of Seismic Controls: As described in Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.
74. Structural Calculations and Design of Equipment Mounting: As described in Section 26 31 00 - Photovoltaic Collectors.
75. Electrical Calculations: For array and associated equipment, as described in Section 26 31 00 - Photovoltaic Collectors.
76. Sound Masking Systems Design: As described in Section 27 51 19 - Sound Masking Systems.
77. Monitoring of Pile Placement, Elevation, and Load Testing: As described in Section 31 09 16.21 - Pile Load Tests.
78. Design of Structural Fill: As described in Section 31 23 23 - Fill.
79. Design of Geofoam Fill: As described in Section 31 23 23.43 - Geofoam.
80. Selection and Design of Pile Components: As described in Section 31 62 13.19 - Precast Concrete Piles
81. Selection and Design of Footing Components: As described in Section 31 62 13.26 - Pressure-Injected Footings.
82. Selection and Design of Pile Components: As described in Section 31 62 16.13 - Sheet Steel Piles.
83. Selection and Design of Pile Components: As described in Section 31 62 16.16 - Steel H Piles.
84. Selection and Design of Pile Components: As described in Section 31 62 19 - Timber Piles.
85. Selection and Design of Pile Components: As described in Section 31 62 23.13 - Concrete-Filled Steel Piles.
86. Design of Piles: As described in Section 31 63 16 - Auger Cast Grout Piles.
87. Design of Piers: As described in Section 31 63 29 - Drilled Concrete Piers and Shafts
88. Design of Piers: As described in Section 31 66 13.13 - Rammed Aggregate Piers.
89. Design or Piers: As described in Section 31 66 14 - Hydraulically Driven Pier Foundations.
90. Design of Helical Foundations: As described in Section 31 66 15 - Helical Foundations Piles.
91. Structural Calculations and Design: As described in Section 32 32 23 - Segmental Retaining Walls
92. Design of Seismic Component of Structural Supports and Anchors: As described in Section 46 05 09 - Piping and Equipment Supports and Anchors.

1.07 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Designer's Qualification Statement: Submit for MBI Companies's knowledge as contract administrator, or for Owner's information.
 1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
 - a. Full name.
 - b. Professional licensure information.
 - c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.

- C. Design Data: Submit for MBI Companies's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
 - 1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
 - 2. Include required product data and shop drawings.
 - 3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
 - 4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- D. Test Reports: After each test/inspection, promptly submit two copies of report to MBI Companies and to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Compliance with Contract Documents.
 - k. When requested by MBI Companies, provide interpretation of results.
 - 2. Test report submittals are for MBI Companies's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to MBI Companies, in quantities specified for Product Data.
 - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to MBI Companies.
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- G. Manufacturer's Field Reports: Submit reports for MBI Companies's benefit as contract administrator or for Owner.
 - 1. Submit report in duplicate within 30 days of observation to MBI Companies for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
- H. Erection Drawings: Submit drawings for MBI Companies's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by MBI Companies or Owner.

1.08 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

C. Contractor's Quality Control (CQC) Plan:

1. Prior to start of work, submit a comprehensive plan describing how contract deliverables will be produced. Tailor CQC plan to specific requirements of the project. Include the following information:

a. Management Structure: Identify personnel responsible for quality. Include a chart showing lines of authority.

1) Include qualifications (in resume form), duties, responsibilities of each person assigned to CQC function.

b. Management Approach: Define, describe, and include in the plan specific methodologies used in executing the work.

1) Management and control of documents and records relating to quality.

2) Communications.

3) Coordination procedures.

4) Resource management.

5) Process control.

6) Inspection and testing procedures and scheduling.

7) Control of noncomplying work.

8) Tracking deficiencies from identification, through acceptable corrective action, and verification.

9) Control of testing and measuring equipment.

10) Project materials certification.

11) Managerial continuity and flexibility.

c. Owner will not make a separate payment for providing and maintaining a Quality Control Plan. Include associated costs in Bid price.

d. Acceptance of the plan is required prior to start of construction activities not including mobilization work. Owner's acceptance of the plan will be conditional and predicated on continuing satisfactory adherence to the plan. Owner reserves the right to require Contractor to make changes to the plan and operations, including removal of personnel, as necessary, to obtain specified quality of work results.

D. Quality-Control Personnel Qualifications. Engage a person with requisite training and experience to implement and manage quality assurance (QA) and quality control (QC) for the project.

1.09 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from MBI Companies before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of MBI Companies shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.10 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ services of an independent testing agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01 21 00; see Section 01 21 00 and applicable sections for description of services included in allowance.
- B. Owner will employ and pay for services of an independent testing agency to perform other specified testing.
- C. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- D. As indicated in individual specification sections, Owner or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- E. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- F. Contractor Employed Agency:
 - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
 - 2. Inspection agency: Comply with requirements of ASTM D3740, and ASTM E329.
 - 3. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
 - 4. Laboratory: Authorized to operate in the State in which the Project is located.
 - 5. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 - 6. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

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

3.02 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups establish the standard of quality the MBI Companies will use to judge the Work.
- C. Integrated Exterior Mock-ups: Construct integrated exterior mock-up as indicated on drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.
- D. Room Mock-ups: Construct room mock-ups as indicated on drawings. Coordinate installation of materials, products, and assemblies as required in specification sections; finish according to requirements. Provide required

lighting and any supplemental lighting where required to enable MBI Companies to evaluate quality of the mock-up.

- E. Notify MBI Companies fifteen (15) working days in advance of dates and times when mock-ups will be constructed.
- F. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
- G. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- H. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- I. Obtain MBI Companies's approval of mock-ups before starting work, fabrication, or construction.
 - 1. MBI Companies will issue written comments within seven (7) working days of initial review and each subsequent follow up review of each mock-up.
 - 2. Make corrections as necessary until Architect's approval is issued.
- J. MBI Companies will use accepted mock-ups as a comparison standard for the remaining Work.
- K. Where mock-up has been accepted by MBI Companies and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by MBI Companies.
- L. Legally salvage and recycle the demolished mock-up materials.

3.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from MBI Companies before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with MBI Companies and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify MBI Companies and Contractor of observed irregularities or non-compliance of Work or products.
 - 6. Perform additional tests and inspections required by MBI Companies.
 - 7. Attend preconstruction meetings and progress meetings.
 - 8. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.

3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
4. Notify MBI Companies and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by MBI Companies.

F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment, as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to MBI Companies 30 days in advance of required observations.
 1. Observer subject to approval of MBI Companies.
 2. Observer subject to approval of Owner.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of MBI Companies, it is not practical to remove and replace the work, MBI Companies will direct an appropriate remedy or adjust payment.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY OF REFERENCE STANDARDS

- A. Regulatory requirements applicable to this project are the following:
- B. 28 CFR 35 - Nondiscrimination on the Basis of Disability in State and Local Government Services; Final Rule; Department of Justice; current edition.
- C. 28 CFR 36 - Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice; current edition.
- D. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- E. 49 CFR 37 - Transportation Services for Individuals with Disabilities (ADA); current edition.
- F. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; current edition.
- G. FED-STD-795 - Uniform Federal Accessibility Standards (UFAS).
- H. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.
- I. State of Tennessee amendments to some or all of the following.
- J. County of Anderson amendments to some or all of the following.
- K. ICC A117.1 - Accessible and Usable Buildings and Facilities; current edition.
- L. ICC (IFC) - International Fire Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- M. NFPA 1 - Fire Code; current edition.
- N. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- O. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- P. NFPA 5000 - Building Construction and Safety Code; 2018.
- Q. ICC (IPC) - International Plumbing Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- R. ICC (IMC) - International Mechanical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- S. ICC (IFGC) - International Fuel Gas Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- T. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- U. ICC (IECC) - International Energy Conservation Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.02 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements.

1.03 QUALITY ASSURANCE

- A. Contractor's Designer Qualifications: Refer to Section - 01 40 00 - Quality Requirements.

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SECTION 01 41 00
REGULATORY REQUIREMENTS

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PART 1 GENERAL

1.01 Quality Control is defined as testing and inspection performed by/or under the direction of the Contractor to ensure materials and construction meet the requirements of the Contract Documents and Specifications.

1.02 TESTS

A. Engage inspection and test service agencies, including independent testing laboratories, which comply with "Guidelines for Effective Practice for Materials Engineering Laboratories" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.

B. Tests required to establish compliance with the Contract requirements for quality control shall be made by a testing agency acceptable to the Contractor, the Owner, and the Architect with reports certified by the laboratory and furnished in duplicate to the Architect with a copy to the Contractor.

C. Representatives of the testing agency and monitoring shall have access to the work at all times. The Contractor shall provide facilities for such access and samples as necessary so that the testing agency may properly perform its function.

D. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to the following:

Name of testing agency or testing laboratory.

Dates and locations of samples and test or inspections.

Names of individuals making the inspection or test.

Complete inspection or test data.

Test results

Interpretations of test results.

Notation of significant ambient conditions at the time of sample taking and testing.

Comments or professional opinion as to whether inspected or tested work complies with requirements of the contract documents.

Recommendations on retesting, if applicable.

E. Non-Compliant Inspection/Test Results: Within 24 hours of inspection/test being performed, notify Architect/Engineer-of-Record, and the Contractor of any non-conforming/non-compliant inspections/tests. Copies of successful retests of the originally non-conforming/non-compliant work shall be submitted to the Architect/Engineer-Of-Record and the Contractor.

F. Project Closeout: Contractor shall certify to the Architect of Record that the required quality control services, as required by this section and the contract documents have been performed and that all results indicate compliance with requirements.

1.03 COST OF TESTS

A. The cost of the services of the testing agency and monitoring shall be paid by the Contractor. When the tests indicate noncompliance with the Contract requirements, any subsequent retesting occasioned by noncompliance shall be performed by the same testing agency and the costs shall be paid by the Contractor.

1.04 NOTIFICATIONS OF THE ARCHITECT

A. Notify architect within 24 hours before any work is completed for areas as described herein. If the architect is not notified as stated above and the Contractor proceeds with the work, the Architect shall have authority to direct the Contractor to remove part or all installed materials at the Contractor's expense for a detailed observation.

B. The Architect shall be notified at the following points of work:

1. Footing bottoms and concrete reinforcement prior to pouring any concrete.

2. Waterproofing/Damp-proofing prior to any backfilling work.
 3. Water drainage test on sloped concrete floors prior to finish floor materials installed.
 4. Thru-wall flashing installation and mortar mix prior to installing any masonry.
 5. Completed structural steel erection before floor slabs are poured.
 6. Mechanical and Electrical systems above ceiling inspection prior to installation of finish ceiling material.
- C. The respective contractor and/or subcontractor shall correct any deficiencies that may be observed. Construction work observations or lack there of by the architect does not relieve the contractor and/or subcontractor from any liability of faulty workmanship that may have occurred or may occur at a later date.

1.05 OTHER TESTS

- A. See provisions of the General Conditions regarding tests required by governing authorities.
- B. The provisions of Divisions 22, 23 and 26 for tests required for plumbing, mechanical, and electrical work.

PART 2 PRODUCTS – (NOT USED)

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

- A. Upon completion of inspection, testing, sample taking, and similar services, repair damaged work and restore substrates and finishes to eliminate all deficiencies. Repair and protection are the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Code-required special inspections.
- B. Testing services incidental to special inspections.
- C. Submittals.
- D. Manufacturers' field services.
- E. Fabricators' field services.

1.02 RELATED REQUIREMENTS

- A. Document 00 72 00 - General Conditions: Inspections and approvals required by public authorities.
- B. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- C. Section 01 40 00 - Quality Requirements.
- D. Section 01 41 00 – Regulatory Requirements.

1.03 ABBREVIATIONS AND ACRONYMS

- A. AHJ: Authority having jurisdiction.
- B. IAS: International Accreditation Service, Inc.
- C. NIST: National Institute of Standards and Technology.

1.04 DEFINITIONS

- A. Code or Building Code: See Contract Documents and drawings for applicable code for this project.
- B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.
- C. Special Inspection:
 - 1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the AHJ that also require special expertise to ensure compliance with the approved Contract Documents and the referenced standards.
 - 2. Special inspections are separate from and independent of tests and inspections conducted by Owner or Contractor for the purposes of quality assurance and contract administration.

1.05 REFERENCE STANDARDS

- A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.
- B. AISC 341 - Seismic Provisions for Structural Steel Buildings.
- C. AISC 360 - Specification for Structural Steel Buildings.
- D. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- F. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
- G. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
- H. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete.

- I. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - J. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
 - K. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing.
 - L. ASTM E605/E605M - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.
 - M. ASTM E736/E736M - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.
 - N. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops.
 - O. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.
 - P. ASTM E2570/E2570M - Standard Test Methods for Evaluating Water-Resistive Barrier (WRB) Coatings Used under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage.
 - Q. AWCI 117 - Technical Manual 12-B; Standard Practice for the Testing and Inspection of Field Applied Thin Film Intumescent Fire-Resistive Materials; an Annotated Guide.
 - R. AWS D1.1/D1.1M - Structural Welding Code – Steel.
 - S. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel.
 - T. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel.
 - U. ICC (IBC) – International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
 - V. SDI (QA/QC) – Standard for Quality Control and Quality Assurance for Installation of Steel Deck.
 - W. SJI 100 - Catalog of Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders.
 - X. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.
- 1.06 SUBMITTALS
- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
 - B. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
 1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 3. Submit certification that Special Inspection Agency is acceptable to AHJ.
 - C. Testing Agency Qualifications: Prior to the start of work, the Testing Agency is required to:
 1. Submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 3. Submit certification that Testing Agency is acceptable to AHJ.
 - D. Smoke Control Testing Agency Qualifications: Prior to the start of work, the Testing Agency is required to:
 1. Submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.

2. Submit documentary evidence that agency has appropriate credentials and documented experience in fire protection engineering, mechanical engineering and HVAC air balancing.
 3. Submit certification that Testing Agency is acceptable to AHJ.
- E. Manufacturer's Qualification Statement: Manufacturer is required to submit documentation of manufacturing capability and quality control procedures. Include documentation of AHJ approval.
- F. Fabricator's Qualification Statement: Fabricator is required to submit documentation of fabrication facilities and methods as well as quality control procedures. Include documentation of AHJ approval.
- G. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to MBI Companies and one to the AHJ.
1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of Special Inspector.
 - d. Date and time of special inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of special inspection.
 - h. Date of special inspection.
 - i. Results of special inspection.
 - j. Compliance with Contract Documents.
 2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.
- H. Fabricator Special Inspection Reports: After each special inspection of fabricated items at the Fabricator's facility, Special Inspector is required to promptly submit at least two copies of report; one to MBI Companies and one to AHJ.
1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of Special Inspector.
 - d. Date and time of special inspection.
 - e. Identification of fabricated item and specification section.
 - f. Location in the Project.
 - g. Results of special inspection.
 - h. Verification of fabrication and quality control procedures.
 - i. Compliance with Contract Documents.
 - j. Compliance with referenced standard(s).
- I. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to MBI Companies and one to AHJ.
1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test or inspection.
 - h. Date of test or inspection.
 - i. Results of test or inspection.
 - j. Compliance with Contract Documents.

- J. Certificates: When specified in individual special inspection requirements, Special Inspector shall submit certification by the manufacturer, fabricator, and installation subcontractor to MBI Companies and AHJ, in quantities specified for Product Data.
 - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to MBI Companies and AHJ.
- K. Manufacturer's Field Reports: Submit reports to MBI Companies and AHJ.
 - 1. Submit report in duplicate within 30 days of observation to MBI Companies for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.
- L. Fabricator's Field Reports: Submit reports to MBI Companies and AHJ.
 - 1. Submit report in duplicate within 30 days of observation to MBI Companies for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.

1.07 SPECIAL INSPECTION AGENCY

- A. Owner or Owner’s Agent will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.
- B. The Special Inspection Agency may employ and pay for services of an independent testing agency to perform testing and sampling associated with special inspections and required by the building code.
- C. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.08 TESTING AND INSPECTION AGENCIES

- A. Owner or Owner’s Agent may employ services of an independent testing agency to perform additional testing and sampling associated with special inspections but not required by the building code.
- B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.09 QUALITY ASSURANCE

- A. Special Inspection Agency Qualifications:
 - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
- B. Testing Agency Qualifications:
 - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
- C. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

- A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
 - 1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
 - 2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

THE FOLLOWING INFORMATION IS PROVIDED AS A SUPPLEMENT (BUT NOT AN EXHAUSTIVE LIST) TO THE SPECIAL INSPECTION REQUIREMENTS LISTED IN THE DRAWINGS. SPECIAL INSPECTIONS REQUIRED FOR THIS PROJECT ARE LISTED IN THE DRAWINGS AND INFORMATION BELOW IS TO BE USED TO SUPPLEMENT ITEMS THAT ARE REQUIRED.

3.02 SPECIAL INSPECTIONS FOR STEEL CONSTRUCTION

- A. Structural Steel: Comply with quality assurance inspection requirements of ICC (IBC).
- B. Cold-Formed Steel Deck: Comply with quality assurance inspection requirements of SDI (QA/QC).
- C. Open-Web Joists and Joist Girders: Comply with requirements of ICC (IBC), Table 1705.2.3.
 - 1. End Connections - Welding or Bolted: Comply with requirements of SJI 100; periodic.
 - 2. Bridging - Horizontal or Diagonal:
 - a. Standard Bridging: Comply with requirements of SJI 100; periodic.
 - b. Bridging That Differs From the SJI Specifications: Periodic inspection.
- D. Cold-Formed Steel Trusses Spanning 60 feet or Greater: Special Inspector is required to verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

3.03 SPECIAL INSPECTIONS FOR CONCRETE CONSTRUCTION

- A. Reinforcement, Including Prestressing Tendons, and Verification of Placement: Verify compliance with ACI 318, Chapters 20, 25.2, 25.3, 26.6.1-26.6.3; periodic.
- B. Reinforcing Steel, Including Prestressing of Tendons and Placement: Verify compliance with approved Contract Documents and ACI 318, Sections 3.5 and 7.1 through 7.7; periodic.
- C. Reinforcing Bar Welding: Verify compliance with AWS D1.4/D1.4M and ACI 318, 26.6.4; periodic.
 - 1. Verify weldability of reinforcing bars other than those complying with ASTM A706/A706M; periodic.
 - 2. Inspect single-pass fillet welds, maximum 5/16 inch; periodic.
 - 3. Inspect all other welds; continuous.
- D. Anchors Cast in Concrete: Verify compliance with ACI 318, 17.8.2; periodic.
- E. Bolts Installed in Concrete: Where allowable loads have been increased or where strength design is used, verify compliance with approved Contract Documents and ACI 318, Sections 8.1.3 and 21.2.8 prior to and during placement of concrete; continuous.
- F. Anchors Post-Installed in Hardened Concrete: Verify compliance with ACI 318.
 - 1. Adhesive Anchors: Verify horizontally or upwardly-inclined orientation installations resisting sustained tension loads - Section 17.8.2.4; continuous.
 - 2. Other Mechanical and Adhesive Anchors: Verify as per Chapter 17.8.2; periodic.
- G. Design Mix: Verify plastic concrete complies with the design mix in approved Contract Documents and with ACI 318, Chapter 19, 16.4.3, 26.4.4; periodic.
- H. Design Mix: Verify plastic concrete complies with the design mix in approved Contract Documents and with ACI 318, Chapter 4 and 5.2; periodic.
- I. Concrete Sampling Concurrent with Strength Test Sampling: Each time fresh concrete is sampled for strength tests, verify compliance with ASTM C172/C172M, ASTM C31/C31M and ACI 318, Chapter 26.5, 26.12, and record the following, continuous:
 - 1. Slump.
 - 2. Air content.
 - 3. Temperature of concrete.
- J. Concrete and Shotcrete Placement: Verify application techniques comply with approved Contract Documents and ACI 318, Chapter 26.5; continuous.
- K. Specified Curing Temperature and Techniques: Verify compliance with ACI 318, Chapter 26.5.3-26.5.5; periodic.

- L. Specified Curing Temperature and Techniques: Verify compliance with approved Contract Documents and ACI 318, Sections 5.11 through 5.13; periodic.
- M. Prestressed Concrete: Verify compliance with approved Contract Documents; continuous.
 - 1. Application of Prestressing Forces: Verify compliance with ACI 318, Chapter 26.10.
 - 2. Grouting of Bonded Prestressing Tendons: Verify compliance with ACI 318, Chapter 26.10.
- N. Precast Concrete Members: Verify erection techniques and placement comply with approved Contract Documents and ACI 318, Chapter 26.9; periodic.
- O. Concrete Strength in Situ: Verify concrete strength complies with approved Contract Documents and ACI 318, Chapter 26.11.2, for the following:
 - 1. Post-tensioned concrete, prior to stressing of tendons; periodic.
 - 2. Beams and structural slabs, prior to removal of shores and forms; periodic.
- P. Formwork Shape, Location and Dimensions: Verify compliance with approved Contract Documents and ACI 318, Chapter 26.11.1.2(b); periodic.
- Q. Welding of Reinforcing Bars: Conduct special inspections and verify Special Inspector's qualifications in accordance with requirements of AWS D1.4/D1.4M.
- R. Materials: If the Contractor cannot provide sufficient data or documentary evidence that concrete materials comply with the quality standards of ACI 318, the AHJ will require testing of materials in accordance with the appropriate standards and criteria in ACI 318, Chapters 19 and 20.

3.04 SPECIAL INSPECTIONS FOR MASONRY CONSTRUCTION

- A. Masonry Structures Subject to Special Inspection:
 - 1. Masonry construction when required by the quality assurance program of TMS 402/602.
 - 2. Empirically designed masonry, glass unit masonry and masonry veneer in structures designated as "essential facilities".
 - a. Perform inspections in accordance with Level B Quality Assurance.
 - 3. Engineered masonry in structures classified as "low hazard..." and "substantial hazard to human life in the event of failure".
- B. Verify each item below complies with approved Contract Documents and the applicable articles of TMS 402/602.
 - 1. Inspections and Approvals:
 - a. Verify compliance with the required inspection provisions of the approved Contract Documents; periodic.
 - b. Verify approval of submittals required by Contract Documents; periodic.
 - 2. Compressive Strength of Masonry: Verify compressive strength of masonry units prior to start of construction unless specifically exempted by code; periodic.
 - 3. Slump Flow and Visual Stability Index (VSI): Verify compliance as self consolidating grout arrives on site; continuous.
 - 4. Joints and Accessories: When masonry construction begins, verify:
 - a. Proportions of site prepared mortar; periodic.
 - b. Construction of mortar joints; periodic.
 - c. Location of reinforcement, connectors, prestressing tendons, anchorages, etc; periodic.
 - d. Prestressing technique; periodic.
 - e. Grade and size of prestressing tendons and anchorages; periodic.
 - 5. Structural Elements, Joints, Anchors, Protection: During masonry construction, verify:
 - a. Size and location of structural elements; periodic.
 - b. Type, size and location of anchors, including anchorage of masonry to structural members, frames or other construction; periodic.
 - c. Size, grade and type of reinforcement, anchor bolts and prestressing tendons and anchorages; periodic.
 - d. Welding of reinforcing bars; continuous.
 - e. Preparation, construction and protection of masonry against hot weather above 90 degrees F and cold weather below 40 degrees F; periodic.

- f. Application and measurement of prestressing force; continuous.
 - 6. Grouting Preparation: Prior to grouting, verify:
 - a. Grout space is clean; periodic.
 - b. Correct placement of reinforcing, connectors, prestressing tendons and anchorages; periodic.
 - c. Correctly proportioned site prepared grouts and prestressing grout for bonded tendons; periodic.
 - d. Correctly constructed mortar joints; periodic.
 - 7. Prestressing Bonded Tendons: Verify placement after grouting; continuous.
 - 8. Preparation of Grout Specimens, Mortar Specimens and Prisms: Observe preparation of specimens; periodic.
- C. Engineered Masonry in Buildings Designated as "Essential Facilities": Verify compliance of each item below with approved Contract Documents and the applicable articles of TMS 402/602.
- 1. Inspections and Approvals:
 - a. Verify compliance with the required inspection provisions of the approved Contract Documents; periodic.
 - b. Verify approval of submittals required by Contract Documents; periodic.
 - 2. Compressive Strength of Masonry: Verify compressive strength of masonry units prior to start of construction and upon completion of each 5,000 square feet increment of masonry erected during construction; periodic.
 - 3. Preblended Mortar and Grout: Verify proportions of materials upon delivery to site; periodic.
 - 4. Slump Flow and Visual Stability Index (VSI): Verify compliance as self consolidating grout arrives on site; continuous.
 - 5. Engineered Elements, Joints, Anchors, Grouting, Protection: Verify compliance of each item below with approved Contract Documents and referenced standards.
 - a. Proportions of site prepared mortar; periodic.
 - b. Placement of masonry units and construction of mortar joints; periodic.
 - c. Placement of reinforcement, connectors, prestressing tendons, anchorages, etc.; periodic.
 - d. Grout space prior to grouting; continuous.
 - e. Placement of grout; continuous.
 - f. Placement of prestressing grout; continuous.
 - g. Size and location of structural elements; periodic.
 - h. Type, size and location of anchors, including anchorage of masonry to structural members, frames or other construction; continuous.
 - i. Size, grade and type of reinforcement, anchor bolts and prestressing tendons and anchorages; periodic.
 - j. Welding of reinforcing bars; continuous.
 - k. Preparation, construction and protection of masonry against hot weather above 90 degrees F and cold weather below 40 degrees F; periodic.
 - l. Application and measurement of prestressing force; continuous.
 - 6. Preparation of Grout Specimens, Mortar Specimens and Prisms: Observe preparation of specimens; continuous.

3.05 SPECIAL INSPECTIONS FOR PREFABRICATED AND SITE-BUILT WOOD CONSTRUCTION

- A. High Load Diaphragms: Verify compliance of each item below with approved Contract Documents.
 - 1. Grade and thickness of sheathing.
 - 2. Nominal size of framing members at adjacent panel edges.
 - 3. Nail or staple diameter and length.
 - 4. Number of fastener lines.
 - 5. Fastener spacing at lines and at edges.
- B. Metal Plate Connected Wood Trusses with Clear Span of 60 feet or More: Verify compliance of each item below with approved Contract Documents in general and with approved truss submittal package in particular.
 - 1. Temporary restraint and bracing.
 - 2. Permanent individual truss member restraint and bracing.

3.06 SPECIAL INSPECTIONS FOR SOILS

- A. Materials and Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
 - 1. Design bearing capacity of material below shallow foundations; periodic.
 - 2. Design depth of excavations and suitability of material at bottom of excavations; periodic.
 - 3. Materials, densities, lift thicknesses; placement and compaction of backfill: continuous.
 - 4. Subgrade, prior to placement of compacted fill verify proper preparation; periodic.
- B. Testing: Classify and test excavated material; periodic.

3.07 SPECIAL INSPECTIONS FOR DRIVEN DEEP FOUNDATIONS

- A. Materials, Equipment and Final Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
 - 1. Material types, sizes and lengths; continuous.
 - 2. Capacities of test elements and additional load tests as required; continuous.
 - 3. Placement locations and plumbness; continuous.
 - 4. Type and size of hammer; continuous.
- B. Installation: Observe driving operations and maintain complete and accurate records for each element; continuous.
 - 1. Record number of blows per foot of penetration.
 - 2. Determine penetration required to achieve design capacity.
 - 3. Record tip and butt elevations.
 - 4. Document any damage to foundation element.
- C. Steel Components of Driven Deep Foundations: Perform additional inspections as required by the Special Inspections for Steel Construction article of this section.
- D. Concrete and Concrete Filled Components of Driven Deep Foundations: Perform additional inspections as required by the Special Inspections for Concrete Construction article of this section.
- E. Specialty Items Associated with Driven Deep Foundations: Conduct special inspections as directed by MBI Companies.

3.08 SPECIAL INSPECTIONS FOR CAST-IN-PLACE DEEP FOUNDATIONS

- A. Materials, Equipment and Final Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
 - 1. Element length; continuous.
 - 2. Element diameters and bell diameters; continuous.
 - 3. Embedment into bedrock; continuous.
 - 4. End bearing strata capacity; continuous.
 - 5. Placement locations and plumbness; continuous.
 - 6. Type and size of hammer; continuous.
- B. Drilling Operations: Observe and maintain complete and accurate records for each element; continuous.
- C. Material Volume: Record concrete and grout volumes.
- D. Concrete Elements Associated with Cast-in-Place Deep Foundations: Perform additional inspections as required by the Special Inspections for Concrete Construction article of this section.

3.09 SPECIAL INSPECTIONS FOR HELICAL PILE FOUNDATIONS

- A. Materials, Equipment and Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
 - 1. Type and capacity of installation equipment used; continuous.
 - 2. Pile dimensions; continuous.
 - 3. Tip elevation; continuous.
 - 4. Final depth; continuous.

5. Final installation torque; continuous.
6. Other installation data requested in writing by MBI Companies; continuous.

3.10 SPECIAL INSPECTIONS FOR VERTICAL MASONRY FOUNDATION ELEMENTS

- A. Vertical Masonry Foundation Elements are subject to the same special inspection requirements listed in the "Special Inspections for Masonry Construction" Article of this section.

3.11 SPECIAL INSPECTIONS FOR SPRAYED FIRE RESISTANT MATERIALS

- A. Sprayed Fire Resistant Materials, General:
1. Verify compliance of sprayed-fire resistant materials with specific fire-rated assemblies indicated in approved Contract Documents, and with applicable requirements of the building code.
 2. Perform special inspections after rough installation of electrical, mechanical, plumbing, automatic fire sprinkler and suspension systems for ceilings.
- B. Physical and visual tests: Verify compliance with fire resistance rating.
1. Condition of substrates; periodic.
 2. Thickness of sprayed fire resistant material; periodic.
 3. Density of sprayed fire resistant material in pounds per cubic foot; periodic.
 4. Bond strength (adhesion and cohesion); periodic.
 5. Condition of finished application; periodic.
- C. Structural member surface conditions:
1. Inspect structural member surfaces before application of sprayed fire resistant materials; periodic.
 2. Verify preparation of structural member surfaces complies with approved Contract Documents and manufacturer's written instructions; periodic.
- D. Application:
1. Ensure minimum ambient temperature before and after application complies with the manufacturer's written instructions; periodic.
 2. Verify area where sprayed fire resistant material is applied is ventilated as required by the manufacturer's written instructions during and after application; periodic.
- E. Thickness: Verify that no more than 10 percent of thickness measurements taken from sprayed fire resistant material are less than thickness required by fire resistance design in approved Contract Documents. In no case shall the thickness of the sprayed fire resistant material be less than the minimum below.
1. Minimum Allowable Thickness: Tested according to ASTM E605/E605M, periodic.
 - a. Design thickness 1 inch or greater: Design thickness minus 1/4 inch.
 - b. Design thickness greater than 1 inch: Design thickness minus 25 percent.
 2. Floor, Roof and Wall Assemblies: Test thickness according to ASTM E605/E605M with no less than four measurements per 1,000 square feet of sprayed area on each story of the structure or portion thereof; periodic.
 - a. Cellular Decks: Measure thickness within a single 12 inch by 12 inch area. Make a minimum of four measurements arranged symmetrically in testing area.
 - b. Fluted Decks: Measure thickness within a single 12 inch by 12 inch area. Make a minimum of four measurements arranged symmetrically in testing area and include one example each of valley, crest and sides. Report the average of the four measurements.
 3. Structural Members: Test according to ASTM E605/E605M. Test no less than 25 percent of structural members on each story of the structure or portion thereof; periodic.
 - a. Beams and girders: Make nine thickness measurements around beam or girder at each end of a 12 inch by 12 inch length.
 - b. Joists and trusses: Make seven thickness measurements around joist or truss at each end of a 12 inch by 12 inch length.
 - c. Wide flanged columns: Make twelve thickness measurements around column at each end of a 12 inch by 12 inch length.
 - d. Hollow structural sections and pipe columns: Make four thickness measurements around hollow structural section or pipe column at each end of a 12 inch by 12 inch length.

- F. Density: Verify density of sprayed fire resistant material is no less than density required by the fire resistance design in the approved Contract Documents.
 - 1. Floor, Roof and Wall Assemblies: Test according to ASTM E605/E605M with no less than one sample per 2,500 square feet of sprayed area on each story of the structure or portion thereof; periodic.
 - 2. Beams, Girders, Trusses and Columns: Test according to ASTM E605/E605M with no less than one sample per 2,500 square feet of sprayed area on each story of the structure or portion thereof; periodic.
- G. Bond Strength: Verify adhesive and cohesive bond strength of sprayed fire resistant materials is no less than 150 pounds per square foot when in-place samples of the cured material are tested according to ASTM E736/E736M and as described below.
 - 1. Floor, roof and wall assemblies: Test no less than one sample per each 2,500 square feet of sprayed area on each story of the structure or portion thereof; periodic.
 - 2. Structural members: Test no less than one sample from each type of structural member in each 2,500 square feet of each story of the structure or portion thereof; periodic.
 - 3. Primer, paint and encapsulant bond tests: When sprayed fire resistant material is applied to a primed, painted or encapsulated surface for which acceptable material to substrate performance has not been determined, conduct bond test.

3.12 SPECIAL INSPECTIONS FOR MASTIC AND INTUMESCENT FIRE RESISTANT COATINGS

- A. Verify mastic and intumescent fire resistant coatings comply with AWCI 117 and the fire resistance rating indicated on approved Contract Documents.

3.13 SPECIAL INSPECTIONS FOR EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)

- A. Verify water resistive barrier coating applied over sheathing complies with ASTM E2570/E2570M.

3.14 SPECIAL INSPECTIONS FOR FIRE RESISTANT PENETRATIONS AND JOINTS

- A. Verify penetration firestops in accordance with ASTM E2174.
- B. Verify fire resistant joints in accordance with ASTM E2393.

3.15 SPECIAL INSPECTIONS FOR SMOKE CONTROL

- A. Test smoke control systems as follows:
 - 1. Record device locations and test system for leakage after erection of ductwork but before starting construction that conceals or blocks access to system.
 - 2. Test and record pressure difference, flow measurements, detection function and controls after system is complete and before structure is occupied.

3.16 SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE

- A. Seismic Force-Resisting Systems: Comply with the quality assurance plan requirements of AISC 341.
- B. Structural Steel: Comply with the quality assurance plan requirements of AISC 341.
- C. Structural Wood:
 - 1. Field gluing; continuous.
 - 2. Nailing, bolting, anchoring and other fastening of components within the seismic force-resisting system; periodic.
- D. Cold Formed Steel Light Frame Construction:
 - 1. Field welding; periodic.
 - 2. Screw attachment, bolting, anchoring and other fastening of components within the main seismic force-resisting system; periodic.
- E. Storage Racks and Access Floors: Anchorage; periodic.
- F. Architectural Components: Erection and fastening of components below; periodic.
 - 1. Exterior cladding.
 - 2. Interior and exterior veneer.

3. Interior and exterior non-loadbearing walls and partitions.

G. Mechanical and Electrical Components:

1. Anchorage of electric equipment required for emergency or standby power systems; periodic.
2. Installation and anchorage of other electrical equipment; periodic.
3. Installation of piping systems for flammable, combustible or highly-toxic contents and associated mechanical units; periodic.
4. Installation of HVAC ductwork that will contain hazardous materials; periodic.
5. Vibration isolation systems where the approved Contract Documents require a nominal clearance of 1/4 inch or less between support frame and seismic restraint; periodic.
6. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic fire sprinkler systems are installed.
 - a. Verify clearances have been provide as required by Section 13.2.3 of ASCE 7.
 - b. Verify nominal clearance of 3 inches has been provided between fire protection sprinkler drops and sprigs and: structural members not used collectively or independently to support the sprinklers; equipment attached to the building structure; and other systems' piping.

H. Seismic Isolation Systems:

1. Fabrication and installation of isolator units; periodic.
2. Fabrication and isolation of energy dissipation devices; periodic.

I. Cold-Formed Steel Special Bolted Moment Frames:

1. Installation in seismic force-resisting systems; periodic.

J. Designated Seismic System Verification: Verify label, anchorage or mounting complies with certificate of compliance provided by manufacturer or fabricator.

K. Structural Testing for Seismic Resistance:

1. Concrete reinforcement: Comply with ACI 318, Section 21.1.5.2.
 - a. Materials Obtain mill certificates demonstrating compliance with ASTM A615/A615M; periodic.
 - b. Welding: Perform chemical tests complying with ACI 318, Section 3.5.2 to determine weldability; periodic.
2. Structural Steel: Comply with the quality assurance requirements of AISC 341.
3. Non-Structural Components:
 - a. General Design Requirements: Obtain manufacturer certification of compliance with requirements of ASCE 7, Section 13.2.1; periodic.
 - b. Designated Seismic Force-Resisting Non-Structural System Components: Obtain manufacturer certification of compliance with ASCE 7, Section 13.2.2; periodic.
4. Seismically Isolated Structures: Test system in accordance with ASCE 7, Section 17.8.

L. Structural Observations for Seismic Resistance: Visually observe structural system for general compliance with the approved Contract Documents; periodic.

3.17 SPECIAL INSPECTIONS FOR WIND RESISTANCE

A. Structural Wood:

1. Field gluing of components in the main wind force-resisting system; continuous.
2. Nailing, bolting, anchoring and other fastening of components within the main wind force-resisting system; periodic.

B. Cold-Formed Steel Light Frame Construction:

1. Field welding; periodic.
2. Screw attachment, bolting, anchoring and other fastening of components within the main wind force-resisting system; periodic

C. Wind Resisting Components:

1. Roof covering, roof deck, and floor framing connections; periodic.
2. Exterior wall covering and wall connections to roof and floor diaphragms and framing; periodic.

- D. Structural Observations for Wind Resistance: Visually observe structural system for general compliance with the approved Contract Documents; periodic.

3.18 STRUCTURAL OBSERVATIONS FOR STRUCTURES

- A. Provide Observations: For structure where one or more of the following conditions exist:
 1. The structure is classified as Risk Category IV.
 2. The structure is a high-rise building.
 3. Such observation is required by the registered design professional responsible for the structural design.
 4. Such observation is specifically required by AHJ.

3.19 OTHER SPECIAL INSPECTIONS

- A. Provide for special inspection of work that, in the opinion of the AHJ, is unusual in nature.
- B. For the purposes of this section, work unusual in nature includes, but is not limited to:
 1. Construction materials and systems that are alternatives to materials and systems prescribed by the building code.
 2. Unusual design applications of materials described in the building code.
 3. Materials and systems required to be installed in accordance with the manufacturer's instructions when said instructions prescribe requirements not included in the building code or in standards referenced by the building code.
- C. Alternative Test Procedures: Where approved rules and standards do not exist, test materials and assemblies as required by AHJ or provide AHJ with documentation of quality and manner in which those materials and assemblies are used.
- D. Load Tests:
 1. Proposed Construction and Construction in Progress: Where required by code, conduct tests listed below.
 - a. Load test procedures specified in code; periodic.
 - b. Load test procedures not specified in code; periodic.
 - c. Loadbearing Wall and Partition Assemblies: Load test with and without window framing; periodic.
 - d. Exterior Window and Door Assemblies: Wind load design pressure test; periodic.
 2. Completed Construction: Where required by code, conduct tests listed below.
 - a. Load test procedures specified in code; periodic.
 - b. Load test procedures not specified in code; periodic.

3.20 SPECIAL INSPECTION AGENCY DUTIES AND RESPONSIBILITIES

- A. Special Inspection Agency shall:
 1. Verify samples submitted by Contractor comply with the referenced standards and the approved Contract Documents.
 2. Provide qualified personnel at site. Cooperate with MBI Companies and Contractor in performance of services.
 3. Perform specified sampling and testing of products in accordance with specified reference standards.
 4. Ascertain compliance of materials and products with requirements of Contract Documents.
 5. Promptly notify MBI Companies and Contractor of observed irregularities or non-compliance of work or products.
 6. Perform additional tests and inspections required by MBI Companies.
 7. Attend preconstruction meetings and progress meetings.
 8. Submit reports of all tests or inspections specified.
- B. Limits on Special Inspection Agency Authority:
 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the work.

C. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by MBI Companies.

D. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.21 TESTING AGENCY DUTIES AND RESPONSIBILITIES

A. Testing Agency Duties:

1. Test samples submitted by Contractor.
2. Provide qualified personnel at site. Cooperate with MBI Companies and Contractor in performance of services.
3. Perform specified sampling and testing of products in accordance with specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify MBI Companies and Contractor of observed irregularities or non-compliance of work or products.
6. Perform additional tests and inspections required by MBI Companies.
7. Attend preconstruction meetings and progress meetings.
8. Submit reports of all tests or inspections specified.

B. Limits on Testing or Inspection Agency Authority:

1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the work.

C. On instructions by MBI Companies, perform re-testing required because of non-compliance with specified requirements, using the same agency.

D. Contractor will pay for re-testing required because of non-compliance with specified requirements.

3.22 CONTRACTOR DUTIES AND RESPONSIBILITIES

A. Contractor Responsibilities, General:

1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
3. Provide incidental labor and facilities:
 - a. To provide access to work to be tested or inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
 - c. To facilitate tests or inspections.
 - d. To provide storage and curing of test samples.
4. Notify MBI Companies and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Retain special inspection records.

B. Contractor Responsibilities, Seismic Force-Resisting System, Designated Seismic System, and Seismic Force-Resisting Component: Submit written statement of responsibility for each item listed in the Statement of Special Inspections to AHJ and Owner prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.

C. Contractor Responsibilities, Wind Force-Resisting System and Wind Force-Resisting Component: Submit written statement of responsibility for each item listed in the Statement of Special Inspections to AHJ and Owner prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.

3.23 MANUFACTURERS' AND FABRICATORS' FIELD SERVICES

- A. When specified in individual specification sections, require material suppliers, assembly fabricators, or product manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, to test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to MBI Companies 30 days in advance of required observations.
 - 1. Observer subject to approval of MBI Companies.
 - 2. Observer subject to approval of Owner.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Dewatering
- B. Temporary utilities.
- C. Temporary telecommunications services.
- D. Temporary sanitary facilities.
- E. Temporary Controls: Barriers, enclosures, and fencing.
- F. Security requirements.
- G. Vehicular access and parking.
- H. Waste removal facilities and services.
- I. Project identification sign.
- J. Field offices.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

1.03 DEWATERING

- A. Provide temporary means and methods for dewatering all temporary facilities and controls.
- B. Maintain temporary facilities in operable condition.

1.04 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power and metering, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.
- B. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- C. Existing facilities may not be used.
- D. New permanent facilities may be used.
- E. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.05 TELECOMMUNICATIONS SERVICES

- A. Provide equivalent equipment and connections for Owner's field office.
- B. Telecommunications services shall include:
 - 1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
 - 2. Telephone Land Lines: One line, minimum; one handset per line.
 - 3. Internet Connections: Minimum of one; DSL modem or faster.
 - 4. Email: Account/address reserved for project use.
 - 5. Facsimile Service: Minimum of one dedicated fax machine/printer, with dedicated phone line.
 - 6. Facsimile Service: Fax-to-email software on personal computer.
 - 7. Project web site.

1.06 TEMPORARY SANITARY FACILITIES

- A. Provide adequate temporary toilet facilities for the use of workmen, conforming to applicable laws, ordinances, and governmental regulations. Service sanitary facilities on a weekly basis. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.
- C. At end of construction, temporary toilet facilities shall be removed from the site.

1.07 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.08 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.09 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.10 INTERIOR ENCLOSURES

- A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:
 - 1. STC rating of 35 in accordance with ASTM E90.
 - 2. Maximum flame spread rating of 75 in accordance with ASTM E84.
- C. Paint surfaces exposed to view from Owner-occupied areas.

1.11 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program.

1.12 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.

- E. Designated existing on-site roads may be used for construction traffic.
- F. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.13 WASTE REMOVAL

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site periodically.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.14 PROJECT IDENTIFICATION

- A. On or near the field office, the Contractor shall install a bulletin board upon which to post legally required notices. The bulletin board shall be of adequate size to contain all required notices and be so constructed as to protect the postings from obliteration by the weather.
- B. The Architect shall provide one painted sign stating the Architect (MBI Companies, Inc.). Location of sign shall be as directed by the Architect. The Contractor shall erect a substantial wood frame to support the sign provided by the Architect.
- C. Maintain all bulletin boards and job signs in good condition from start to completion of the work.
- D. No other signs are allowed without Owner permission except those required by law.

1.15 FIELD OFFICES

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Locate offices a minimum distance of 30 feet from existing and new structures.

1.16 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Demonstration and instruction of Owner personnel.
- I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.
- D. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures, and temporary interior partitions.
- E. Section 01 74 19 - Construction Waste Management and Disposal: Additional procedures for trash/waste removal, recycling, salvage, and reuse.
- F. Individual Product Specification Sections:
 - 1. Advance notification to other sections of openings required in work of those sections.
 - 2. Limitations on cutting structural members.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.04 SUBMITTALS

- A. See Section 01 30 00.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
 - 6. Include in request:
 - a. Identification of Project.
 - b. Location and description of affected work.
 - c. Necessity for cutting or alteration.

- d. Description of proposed work and products to be used.
- e. Effect on work of Owner or separate Contractor.
- f. Written permission of affected separate Contractor.
- g. Date and time work will be executed.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 QUALIFICATIONS

- A. For demolition work, employ a firm specializing in the type of work required.
- B. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to MBI Companies. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities.

1.06 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
 - 2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
- H. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
 - 1. Pest Control Service: Weekly treatments.
- I. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
- J. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.07 COORDINATION

- A. See Section 01 10 00 - Summary for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.

- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 25 00 – Substitution Procedures, and on 00 63 25 – Substitution Request Form.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or mis-fabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify MBI Companies four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 1. Review conditions of examination, preparation and installation procedures.

2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to MBI Companies, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify MBI Companies of any discrepancies discovered.

C. Contractor shall locate and protect survey control and reference points.

D. Control datum for survey is that established by Owner provided survey.

E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

F. Promptly report to MBI Companies the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to MBI Companies.

H. Utilize recognized engineering survey practices.

I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:

1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
2. Grid or axis for structures.
3. Building foundation, column locations, and ground floor elevations.

J. Periodically verify layouts by same means.

K. Maintain a complete and accurate log of control and survey work as it progresses.

3.05 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.

1. Verify that construction and utility arrangements are as indicated.
2. Report discrepancies to MBI Companies before disturbing existing installation.
3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

C. Remove existing work as indicated and as required to accomplish new work.

1. Remove items indicated on drawings.
2. Relocate items indicated on drawings.

3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- E. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- F. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- G. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- H. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- I. Clean existing systems and equipment.
- J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- K. Do not begin new construction in alterations areas before demolition is complete.
- L. Comply with all other applicable requirements of this section.
- 3.07 CUTTING AND PATCHING
- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-complying work.

- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.
- J. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.

- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 DEMONSTRATION AND INSTRUCTION

A. Conduct training session for Owner's designated personnel covering various mechanical, electrical, and other operating features for familiarization with the physical plant equipment and operation. One copy of the required (see various technical sections on project closeout) mechanical operations manual shall be on hand during this session along with the mechanics familiar with all equipment. These mechanics shall have on hand such tools and/or equipment to reveal controls and mechanic access areas. The instruction session shall be scheduled for a full day but in no case less than the minimum time required to review each type of equipment/operation. The minimum areas of instruction shall be:

1. Location and operation of project site water valves, meters and other operational equipment.
2. Location and operation of project electrical disconnects.
3. Operation of sewage handling facilities.
4. Sprinkler valves, alarms, test and operation.
5. Project landscape irrigation operation.
6. Project Site lighting operation/maintenance.
7. Storm sewer operation/configuration.
8. Refuse containment areas.
9. Roof maintenance/warranty considerations. Traffic cautions.
10. HVAC unit operations/maintenance (filters and thermostats, boiler and/or cooling tower maintenance).
11. Interior lighting, lamp and ballast replacement.
12. Keying and lock operations.
13. Locations and use of required replacement finish materials such as floor and ceiling tiles and panels.
14. Notification procedures for Contractor warranty work.

B. Video Tape Owner's Instruction Session and provide two (2) copies on DVD to Owner as part of Close Out Documentation.

3.12 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.13 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.14 SUBSTANTIAL COMPLETION

- A. Notify the owner not less than twenty-one (21) days prior to the date of substantial completion to allow notification of tenants.
- B. Submit written certification to Architect that Project, or designated portion of Project, is substantially complete. Include a list of items to be completed or corrected as a result of his inspection of the work.

- C. Submit the Certificate of Occupancy issued by the local building authority to the Architect for forwarding to the Owner.
- D. The Architect will make an inspection within seven (7) days after receipt of certification, together with Owner's Representative.
- E. Should the Architect consider the work substantially complete:
 1. The Contractor shall prepare, and submit to the Architect, a list of items to be completed or corrected, as determined by the Architect's inspection.
 2. The Architect will prepare and issue a certificate of substantial completion, AIA document G704, complete with signatures of Owner, Contractor, and Architect, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect.
 3. The Owner will occupy the project, under provisions stated in certificate of substantial completion.
 4. The Contractor will complete work listed for completion or correction, within the designated time.
 5. Refer to Supplementary Conditions Article 9.10.6 for failure to complete in a timely manner.
- F. Should the Architect consider that the Work is not Substantially Complete:
 1. He shall immediately notify Contractor, in writing stating reasons.
 2. The Contractor shall complete the Work, and send second written notice to the Architect, certifying that the project or designated portion of project, is substantially complete.
 3. The Architect will reinspect the work at the Contractor's expense.

3.15 CLOSEOUT PROCEDURES AT FINAL COMPLETION:

- A. As a precedent to final acceptance of the work and issuance of Certificate of Final Payment, certain submittals shall be made as specified in the various sections of the specifications. All such submittals shall be delivered to the Architect, in the form and number of copies specified, prior to or with the Contractor's request for final payment. Submittals shall include but not be limited to:
 1. General Contractor's Affidavit, Waiver and Release of Lien Statements and Consent of Surety, to final payment as well as release of lien statements from all subcontractors and major material suppliers as specified in Subparagraph 9.10.2 of the General Conditions. These documents shall be addressed to the Owner and shall be original signed documents and not reproduced copies. Two (2) sets of these drawings shall be submitted.
 2. Written guarantees and warranties as specified in the various other sections of the specifications.
 3. Record drawings as specified in the General Conditions and in Divisions 15 and 16. Include electronic files provided to Contractor for use in the project with as-built information added.
 4. One copy of each final approved shop drawing submitted during the course of the project. Include electronic files provided to Contractor for use in the project with as-built information added.
 5. Three copies of operation and maintenance data for mechanical equipment and electrical equipment.
 6. Letter stating that to the best of the Contractor's knowledge, no asbestos containing materials or other Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended
 7. Contract Close-Out Submittals, except for record drawings, shall be submitted in commercial quality three ring binders with durable plastic covers. Identify the project on the face and side of the binders. Provide a cover sheet giving complete Project Title, Contractor's and Architect's name, address, phone number, name of project superintendent, and related general information. Include a Table of Contents to identify material in the Project Data Binders and a complete listing of subcontractors and material suppliers. Provide copies of all Certificates, Warranties and related documents as well as Product Data, Maintenance and Operation Data and related information required by the Contract Documents or furnished with items included in the Project. Two (2) sets of these documents shall be submitted.
- B. Submit written certification that the Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for final inspection by Owner and Architect.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.

3.16 WARRANTIES

- A. Provide notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three D side ring binders with durable plastic covers. Note: This is in addition to copies of warranties provided with operation and maintenance binders.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as warranty period.

3.17 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance, and extra materials in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed, obtain receipt prior to final payment.

END OF SECTION

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- E. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- C. Section 01 70 00 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

- A. See Section 01 30 00.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.
- D. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and MBI Companies.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 - 1. Pre-bid meeting.
 - 2. Pre-construction meeting.
 - 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 00 72 00 - General Conditions and 00 73 00 - Supplementary Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- D. Individual Product Sections: Specific requirements for operation and maintenance data.
- E. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to MBI Companies with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. MBI Companies will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with MBI Companies comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.

- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 1. Measured depths of foundations in relation to finish first floor datum.
 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 4. Field changes of dimension and detail.
 5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 1. Product data, with catalog number, size, composition, and color and texture designations.
 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 1. Description of unit or system, and component parts.
 2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.
 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

- D. Include color coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - 1. Include HVAC outdoor and exhaust air damper calibration strategy.
 - a. Include provisions which ensure that full closure of dampers can be achieved.
 - 2. Include Carbon Dioxide Monitoring Protocol.
 - 3. Include Carbon Monoxide Monitoring Protocol.
 - 4. Include Frost Mitigation Strategy for ventilation heat-recovery system.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- O. Include test and balancing reports.
- P. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of MBI Companies, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.

2. Table of Contents, of all volumes, and of this volume.
3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Photocopies of warranties and bonds.
4. Design Data: To allow for addition of design data furnished by MBI Companies or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.
- F. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- G. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- H. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- I. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Removal of existing debris.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 10 00 - Summary: Sequencing and staging requirements.
- C. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 57 13 - Temporary Erosion and Sediment Control.
- E. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- F. Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- G. Section 02 41 00 - Demolition: Removal of built elements and utilities.
- H. Section 02 65 00 - Underground Storage Tank Removal.
- I. Section 31 22 00 - Grading: Topsoil removal.
- J. Section 31 22 00 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- K. Section 31 23 23 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- L. Section 31 23 23 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.
- M. Section 32 93 00 - Plants: Relocation of existing trees, shrubs, and other plants.
- N. Section 32 93 00 - Plants: Pruning of existing trees to remain.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
 - 1. Vegetation removal limits.
 - 2. Areas for temporary construction and field offices.

1.04 QUALITY ASSURANCE

- A. Clearing Firm: Company specializing in the type of work required.
 - 1. Minimum of 5 years of documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill Material: As specified in Section 31 22 00 - Grading

PART 3 EXECUTION

3.01 SITE CLEARING

- A. Comply with other requirements specified in Section 01 70 00.

- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

3.03 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, and planting beds.
- B. Do not begin clearing until vegetation to be relocated has been removed.
- C. Do not remove or damage vegetation beyond the limits indicated on drawings.
 1. 40 feet outside the building perimeter.
 2. 10 feet each side of surface walkways, patios, surface parking, and utility lines less than 12 inches in diameter.
 3. 15 feet each side of roadway curbs and main utility trenches.
 4. 25 feet outside perimeter of pervious paving areas that must not be compacted by construction traffic.
 5. Exception: Specific trees and vegetation indicated on drawings to be removed.
 6. Exception: Selective thinning of undergrowth specified elsewhere.
- D. Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
 1. At vegetation removal limits.
 2. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
 3. Around other vegetation to remain within vegetation removal limits.
 4. See Section 01 50 00 for fence construction requirements.
- E. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum disturbance of the subsoil.
- F. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
 1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
 2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
 3. Existing Stumps: Treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
 4. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.
 5. Fill holes left by removal of stumps and roots, using suitable fill material, with top surface neat in appearance and smooth enough not to constitute a hazard to pedestrians.
- G. Dead Wood: Remove all dead trees (standing or down), limbs, and dry brush on entire site; treat as specified for vegetation removed.
- H. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.04 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

- A Work shall include, but not be limited to: Protection of existing trees to remain, removal of trees and other vegetation scheduled to be removed, topsoil stripping, clearing, grubbing, and removal of above and below grade improvements.

1.02 RELATED DOCUMENTS

- A Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1, General Requirements, apply to the work under this section.

Section 31 20 00 – Earthwork.

1.03 PROJECT CONDITIONS

- A Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

- B Protection of Existing Improvements:

1. Provide protections necessary to prevent damage to existing improvements indicated to remain.
2. Protect improvements on adjoining properties and on the Owner's property.
3. Restore damaged improvements to their original condition, as acceptable to property owners and other parties having jurisdiction

- C Protection of Existing Trees and Vegetation:

1. Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering or trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within the drip line. Provide temporary guards to protect trees and vegetation to be left standing.
2. Water trees and other vegetation to remain within the limits of the contract work as required to maintain their health during the course of construction operations.
3. Provide protection for roots over 1-1/2" in diameter which are cut during construction operations. Coat the cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out. Cover with earth as soon as possible.
4. Repair or replace trees and vegetation indicated to remain which are damaged by construction operations, in a manner acceptable to the Architect. Employ a licensed arborist to repair damages to trees and shrubs. Replace trees which cannot be repaired and restored to full growth status, as determined by the arborist.

- D Salvageable Improvements: Carefully remove items indicated to be salvaged, and store on the Owner's premises where indicated or directed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SITE CLEARING

- A General:

1. Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions as required to permit installation of new construction. Remove similar items elsewhere on the site or premises

unless specifically indicated to remain. Removal includes digging out and off-site disposing of roots and stumps.

2. Carefully and cleanly cut minor roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction.

B Topsoil:

1. Topsoil is defined as friable clay loam surface soil found in depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.
2. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material.
3. Remove heavy growths of grass from areas before stripping.
4. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to root system.
5. Stockpile topsoil in storage piles in areas shown, or where otherwise directed. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent windblown dust.

C Clearing and Grubbing:

1. Clear site of trees, shrubs and other vegetation, except for those specifically indicated to be left standing.
2. Completely remove stumps, roots, and other debris protruding through the ground surface.
3. Use only hand methods for grubbing inside the drip lines of trees indicated to be left standing.
4. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
5. Place fill material in horizontal layers not exceeding 6 inches loose depth, and thoroughly compact to a density equal to adjacent original ground.

D Removal of Improvements:

1. Remove above-ground and below-grade improvements as indicated and as necessary to facilitate new construction.
2. Abandonment or removal of certain underground pipe or conduits may be shown on mechanical or electrical drawings, and is included under work of related Division 15 and 16 Sections. Removal of abandoned underground piping or conduit interfering with construction is included in this Section.

3.02 DISPOSAL OF WASTE MATERIALS

A Burning is not permitted on the Owner's property.

B Remove waste materials and unsuitable or excess topsoil from Owner's property and dispose of legally.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

- A Do all excavating, filling, backfilling, grading, and all necessary incidental work in connection therewith, required to install all work shown and specified under the Contract.
- B Work shall include, but not be limited to: Soils Engineer monitoring, topsoiling, and fine grading of areas to be seeded; topsoiling and fine grading of planting areas; excavating and grading for building drives and walks, controlled filling and porous fill.

1.02 RELATED DOCUMENTS

- A Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1, General Requirements, apply to the work under this section.

Section 01 40 00 - Quality Control.
- B The Subsurface Investigation Report is the basis for the design. The Contractor shall make note and comply with suggestions incorporated in the included Soils Engineering Reports relative to cut, fill, compaction, removal of unsatisfactory material, maintenance of site drainage or other soils-related conditions.

1.03 EXAMINATION OF THE SITE

- A Bidders upon work under this section, before submitting bids, shall visit and carefully examine the site so as to familiarize themselves with the existing conditions, including amount of topsoil available, and the difficulties that will affect the execution of the work. The submission of a bid will be construed as evidence that such an examination has been made.

1.04 DETERMINATION OF FOUNDATION BEARING CAPACITY BY GEOTECHNICAL ENGINEER

- A Foundation bearing capacity shall be determined on the basis of scientific analysis utilizing investigations, tests, or studies conducted or provided by the soils testing engineer.
- B Documentation of foundation bearing capacity shall be submitted to the Structural Engineer of record. Submittal shall identify the project, contain the name, address and registration number of the designated engineer and shall indicate type and frequency of tests performed as well as their location within the project.

1.05 SUBMITTALS

- A Submit one copy of permits and notices obtained from authority having jurisdiction before commencing work.
- B Obtain and submit certification of adequacy of site grading and filling from Testing Laboratory, signed and sealed by the Geotechnical Engineer of record, registered in the state in which the work is performed, stating that work is in accordance with Contract Documents, and that soils are capable of supporting the structure to be constructed under the Contract.
- C If bench marks and other permanent reference points are displaced, obtain and submit certification, signed and sealed by a licensed surveyor, of proper re-establishment of bench marks and reference points.
- D The Contractor shall submit samples of approximately 50 pounds each of the fill materials he proposes to use to testing agency approved by the Owner at least ten (10) days prior to its use. The testing agency shall test such samples, classify them as specified by U.S. Bureau of Public Roads, and determine the moisture-density in pounds per cubic foot of oven-dried weight.

1.06 PROJECT CONDITIONS

- A The Subsurface Investigation Report is the basis for the design. The Contractor shall make note and comply with suggestions incorporated in the included Soils Engineering Reports relative to cut, fill, compaction, removal of unsatisfactory material, maintenance of site drainage or other soils-related conditions. Any conflicts or contradictions between the Subsurface Investigation Report and any portion of this specification, the conflict shall be brought to the attention of the Architect and clarified prior to proceeding with the work of this section.
- B Additional test borings and other investigatory operations may be undertaken by Contractor at the Contractor's option. However, no change in Contract Amount will be made for such operations.
- C Notify Owner's representative when excavations have reached required elevations. If it is determined that bearing materials are unsuitable, continue excavations until suitable bearing is encountered. Contract Amount may be adjusted by an appropriate Contract modification.
- D Locate and, where indicated to remain, protect and support existing utilities. If uncharted or incorrectly charted items are encountered, immediately notify utility company and cooperate with utility company's directives. Cooperate with Owner and utility companies in order to keep services and facilities in operation. Repair any damages caused by Work to the satisfaction of the affected utility company.
- E If utility service must be interrupted, give 72-hour notice to Owner's representative, and obtain written approval prior to such interruption.
- F Provide barricades and warning lights for open excavations. Operate warning lights as and when recommended by authorities having jurisdiction. Remove such protective items when no longer required.
- G Protect structures, utilities, sidewalks, paving, and other facilities from damage due to settlement, lateral movement, undermining, washout, and other hazards resulting from earthwork operations.
- H Root systems of trees to remain are to be protected from damage or drying out; cover exposed roots with burlap.

PART 2 PRODUCTS

2.01 UNIT PRICES

- A The Contractor shall include on his Bid Form, any Unit Prices described in Section 01 21 00.

2.02 ALLOWANCES

- A The Contractor shall include in his Base Bid, any Allowances described in Section 01 21 00.

2.03 DRAINAGE FABRIC

- A Non-woven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
 1. Grab Tensile Strength: 110 lbf (490 N); ASTM D 4632.
 2. Tear Strength: 40 lbf (178 N); ASTM D 4533.
 3. Puncture Resistance: 50 lbf (222 N); ASTM D 4833.
 4. Water Flow Rate: 150 gpm per sq. ft. (100 L/s per sq. m); ASTM D 4491.
 5. Apparent Opening Size: No. 50 (0.3 mm); ASTM D 4751.

2.04 BURIED WARNING AND IDENTIFICATION TAPE

- A. Polyethylene plastic and metallic core or metallic-faced, acid and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read “CAUTION BURIED (intended service) LINE BELOW” or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.

Warning Tape Color Codes:

| | |
|--------|------------------------------------|
| Red | Electric |
| Yellow | Gas, Oil, Dangerous Materials |
| Orange | Telephone and Other Communications |
| Blue | Water Systems |
| Green | Sewer Systems |
| White | Steam Systems |

- B. Warning Tape for Metallic Piping: Acid and Alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of tape shall be 0.003 inch. Tape shall have a minimum strength of 1500 psi lengthwise, and 1250 psi crosswise, with a maximum 350 percent elongation.

2.05 BACKFILL MATERIAL

- A. Backfill material shall be a type that can be compacted to the densities specified under the conditions existing at the site at the time it is placed.
- B. Stone for compacted backfill under slabs shall be evenly graded mixture of crushed stone or crushed or uncrushed gravel, with one hundred percent (100%) passing a 1-1/2” sieve and not more than five percent (5%) passing a No. 4 sieve.
- C. Earth for compacted backfill and engineered fill shall consist of clean granular soils, clay soils, or shale soils having a plasticity index of less than 30 and a minimum density of 90 pounds per cubic foot when compacted to one hundred percent (100%) of its maximum dry density per standard proctor test. (ASTM D698) Material shall be free of vegetation, roots, rocks larger than 2” in any dimension, debris and other deleterious materials. Residual soil excavated at the site may be used for backfill if it meets the specification requirements. The moisture content of the fill soils should be maintained within +3 and -3 percentage points of optimum moisture content determined from the standard Proctor compaction test.
- D. Cohesive soils that have become hard and lumpy or that have been piled and become dry shall be broken up and properly conditioned for optimum moisture content immediately before using as backfill. However, in no case shall earth backfill be wetted or puddled in place.
- E. Backfill at retaining walls (if any) shall be ASTM #57 or #67 stone.

2.06 ENGINEERED FILL

- A. All fill in areas to be occupied by the building(s) and paving, including an area 10 feet outside the perimeters thereof, and any areas noted on the site plan as “Future Expansion” shall be controlled (engineered) fill and the compaction shall be tested by an Agency as specified in Section 01 40 00 Quality Control. Controlled fill in areas of buildings shall be compacted in thin lifts to at least 98% of maximum dry density within 3% of optimum moisture content in accordance with ASTM Specification D-698 (standard proctor). Fill in areas of asphalt paving shall be compacted in thin lifts to at least 98% of maximum dry density within 3% of optimum moisture content in accordance with ASTM Specification D 698. The upper 12 inches of fill beneath pavements and upper 24 inches beneath footings and grade slabs shall be compacted to 100%.

- B Where rock is excavated to 24 inches below footings, the footing excavations shall be refilled from top of rock to bottom of footings with controlled compacted fill.

2.07 TOPSOIL

- A Shall be natural, fertile, agricultural soil, capable of sustaining vigorous plant growth. It shall be of uniform friable clay loam composition throughout, without admixture of subsoil. Soil shall be free of stones, lumps, live plants and their roots, sticks and other extraneous matter. The soil shall not be contaminated with substances harmful to the growth of plants and humans. It shall have a pH range of 5.0 to 7.0, and contain not less than five percent (5%) organic matter. The topsoil shall be free of noxious weeds, grasses or other foreign vegetation which would cause maintenance problems for the Owner after the contract is complete. Contractor shall assume full responsibility for control of noxious species introduced by the addition of soil infested with such species for a period of one year from Provisional Acceptance of the Work.

2.08 UNDERCUT AT FOUNDATIONS

- A Undercut and backfill with compacted stone at foundations shall be performed if directed by the Architect, based on the results of in place testing of earth at foundation sub-grades. In areas where unsuitable soils are encountered at or near foundation level, the foundation shall be undercut to a depth and width of two times the foundation bearing level or to competent bearing soils. The trench shall be backfilled with compacted stone to the level of foundation bearing.

2.09 CLASSIFICATION OF EXCAVATED MATERIALS

- A Materials to be excavated shall be unclassified. Excavating shall include the removal of all materials encountered, both natural and artificial.
- B It is understood that full compensation has been included in the Base Bid amount for all excavation work, including the furnishing and installing of all filling and backfilling materials required, the removal of rock and excavating and backfilling of areas of unsuitable soil except work required because of differing site conditions as defined hereinafter.

2.10 GROUNDWATER IN EXCAVATIONS

- A It is anticipated that ground water will be encountered in the course of the work. The Contractor shall coordinate his work so that any ground water is controlled and directed to existing or newly constructed storm drainage structures. Measures such as temporary trenching and pumping should be anticipated and shall not be given consideration as differing site conditions.

2.11 DIFFERING SITE CONDITIONS

- A The Contractor shall promptly, and before such conditions are disturbed, notify the Architect in writing of sinkholes or caves encountered in excavations.
- B The Architect and the Soil Engineer will promptly investigate the conditions, and if they find such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for performance of any part of the work under this Contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the Contract modified in writing accordingly by a change order.
- C No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in Subparagraph A above; provided, however, the time prescribed therefore may be extended by the Owner.
- D No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under the Contract.

PART 3 EXECUTION

3.01 ROCK EXCAVATION

- A Material to be excavated is assumed to be earth and other materials that can be removed by power shovel, power spade, backhoe, bulldozer, or other equipment normal to excavation work, but not requiring the use of explosives or drills. If rock, as herein defined, is encountered within the limits of excavation, the "Contract Price" will be adjusted. When the rock is encountered, the Contractor shall immediately notify the Architect and shall not proceed further until instructions are given and measurements made for the purpose of establishing volume of rock excavation.
- B Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material exceeding 1 cu.yd. for bulk excavation or 3/4 cu.yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting (when permitted):
1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator equivalent to Caterpillar Model No. 3201; equipped with a 24 inch wide, short-tip-radius rock bucket; rated at not less than 120 hp flywheel power with bucket-curling force of not less than 25,000 lbf and stick-crowd force of not less than 18,700 lbf; measured according to SAE J-1179.
 2. Bulk Excavation: Late-model, track-mounted loader equivalent to Caterpillar Model No. 973; rated at not less than 210 hp flywheel power and developing a minimum of 45,000 lbf breakout force; measured according to SAE J-732.
- C Quantities of excavated rock shall be based on "in-place" volumes. Rock shall be stripped for measurement before excavating, and no rock excavated or loosened before measurement will be allowed or paid for as rock. Measurement and payment therefore, shall be by the number of cubic yards required to bring the excavation to the required surface or grade shown on the Drawings. The Owner may adjust the grades should excessive rock be encountered.
- D Before placing concrete or masonry or rock surfaces, the surfaces shall be leveled off, or shelved, to a slope not exceeding one inch per foot.
- E Payment for rock excavation, as defined above, shall be at the agreed unit price per cubic yard. (Computations will be made in a vertical plane from the lowest point rock is excavated).
- F If the use of explosives is required or desired by the Contractor, Contractor shall present written evidence of appropriate insurance, have written permission from the Architect and all authorities having jurisdiction prior to bringing explosives onto job site or using in the work and shall implement all precautionary measures deemed necessary by all authorities having jurisdiction.
- G If rock is encountered, it shall be excavated to the following limits:
1. Two feet outside of concrete work for which forms are required, except footings.
 2. One foot outside the perimeter of footings and two feet below bottom of footings.
 3. One foot below concrete floor slabs on grade.
 4. In all pipe trenches, 6" below invert elevation of pipe and 2 feet wider than the inside diameter of the pipe, but not less than three feet trench width. Contractor shall notify officials prior to detonation of explosives or beginning noisy drilling operations.
 5. In all other excavated areas: 2 feet below finished grade.

3.02 EXCAVATIONS

- A Excavation shall be to depth and of form and size required for installation of work shown on the drawings. Excavations for foundation walls shall be large enough to provide sufficient working space to permit the proper placing and inspection of forms, waterproofing, sleeves, and similar items, and the installation of

- foundation drains where such drains are shown. Excavation for slabs on grade shall be deep enough to allow for placing porous fill of depths specified under the slabs.
- B Excavation for wall and column footings shall be to firm undisturbed earth or engineered earth fill, sides square and bottoms level. Changes in level of wall footings shall be made by stepping and not by sloping. Trenches, if excavated properly, may be used to maintain the concrete for all footings without the use of forms.
- C Excavations in earth for footings, slabs, walks, and other structures shall not be made to full depths required when freezing temperatures or rain may be expected. Concrete footings shall be placed immediately after excavation is completed. Freezing or water damaged excavations shall be carried deeper as required and backfilled as necessary at no additional cost to the Owner. The Soils Engineer shall observe all footing excavations immediately prior to placing reinforcing steel or concrete.
- D After excavating and rough grading the building areas, and areas to be paved which are in cut, to the required subgrade elevations, and after topsoil has been removed from building areas and areas to be paved which are to receive engineered fill, these areas shall be proof-rolled by the Contractor in the presence of the Soils Engineer using a fully-loaded dump truck or similar pneumatic-tired equipment. Any areas exhibiting significant deflection, in the opinion of the Soil Engineer, shall be stabilized as directed prior to placing any fill. If areas exhibiting deflection cannot be stabilized by compaction, the unsuitable soil shall be undercut as directed by the Soil Engineer and replaced with engineered fill.
- E Any existing underground pipes or electrical conduits that are in service encountered during the excavation shall be temporarily supported and maintained until permanent support has been restored, or until other disposition has been made as directed by the Architect. Existing underground pipes encountered that have been abandoned or are to be abandoned shall be removed to a point outside the construction excavation and plugged.
- F All non-engineered fill shall be removed in the area of the new construction and replaced with engineered fill. All footing excavations shall be examined and approved by a senior engineering technician working under the direct supervision of a Geotechnical engineer immediately prior to placing reinforcing steel or concrete. Modifications shall be made to the excavation if the Soils Engineer determines that the excavation is not in compliance with the drawings or specifications.
- G In cut areas, excavation shall extend below any deleterious materials or unsatisfactory soil as specified.
- H Cut shall not be carried deeper than necessary to reach required elevations. Fill shall be clean earth as specified for backfilling. Fill shall be placed evenly over the entire area to be filled, in layers. Each layer shall be thoroughly compacted to sufficient density to prevent unsightly settlement.
- J. Foundation Bearing Materials Testing: The Soils Engineer shall observe all footing excavations immediately **prior to placing reinforcing steel or concrete.**
1. For foundations bearing on residual (natural) soils, the bearing materials shall be probed with a minimum 1/2 inch diameter steel probe rod to detect weaker materials. Weaker materials detected by probing shall be tested with dynamic cone penetrometer to verify the design bearing capacity. Test frequency shall be one cone penetrometer test per four individual foundations and per 100 linear feet of strip foundations.
 2. For foundations bearing on fill (under the present contract) soils, the bearing materials shall be probed with a minimum 1/2 inch diameter steel probe rod to detect weaker materials. Weaker materials detected by probing shall be tested with a nuclear density gauge to verify the in-place percent compaction conforms to the applicable compaction criteria. Test frequency shall be one nuclear density test per four individual foundations and per 100 linear feet of strip foundations.

3.03 UNSUITABLE SOIL

- A In building or paving areas where unsuitable soil conditions are encountered which cannot be stabilized by compaction, or where in the opinion of the Soil Engineer attempting stabilization by compaction would be unsuccessful, the unsuitable soil shall be excavated and removed from the site and the area backfilled with engineered fill specified hereinafter.
- B Quantities of excavated unsuitable soil shall be based on "in-place" volumes. Quantities of unsuitable soil removed shall be determined from measurements made by the Contractor in the presence of the Soils Engineer. Measurements shall be made by cross sectioning and determining depth of cut with a surveyor's level at periodic intervals, or by other methods mutually agreed upon by the Contractor and the Owner. When unsuitable soil is encountered the contractor shall notify the architect and not proceed further until instructions are given. Payment for unsuitable soil, as defined above, shall be made at the agreed unit price per cubic yard.

3.04 PAYMENT FOR EXCAVATION OF ROCK OR UNSUITABLE SOIL

- A If rock or unsuitable soil is encountered, a change order will be issued to adjust the Contract Amount after all general excavation in building and paving area is complete.

3.05 PROTECTION OF EXISTING WORK AND LANDSCAPE FEATURES

- A Excavating, filling, backfilling and grading shall be performed in such a manner and by such methods that will not damage existing structures, existing underground piping, existing overhead wiring, existing trees (unless noted to be removed), and other landscaping planting.
- B Protect, maintain and restore benchmarks, monuments, and other reference points affected by this work. If bench marks, monuments or other permanent reference points are displaced or destroyed, points shall be re-established and markers reset under supervision of a licensed surveyor who shall furnish Architect with certification of his work.

3.06 PROTECTION OF EXCAVATION

- A Excavation and grading operations shall be performed in a manner that will ensure positive and rapid surface run off of water away from the building area at all times.
- B Banks, slopes and adjacent structures shall be fully protected against harmful sluffing and erosion, by the use of shoring or other temporary construction, if necessary. The excavations shall be kept free of water by temporary dams or drains, pumping or other adequate means, until backfilling is completed.

3.07 STABILITY OF EXCAVATION

- A. General: Comply with local codes, ordinances, and requirements of agencies having jurisdiction.
- B. Slope sides of excavations to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- C. Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross braces, in good serviceable condition. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Extend shoring and bracing as excavation progresses.
- D. Provide permanent steel sheet piling or pressure-creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops a minimum of 2'-6" below final grade and leave permanently in place.

3.08 BACKFILLING

- A Excavation below the finished grade shall be backfilled after removing forms, shoring and similar temporary work and after waterproofing, piping, and other underground work has been installed, inspected and approved. Any caving of excavations or any backfill placed before inspections are completed shall be removed as the Architect or Engineer may deem necessary.
- B Material and compaction of backfill for excavations in controlled fill shall conform to requirements specified for controlled fill.
- C Backfill material for use in areas to be seeded or planted shall be clean earth, free from large stones or rock fragments, large roots and debris, but may contain loam or similar organic matter. Backfill in these areas shall be compacted to a density that will prevent unsightly settlement after the finished grading is completed.
- D All backfill, not otherwise specified, shall be deposited in layers not over 10" loose thickness and each layer shall be compacted by light compaction equipment as it is placed.
- E Install porous backfill under concrete slabs on grade. Porous backfill thickness shall be not less than 4" under slabs. Where rock is excavated to 12 inches below concrete floor slabs on grade excavations shall be refilled from top of rock to bottom of slab with porous backfill.
- F Finish grade shall slope away from the structure on all sides.
- G After all turf, topsoil, roots, debris and other objectionable materials that would cause interference with the compaction of the fill have been removed, the area to be filled shall be scarified and broken to a depth of 8 inches. A thin layer, 3 inches thick, of the specified fill material shall be spread on the scarified base and the whole compacted as specified.
- H The fill shall be formed of successive horizontal layers of 6 to 8 inches loose depth deposited in windows and machine spread. Each layer shall be compacted to the percentage of maximum density at optimum moisture content specified by means of sheeps-foot rollers, or other approved mechanical compacting machines. Where the fill is inaccessible to tamping rollers, it shall be consolidated and compacted by mechanical hand tampers.
- I During the fill operation, field compaction tests by means of the Ottawa Sand and Cone Method, ASTM D1556, or other acceptable method, shall be made as often as deemed necessary by the selected testing agency to determine the percent compaction of any completed layer. There shall be taken not less than one compaction test for every 900 square feet for each foot depth to fill. There shall be a representative of the testing agency present on site at all times when engineered fill is being placed. If such test shows failure to meet the required compaction due to insufficient moisture, too much moisture, insufficient rolling or other causes, the Contractor shall remedy the condition by bringing the material to optimum moisture content or by continued rolling and re-compaction. In no case shall the Contractor be permitted to continue filling if the underlying layers fail to meet compaction requirements.
- J The Contractor shall maintain drainage and dryness so that there will be no undue saturation of the fill while the work is in progress. If an area becomes saturated, the Contractor shall remove all soft materials, scarify and re-compact to the required density.
- K Fill in areas other than those where controlled fill is specified shall be earth fill compacted to a density of approximately ninety-five percent (95%) standard proctor to prevent harmful or unsightly settlement of the finished grade, but need not be tested for specific percentage of compaction.

3.09 ROUGH GRADING

- A Do all grading inside building to bring subgrade to proper level at underside of floor slab.

- B Do all grading outside the building required to bring the site to the finished grades indicated on the drawings. Subgrade in areas to be seeded and planted shall be brought to within 5" of finished grades.
- C Sub-grades under walks and paved areas shall be brought to proper elevations at bottom of surfacing material to within two-tenths of one foot, plus or minus, of the required grades and profiles.
- D Grades not otherwise shown shall be uniform levels or slopes between points where elevations are given, or between such points and existing finished grades.

3.10 EXCAVATION FOR UTILITY TRENCHES

- A Excavate trenches to indicated gradients, lines, depths, and elevations.
 - 1. In the absence of a local code requirement or standard detail, beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B Excavate trenches to uniform widths to provide a working clearance on each side of pipe. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe, unless otherwise indicated.
 - 1. Clearance: As indicated in standard detail or 12" minimum on each side of pipe if no detail is available.
- C Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes. Remove projecting stones and sharp objects along trench subgrade.
 - 1. For ductile or cast iron pipe, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
 - 2. For PVC or other flexible pipe provide 6" bedding layer of #57 stone.
 - 3. For all pipe, excavate trenches 6" deeper than elevation required in rock or other unyielding bearing material to allow for #57 stone bedding layer. Provide specified stone.

3.11 UTILITY TRENCH BACKFILL

- A Place and compact bedding course on trench bottoms where indicated as fill area on plans. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B Backfill trenches excavated under footings and within 18 inches of bottom of footings with concrete to elevation of bottom of footings.
- C Provide 4-inch-thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway sub-base.
- D For typical site installation of ductile or cast iron pipe, place and compact initial backfill of sub-base material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping to avoid damage or displacement of utility system. For PVC or other flexible pipe, backfill with #57 stone (or to plans specifications if differs) to 6" above top of pipe to provide complete stone envelope. Backfill to subgrade with #57 stone in all paved areas.
- E Coordinate backfilling with utilities testing.
- F Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.
- G Place and compact final backfill of satisfactory soil material to final sub grade.

- H Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.12 FINE GRADING

- A All areas where existing grass lawn cover is damaged or disturbed by construction operations. Areas indicated on the site plan to be grass shall be surfaced with topsoil not less than 5” thick after compacting. If the quantity of topsoil existing on the site is insufficient for these purposes, or if the existing topsoil does not conform to the requirements specified above for topsoil, additional topsoil shall be brought to the job or the existing topsoil shall be amended as required to provide the specified quantity and quality of topsoil.
- B After the rough grading and other construction operations have been completed to the point where these areas will not be disturbed by subsequent work, the subgrade shall be cleaned free from waste materials of all kinds, large rocks, and other objectionable material; scarified and pulverized to a depth of 4”; graded to remove remaining surface irregularities; and then covered with the topsoil which was previously removed and stockpiled.
- C If the previously stockpiled topsoil is not sufficient to cover the areas as specified, the Contractor shall furnish additional topsoil obtained from other sources. Topsoil obtained from other sources shall be clean, friable loam free from objectionable weed seeds.
- D Finished grades shall slope away from the building in all cases and shall contain no sinks or dams. Hand trim and rake topsoil to finished grades and leave ready for seeding or planting.

3.13 DISPOSAL OR SURPLUS MATERIAL AND VEGETATION

- A Surplus dirt and rock not required for site improvements shall be removed from the site at the Contractor's expense and to a place of his choosing but only after the Architect has determined it cannot be used on the site. The Owner shall be given the opportunity to keep surplus dirt on site to use as he sees fit. Only after the Owner has stated that they do not wish to retain surplus dirt shall it be removed from the site.
- B All vegetation, roots, trees, etc., are to be hauled away from the site and disposed of by the Contractor and at his expense.
- C Placement of any materials listed in Paragraphs A & B above on any off-site location shall be done only after prior approval of the Owner of the land involved and it shall be the full responsibility of the Contractor and Owner of such land to agree on location, distribution and condition in which such materials are left.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal of topsoil.
- B. Rough grading the site for site structures.
- C. Finish grading.

1.02 RELATED REQUIREMENTS

- A. Section 31 10 00 - Site Clearing.
- B. Section 31 23 16 - Excavation.
- C. Section 31 23 16.13 - Trenching: Trenching and backfilling for utilities.
- D. Section 31 23 16.26 - Rock Removal.
- E. Section 31 23 23 - Fill: Filling and compaction.
- F. Section 32 92 19 - Seeding: Finish ground cover.

1.03 SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Tennessee, Highway Department standards.
 - 1. Maintain one copy on site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil : Complying with State of Tennessee, Highway Department standards.
- B. Topsoil : Topsoil excavated on-site.
 - 1. Graded.
 - 2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities.
- E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

G. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.

H. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

B. Do not remove topsoil when wet.

C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.

E. When excavating through roots, perform work by hand and cut roots with sharp axe.

F. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.

G. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

H. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL

A. Stockpile excavated topsoil on site.

B. Stockpile topsoil to be re-used on site; remove remainder from site.

C. Remove excavated topsoil from site.

D. Stockpile excavated subsoil on site.

E. Stockpile subsoil to be re-used on site; remove remainder from site.

F. Remove excavated subsoil from site.

G. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.05 FINISH GRADING

A. Before Finish Grading:

1. Verify building and trench backfilling have been inspected.
2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.

C. Where topsoil is to be placed, scarify surface to depth of 3 inches.

D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

E. Place topsoil in areas where seeding are indicated.

F. Place topsoil in areas indicated.

G. Place topsoil where required to level finish grade.

H. Place topsoil to thickness as indicated.

I. Place topsoil to nominal depth as noted on drawings.

J. Place topsoil to the following compacted thicknesses:

1. Areas to be Seeded with Grass: 6 inches.
2. Areas to be Sodded: 4 inches.
3. Shrub Beds: 18 inches.

- 4. Flower Beds: 12 inches.
- 5. Planter Boxes: To within 3 inches of box rim.

- K. Place topsoil during dry weather.
- L. Remove roots, weeds, rocks, and foreign material while spreading.
- M. Near plants spread topsoil manually to prevent damage.
- N. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- O. Lightly compact placed topsoil.
- P. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

3.07 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from MBI Companies as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for building volume below grade, footings, pile caps, slabs-on-grade, paving, site structures, and utilities within the building.
- B. Trenching for utilities outside the building to utility main connections.
- C. Temporary excavation support and protection systems.

1.02 RELATED REQUIREMENTS

- A. Section 01 57 13 - Temporary Erosion and Sediment Control: Slope protection and erosion control.
- B. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.
- D. Section 31 10 00 - Site Clearing: Vegetation and existing debris removal.
- E. Section 31 22 00 - Grading: Soil removal from surface of site.
- F. Section 31 22 00 - Grading: Grading.
- G. Section 31 23 16.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- H. Section 31 23 16.26 - Rock Removal: Removal of rock during excavating.
- I. Section 31 37 00 - Riprap.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Temporary Support and Excavation Protection Plan.
- C. Project Record Documents: Record drawings at project closeout according to 01 70 00 - Execution and Closeout Requirements. Show locations of installed support materials left in place, including referenced locations and depths, on drawings.
- D. Shoring Installer's Qualification Statement.
- E. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

1.05 QUALITY ASSURANCE

- A. Temporary Support and Excavation Protection Plan:
 - 1. Indicate sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property.
 - 2. Include drawings and calculations for bracing and shoring.
 - 3. Bracing and shoring design to meet requirements of OSHA92s Excavation Standard, 29 CFR 1926, Subpart P.
- B. Designer Qualifications: For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- C. Shoring Installer Qualifications: Company specializing in performing the shoring and bracing work of this section with minimum 5 years of documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Bedding and Fill to Correct Over-Excavation:
 - 1. See Section 31 23 16.13 for bedding and corrective fill materials at utility trenches.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the work are as indicated.
- B. Survey existing adjacent structures and improvements and establish exact elevations at fixed points to act as benchmarks.
 - 1. Resurvey benchmarks during installation of excavation support and protection systems and notify Owner if any changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.
- C. Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by MBI Companies. If the proposed excavation extends more than 1 foot into the prevailing groundwater, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by Geotechnical Engineer.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 10 00 for clearing, grubbing, and removal of existing debris.
- C. See Section 31 22 00 for topsoil removal.
- D. Locate, identify, and protect utilities that remain and protect from damage.
- E. Notify utility company to remove and relocate utilities.
- F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- G. Protect plants, lawns, rock outcroppings, and other features to remain.
- H. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by MBI Companies.
- I. See Sections 01 70 00 for underpinning and shoring of adjacent structures that could be damaged by excavating work.

3.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

- A. Excavation Safety: Comply with OSHA92s Excavation Standard, 29 CFR 1926, Subpart P.
 - 1. Excavations in stable rock or in less than 5 feet in depth in ground judged as having no cave-in potential do not require excavation support and protection systems.
 - 2. Depending upon excavation depth, time that excavation is open, soil classification, configuration and slope of excavation sidewalls, design and provide an excavation support and protection system that meets the requirements of 29 CFR 1926, Subpart P:
 - a. Sloping and benching systems.
 - b. Support systems, shield systems, and other protective systems.
- B. Leave excavation support and protection systems, used as formwork or within 10 feet of existing foundations, permanently in place, unless otherwise noted.
 - 1. Cut off top 4 feet below grade, abandon remainder.

- C. Excavation support and protection systems not required to remain in place may be removed subject to approval of Owner or Owner's Representative.
 - 1. Remove temporary shoring and bracing in a manner to avoid harmful disturbance to underlying soils and damage to buildings, structures, pavements, facilities and utilities.

3.04 EXCAVATING

- A. Excavate to accommodate new structures and construction operations.
 - 1. Excavate to the specified elevations.
 - 2. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
 - 3. Cut utility trenches wide enough to allow inspection of installed utilities.
 - 4. See Section 31 23 16.26 for required excavation clearances for pipes in utility trenches.
 - 5. Hand trim excavations. Remove loose matter.
- B. Notify MBI Companies of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Preparation for Piling Work: Excavate to working elevations. Coordinate special requirements for piling.
- D. Do not interfere with 45 degree bearing splay of foundations.
- E. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard measured by volume. See Section 31 23 16.26 for removal of larger material.
- F. Provide temporary means and methods, as required, to remove all water from excavations until directed by MBI Companies. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.05 SUBGRADE PREPARATION

- A. See Section 31 23 16.13 for subgrade preparation at utility trenches.

3.06 FILLING AND BACKFILLING

- A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.
- B. Install underground warning tape at buried utilities according to Sections 21 05 53, 22 05 53, 23 05 53, and 26 05 53.
- C. See Section 31 23 16.13 for fill, backfill, and compaction requirements at utility trenches.
- D. See Section 31 22 00 for rough and final grading and topsoil replacement requirements.

3.07 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.
- B. Provide for visual inspection of load-bearing excavated surfaces by MBI Companies before placement of foundations.

3.08 CLEANING

- A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 22 00.
- B. Remove excavated material that is unsuitable for re-use from site.
- C. Remove excess excavated material from site.

3.09 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 31 22 00 - Grading: Site grading.
- C. Section 31 23 16 - Excavation: Building and foundation excavating.
- D. Section 31 23 16.26 - Rock Removal: Removal of rock during excavating.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.
- C. Subgrade Elevations: 4 inches below finish grade elevations indicated on drawings, unless otherwise indicated.
- D. Finish Grade Elevations: 4 inches above subgrade elevations indicated on drawings, unless otherwise indicated.

1.04 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 2017.
- B. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2018.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012, with Editorial Revision (2015).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2012, with Editorial Revision (2015).
- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
- I. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- J. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2017a.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Samples: 10 pound sample of each type of fill; submit in air-tight containers to testing laboratory.
- C. Materials Sources: Submit name of imported materials source.
- D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

E. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill : Complying with State Highway Department standard.

B. General Fill : Subsoil excavated on-site.

1. Graded.
2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
3. Complying with ASTM D2487 Group Symbol CL.

C. Structural Fill : Complying with State Highway Department standard.

D. Structural Fill : Subsoil excavated on-site.

1. Graded.
2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
3. Complying with ASTM D2487 Group Symbol CL.

E. Concrete for Fill: See Section 03 30 00; compressive strength of 2,500 psi.

F. Granular Fill - Gravel – Fill : Pit run washed stone; free of shale, clay, friable material and debris.

1. Graded in accordance with ASTM D2487 Group Symbol GW.
2. Graded in accordance with ASTM C136/C136M, within the following limits:
 - a. 2 inch sieve: 100 percent passing.
 - b. 1 inch sieve: 95 percent passing.
 - c. 3/4 inch sieve: 95 to 100 percent passing.
 - d. 5/8 inch sieve: 75 to 100 percent passing.
 - e. 3/8 inch sieve: 55 to 85 percent passing.
 - f. No. 4 sieve: 35 to 60 percent passing.
 - g. No. 16 sieve: 15 to 35 percent passing.
 - h. No. 40: 10 to 25 percent passing.
 - i. No. 200: 5 to 10 percent passing.

G. Granular Fill - Pea Gravel – Fill : Natural stone; washed, free of clay, shale, organic matter.

1. Grade in accordance with ASTM D2487 Group Symbol GM.
2. Graded in accordance with ASTM C136/C136M, within the following limits:
 - a. Minimum Size: 1/4 inch.
 - b. Maximum Size: 5/8 inch.

H. Topsoil - Fill Type : Complying with State Highway Department standard.

I. Topsoil - Fill : Topsoil excavated on-site.

1. Select.
2. Graded.
3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
4. Acidity range (pH) of 5.5 to 7.5.
5. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.
6. Complying with ASTM D2487 Group Symbol OH.
7. Limit decaying matter.

2.02 ACCESSORIES

- A. Geotextile: Non-biodegradable, woven.

2.03 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. Where fill materials are specified by reference to a specific standard, testing of samples for compliance will be provided before delivery to site.
- D. If tests indicate materials do not meet specified requirements, change material and retest.
- E. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 22 00 for additional requirements.
- C. Locate, identify, and protect utilities that remain and protect from damage.
- D. Notify utility company to remove and relocate utilities.
- E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Protect plants, lawns, rock outcroppings, and other features to remain.
- G. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the MBI Companies.

3.03 TRENCHING

- A. Notify MBI Companies of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Cut trenches wide enough to allow inspection of installed utilities.
- E. Hand trim excavations. Remove loose matter.
- F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
- G. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard measured by volume. See Section 31 23 16.26 for removal of larger material.
- H. Remove excavated material that is unsuitable for re-use from site.
- I. Stockpile excavated material to be re-used in area designated on site.
- J. Stockpile excavated material to be re-used in area designated in Section 31 22 00.

- K. Remove excess excavated material from site.
- L. Provide temporary means and methods, as required, to remove all water from trenching until directed by the MBI Companies. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- M. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the MBI Companies.

3.04 PREPARATION FOR UTILITY PLACEMENT

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.05 BACKFILLING

- A. Backfill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- I. Correct areas that are over-excavated.
 - 1. Thrust bearing surfaces: Fill with concrete.
 - 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- J. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 97 percent of maximum dry density.
 - 2. At other locations: 95 percent of maximum dry density.

- K. Reshape and re-compact fills subjected to vehicular traffic.

3.06 BEDDING AND FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Utility Piping, Conduits, Duct Bank:
 - 1. Bedding: Use general fill.
 - 2. Cover with general fill.
 - 3. Fill up to subgrade elevation.
 - 4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.
- C. At Pipe Culverts:
 - 1. Bedding: Use general fill.
 - 2. Place filter fabric specified in Section 33 05 61 over compacted bedding.
 - 3. Cover with general fill.
 - 4. Fill up to subgrade elevation.
 - 5. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.

D. Over Subdrainage Piping at Foundation Perimeter and Under Slabs:

1. Drainage fill and geotextile: Section 31 05 19.
2. Cover drainage fill with general fill.
3. Fill up to subgrade elevation.
4. Compact to 95 percent of maximum dry density.

E. At French Drains:

1. Use granular fill.
2. Fill up to 8 inches below finish grade.
3. Compact to 95 percent of maximum dry density.

3.07 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.08 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor"), AASHTO T 180, or ASTM D698 ("standard Proctor").
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.09 CLEANING

- A. Leave unused materials in a neat, compact stockpile.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal of identified rock during excavation.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 31 23 23 - Fill: Fill materials.

1.03 DEFINITIONS

- A. Site Rock: Solid mineral material with a volume in excess of 1/3 cubic yard or solid material that cannot be removed with a 3/4 cubic yard capacity power shovel without drilling.
- B. Trench Rock: Solid mineral material with a volume in excess of 1/6 cubic yard or solid material that cannot be removed with a power shovel without drilling.
- C. Rock: Solid mineral material of a size that cannot be removed with a power shovel.

1.04 REFERENCE STANDARDS

- A. NFPA 495 - Explosive Materials Code; 2018.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate the proposed method of blasting, delay pattern, explosive types, type of blasting mat or cover, and intended rock removal method.

1.06 QUALITY ASSURANCE

- A. Seismic Survey Firm: Company specializing in seismic surveys with five years documented experience.
- B. Explosives Firm: Company specializing in explosives for disintegration of rock, with five years documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Explosives: Type recommended by explosive firm following seismic survey and required by authorities having jurisdiction.
- B. Delay Device: Type recommended by explosives firm.
- C. Blast Mat Materials: Type recommended by explosives firm.
- D. Mechanical Disintegration Compound: Grout mix of materials that expand on curing.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify site conditions and note subsurface irregularities affecting work of this section.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.

3.03 ROCK REMOVAL

- A. Excavate and remove rock by mechanical methods only; use of explosives is prohibited.
- B. Mechanical Methods: Drill holes and utilize expansive tools to fracture rock.

- C. If rock is uncovered requiring the explosives method for rock disintegration, notify the MBI Companies.
- D. Form level bearing at bottom of excavations.
- E. Remove shaled layers to provide sound and unshattered base for footings.
- F. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.
- G. Remove excavated materials from site.
- H. Correct unauthorized rock removal in accordance with backfilling and compacting requirements.
- I. Correct unauthorized rock removal to directions of MBI Companies.

3.04 FIELD QUALITY CONTROL

- A. Independent agency field inspection will be provided under provisions of Section 01 40 00 - Quality Requirements.
- B. Provide for visual inspection of foundation bearing surfaces and cavities formed by removed rock.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for building volume below grade, footings, slabs-on-grade, paving, and utilities within the building.
- B. Backfilling and compacting for utilities outside the building to utility main connections.
- C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.
- D. Rigid plastic foam block fill.
- E. Lightweight concrete fill.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 31 22 00 - Grading: Removal and handling of soil to be re-used, and site grading.
- C. Section 31 23 16 - Excavation: Removal and handling of soil to be re-used.
- D. Section 31 23 16.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- E. Section 31 23 16.26 - Rock Removal: Removal of rock during excavating.
- F. Section 31 37 00 - Riprap.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.
- C. Subgrade Elevations: 4 inches below finish grade elevations indicated on drawings, unless otherwise indicated.
- D. Finish Grade Elevations: 4 inches above subgrade elevations indicated on drawings, unless otherwise indicated.

1.04 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 2017.
- B. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2018.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
- D. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- E. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- F. ASTM C796/C796M - Standard Test Method for Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam; 2019.
- G. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012, with Editorial Revision (2015).
- H. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- I. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2012, with Editorial Revision (2015).
- J. ASTM D1603 - Standard Test Method for Carbon Black Content in Olefin Plastics; 2020.

- K. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- L. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
- M. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- N. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus; 2014.
- O. ASTM D6637/D6637M - Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method; 2015.
- P. ASTM D6817/D6817M - Standard Specification for Rigid Cellular Polystyrene Geofoam; 2017.
- Q. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2017a.
- R. ASTM D7557/D7557M - Standard Practice for Sampling of Expanded Geofoam Specimens; 2009, with Editorial Revision (2013).
- S. ICC-ES AC239 - Acceptance Criteria for Termite-Resistant Foam Plastic; 2008, with Editorial Revision (2014).

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data for Manufactured Fill.
- C. Shop Drawings for Manufactured Fill.
 - 1. Submit plan, section, and profile drawings. Indicate size, type, location, and orientation of each geofoam block.
 - 2. Submit location and type of connectors.
 - 3. Indicate proposed weighting or guying.
- D. Soil Samples: 10 pounds sample of each type of fill; submit in air-tight containers to testing laboratory.
- E. Materials Sources: Submit name of imported materials source.
- F. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.
- G. Compaction Density Test Reports.
- H. Lightweight Concrete Test Reports.
- I. Manufacturer's Instructions.
- J. Designer's Qualification Statement.
- K. Manufacturer's Qualification Statement.
- L. Lightweight Concrete Fill Installer's Qualification Statement.
- M. Testing Agency Qualification Statement.
- N. Specimen Warranty.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design of structural fill under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

- C. Lightweight Concrete Fill Applicator Qualifications: Company specializing in performing work of the type specified and with at least 13,000 cubic yards in five years of documented experience and approved by manufacturer.
- D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- E. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.
- C. Manufactured Fill - Geofoam: Review manufacturer's care and handling instructions. Prevent damage to material during delivery, storage, and construction activity.
 - 1. Cover stored geofoam with opaque material when geofoam will exposed to sunlight for more than six months.
 - 2. Protect material from organic solvents, petroleum-based solvents, and open flame.
 - 3. Follow manufacturer's written procedures for handling and installation of geofoam material.
 - 4. Do not place heavy construction equipment or vehicles directly onto geofoam material.
 - 5. Replace geofoam material damaged when by construction equipment or activity, or repair according to manufacturer's written repair criteria and procedures.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide ten year manufacturer warranty for manufactured fill material.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill: Complying with State of Tennessee Highway Department standard.
- B. General Fill: Subsoil excavated on-site.
 - 1. Graded.
 - 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
 - 3. Complying with ASTM D2487 Group Symbol CL.
- C. Structural Fill: Complying with State of Tennessee Highway Department standard.
- D. Structural Fill: Subsoil excavated on-site.
 - 1. Graded.
 - 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
 - 3. Complying with ASTM D2487 Group Symbol CL.
- E. Concrete for Fill: Lean concrete.
- F. Concrete for Fill: See Section 03 30 00; compressive strength of 2,500 psi.
- G. Granular Fill: Coarse aggregate, complying with State of Tennessee Highway Department standard.
- H. Granular Fill - Gravel: AASHTO M 147; with a liquid limit of not more than 25 and a plasticity index of not more than 5 in accordance with ASTM D4318.

- I. Granular Fill - Gravel: Pit run washed stone; free of shale, clay, friable material and debris.
 - 1. Graded in accordance with ASTM D2487 Group Symbol GW.
 - 2. Graded in accordance with ASTM C136/C136M, within the following limits:
 - a. 2 inch sieve: 100 percent passing.
 - b. 1 inch sieve: 95 percent passing.
 - c. 3/4 inch sieve: 95 to 100 percent passing.
 - d. 5/8 inch sieve: 75 to 100 percent passing.
 - e. 3/8 inch sieve: 55 to 85 percent passing.
 - f. No. 4 sieve: 35 to 60 percent passing.
 - g. No. 16 sieve: 15 to 35 percent passing.
 - h. No. 40: 10 to 25 percent passing.
 - i. No. 200: 5 to 10 percent passing.

- J. Granular Fill - Pea Gravel: Natural stone; washed, free of clay, shale, organic matter.
 - 1. Grade in accordance with ASTM D2487 Group Symbol GM.
 - 2. Graded in accordance with ASTM C136/C136M, within the following limits:
 - a. Minimum Size: 1/4 inch.
 - b. Maximum Size: 5/8 inch.

- K. Sand - Fill: Complying with State of Tennessee Highway Department standard.

- L. Sand - Fill: Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter.
 - 1. Grade in accordance with ASTM D2487 Group Symbol SW.
 - 2. Graded in accordance with ASTM C136/C136M; within the following limits:
 - a. No. 4 sieve: 100 percent passing.
 - b. No. 14 sieve: 10 to 100 percent passing.
 - c. No. 50 sieve: 5 to 90 percent passing.
 - d. No. 100 sieve: 4 to 30 percent passing.
 - e. No. 200 sieve: 0 percent passing.

- M. Topsoil: See Section 31 22 00.

- N. Engineered Fill - Lightweight Concrete:
 - 1. Finished Properties, Class II Engineered Fill:
 - a. Cast Density, Maximum: 30 pounds per cubic foot.
 - b. Compressive Strength, Minimum: 41 pounds per square inch.
 - 2. Materials:
 - a. Cement: ASTM C150/C150M.
 - b. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
 - c. Admixtures: As recommended by lightweight concrete fill manufacturer.
 - d. Expansion Material: Manufacturer's recommended expansion material.
 - e. Mix Design: By manufacturer.
 - f. Manufacturers:
 - 1) Elastizell Corp. of America: www.elastizell.com.
 - 2) Substitutions: See Section 01 25 00 – Substitution Procedures.

- O. Manufactured Fill - Geofabric: Rigid foam plastic blocks.
 - 1. Material: Expanded polystyrene (EPS), clearly marked with manufacturer name and product type.
 - 2. Fasteners: Geofabric manufacturer's standard galvanized or stainless steel grip plates that resist 60 pounds lateral force, minimum, when barbs are fully embedded in geofabric blocks.
 - 3. Adhesive: Urethane construction adhesive, recommended by geofabric manufacturer.
 - 4. Termite Treatment: Comply with ICC-ES AC239.
 - 5. Manufacturers:
 - a. Atlas Molded Products, a Division of Atlas Roofing Corporation; Atlas Geofabric: www.atlasmoldedproducts.com.
 - b. Insulfoam LLC; InsulFoam GF: www.insulfoam.com.
 - c. Substitutions: See Section 01 25 00 – Substitution Procedures.

2.02 ACCESSORIES

- A. Vapor Retarder: 10 mil thick, polyethylene.

2.03 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. Where fill materials are specified by reference to a specific standard, testing of samples for compliance will be provided before delivery to site.
- D. If tests indicate materials do not meet specified requirements, change material and retest.
- E. Provide materials of each type from same source throughout the Work.
- F. Manufactured Fill - Geofoam:
 1. Initial Testing: Provide third-party testing indicating compliance with ASTM D6817/D6817M prior to first shipment of material to site. Compliance documentation for other rigid foam plastic reference standards is not acceptable.
 2. Ongoing Testing: Provide third-party testing indicating compliance with ASTM D6817/D6817M. Test at intervals that comply with ASTM D7557/D7557M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. See Section 31 22 00 for additional requirements.
- D. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- E. Verify structural ability of unsupported walls to support imposed loads by the fill.
- F. Verify underground tanks are anchored to their own foundations to avoid flotation after backfilling.
- G. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.

- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- I. Correct areas that are over-excavated.
 - 1. Load-bearing foundation surfaces: Fill with concrete.
 - 2. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 100 percent of maximum dry density.
 - 3. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- J. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 97 percent of maximum dry density.
 - 2. At other locations: 95 percent of maximum dry density.
- K. Reshape and re-compact fills subjected to vehicular traffic.
- L. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the MBI Companies. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 ENGINEERED FILL - LIGHTWEIGHT CONCRETE

- A. Install lightweight concrete fill according to manufacturer's written instructions.
- B. Use batching, mixing, and placing equipment approved by the manufacturer.
- C. Prevent segregation of material.
- D. Tolerance: Finished surface within 2 inches of elevation indicated on drawings.

3.05 MANUFACTURED FILL INSTALLATION - GEOFOAM

- A. Provide finish grade free of holes and protrusions.
- B. Install 8 inch leveling pad of granular, permeable material approved by MBI Companies.
- C. Place geofoam fill as indicated on drawings.
- D. Cut blocks with hot wire. Cutting with hand tools, with power tools, or by breaking block material is not permitted.
- E. Offset each layer of blocks 2 feet from adjacent rows.
- F. Rotate each layer of blocks 90 degrees in the horizontal plane relative to previous layer.
- G. Connectors and Adhesive:
 - 1. Install connectors and adhesive as directed in geofoam manufacturer's written instructions.
 - 2. When mechanical connectors are used, install a minimum of two (2) connectors for each 4 feet by 8 feet section of material.
- H. Connectors and Adhesive: Install as indicated on shop drawings.
- I. Connectors and Adhesive: Install as directed by MBI Companies.
- J. Provide temporary weighing and guying required to protect geofoam material until soil cover or pavement is in place.
- K. Avoid damage to geofoam material during other construction activities. Replace or repair damaged geofoam.

3.06 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Under Interior Slabs-On-Grade:

1. Use granular fill.
 2. Depth: 4 inches deep.
 3. Compact to 95 percent of maximum dry density.
 4. Cover with sand.
 - a. Depth: 2 inches.
 - b. Compact to 95 percent of maximum dry density.
- C. At Foundation Walls and Footings:
1. Use general fill.
 2. Fill up to subgrade elevation.
 3. Compact each lift to 90 percent of maximum dry density.
 4. Do not backfill against unsupported foundation walls.
 5. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- D. Over Subdrainage Piping at Foundation Perimeter and Under Slabs:
1. Cover drainage fill with general fill.
 2. Fill up to subgrade elevation.
 3. Compact to 95 percent of maximum dry density.
- E. Over Buried Utility Piping, Conduits, and Duct Bank in Trenches:
1. Bedding: Use general fill.
 2. Cover with general fill.
 3. Fill up to subgrade elevation.
 4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.
- F. At Interior Crawl Spaces:
1. Use general fill.
 2. Compact to 90 percent of maximum dry density.
 3. Install vapor retarder over entire exposed surface.
 4. Cover with granular fill, 2 inches deep.
- G. Inside Planter Boxes:
1. Use granular fill, 4 inches deep.
 2. Cover with geotextile.
 3. Cover with sand, 2 inches deep.
 4. Finish with topsoil, to within 2 inches of planter rim, lightly tamped.
- H. Around and Over Underground Tanks:
1. Use initial fill of sand.
 - a. 12 inches deep.
 - b. Compact to 95 percent of maximum dry density.
 2. Complete with general fill.
 - a. Depth: Up to subgrade elevation.
 - b. Compact to 95 percent of maximum dry density.
- I. At Lawn Areas:
1. Use general fill.
 2. Fill up to 6 inches below finish grade elevations.
 3. Fill up to subgrade elevations.
 4. Compact to 95 percent of maximum dry density.
 5. See Section 31 22 00 for topsoil placement.
- J. At Planting Areas Other Than Lawns:
1. Use general fill.
 2. Fill up to 12 inches below finish grade elevations.
 3. Fill up to subgrade elevations.
 4. Compact to 95 percent of maximum dry density.
 5. See Section 31 22 00 for topsoil placement.

- K. At French Drains:
 1. Use granular fill.
 2. Fill up to 8 inches below finish grade.
 3. Compact to 95 percent of maximum dry density.
- L. Under Pavers Set on Sand Leveling Bed:
 1. Use granular fill.
 2. Fill up to bottom of sand leveling bed.
 3. Compact to 95 percent of maximum dry density.
 4. See unit pavers section for leveling bed placement.
- M. Under Monolithic Paving and Monolithic Paver Setting Beds:
 1. Compact subsoil to 95 percent of its maximum dry density before placing fill.
 2. Use general fill.
 3. Fill up to subgrade elevation.
 4. Compact to 95 percent of maximum dry density.
 5. See Section 32 11 23 for aggregate base course placed over fill.

3.07 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.
- C. Manufactured Fill - Geofilm:
 1. Top Surface, Each Layer: Maximum 5/8 inch variation in any 10 foot interval.
 2. Top Surface, Areas to Receive Pavement: Zero to minus 2-3/8 inch below indicated grade.
 3. Top Surface, Slopes: Within plus or minus 3-5/8 inch of indicated grade.
 4. Vertical Joints: No gaps greater than 3/4 inch.

3.08 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.
- B. Soil Fill Materials:
- C. Perform compaction density testing on compacted fill in accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.
- D. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
- E. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- F. Proof roll compacted fill at surfaces that will be under slabs-on-grade.
- G. Engineered Fill - Lightweight Concrete:
 1. Sampling: During initial placement, take four 3 inch by 6 inch3 inch by 6 inch test specimens per 303 cubic yards of material placed or for each four hours of placement work.
 2. Testing: Provide third-party testing of samples in accordance with ASTM C796/C796M except do not oven-dry load-test specimens.
- H. Manufactured Fill - Geofilm:
 1. Initial Testing: Provide third-party testing indicating compliance with ASTM D6817/D6817M prior to first shipment of material to site. Compliance documentation for other rigid foam plastic reference standards is not acceptable.
 2. Ongoing Testing: Provide third-party testing indicating compliance with ASTM D6817/D6817M. Test at intervals that comply with ASTM D7557/D7557M.

3.09 CLEANING

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

- B. Leave unused materials in a neat, compact stockpile.
- C. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- D. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Permanent erosion and sediment control.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for permanent erosion control structures indicated on drawings.
- B. Section 31 23 23 - Fill: Filling and compaction.
- C. Section 31 37 00 - Riprap: Stabilization using riprap.
- D. Section 32 92 19 - Seeding: Permanent turf for erosion control.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Topsoil:
 - 1. Basis of Measurement: By the cubic yard.
 - 2. Basis of Payment: Includes topsoil, placing topsoil.
- B. Grassed Areas:
 - 1. Basis of Measurement: By the square yard.
 - 2. Basis of Payment: Includes preparation of subsoil, placing topsoil, seeding, watering and maintenance to specified time limit.

1.04 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 2017.
- B. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- C. ASTM D5338 - Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials Under Controlled Composting Conditions, Incorporating Thermophilic Temperatures; 2015 (Reapproved 2021).
- D. ASTM D7322/D7322M - Standard Test Method for Determination of Erosion Control Product (ECP) Ability to Encourage Seed Germination and Plant Growth Under Bench-Scale Conditions; 2017.
- E. ASTM D7367 - Standard Test Method for Determining Water Holding Capacity of Fiber Mulches for Hydraulic Planting; 2019, with Editorial Revision.
- F. ASTM D8298/D8298M - Standard Test Method for Determination of Erosion Control Products (ECP) Performance in Protecting Slopes from Continuous Rainfall-Induced Erosion Using a Tilted Bed Slope; 2020.
- G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.
- H. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; 1995.
- I. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 2013.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Sustainable Design Documentation: Submit documentation required in this section in accordance with requirements specified in Section 01 33 29.02.
- C. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

- D. Maintenance Instructions: Provide instructions covering inspection and maintenance for preventive measures that must remain after Substantial Completion.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Comply with more stringent requirements of State of Tennessee Erosion and Sedimentation Control Manual.
- C. Best Management Practices Standard: FHWA FLP-94-005.
- D. Runoff Calculation Standard for Urban Areas: USDA TR-55.

2.02 MATERIALS

- A. High Performance - Flexible Growth Medium (HP-FGM):
 - 1. Physical Properties:
 - a. Water Holding Capacity: Greater than or equal to 1,700 percent when tested in accordance with ASTM D7367.
 - b. Material Color: Green.
 - c. Cure Time: Zero to 2 hours.
 - d. Functional Longevity: Less than or equal to 18 months when tested in accordance with ASTM D5338.
 - e. Cover Factor: Less than or equal to 0.01 when tested in accordance with ASTM D8298/D8298M.
 - f. Application Rate: 3,500 lb per acre.
 - g. Seed Germination and Vegetation Enhancement: Greater than or equal to 100 percent when tested in accordance with ASTM D7322/D7322M.
 - 2. Manufacturers:
 - a. Profile Products; Flexterra HP-FGM: www.profileevs.com.
 - b. Substitutions: See Section 01 25 00 – Substitution Procedures.
- B. Bonded Fiber Matrix (BFM):
 - 1. Physical Properties:
 - a. Water Holding Capacity: Greater than or equal to 1,200 percent when tested in accordance with ASTM D7367.
 - b. Material Color: Green.
 - c. Cure Time: 4 to 24 hours.
 - d. Functional Longevity: Observed, less than or equal to 6 months.
 - e. Cover Factor: Less than or equal to 0.05 when tested in accordance with ASTM D8298/D8298M.
 - f. Application Rate: 3,500 lb per acre.
 - g. Seed Germination and Vegetation Enhancement: Greater than or equal to 100 percent when tested in accordance with ASTM D7322/D7322M.
 - 2. Manufacturers:
 - a. Profile Products; HydroStraw BFM: www.profileevs.com.
 - b. Substitutions: See Section 01 25 00 – Substitution Procedures.
- C. Engineered Fiber Matrix (EFM):
 - 1. Physical Properties:
 - a. Water Holding Capacity: Greater than or equal to 1,400 percent when tested in accordance with ASTM D7367.
 - b. Material Color: Green.
 - c. Cure Time: 4 to 24 hours.
 - d. Functional Longevity: Less than or equal to 12 months when tested in accordance with ASTM D5338.
 - e. Cover Factor: Less than or equal to 0.05 when tested in accordance with ASTM D8298/D8298M.
 - f. Application Rate: 3,500 lb per acre.

- g. Seed Germination and Vegetation Enhancement: Greater than or equal to 100 percent when tested in accordance with ASTM D7322/D7322M.
- 2. Manufacturers:
 - a. Profile Products; ProMatrix EFM: www.profileevs.com.
 - b. Substitutions: See Section 01 25 00 – Substitution Procedures.

D. Biotic Erosion Control Matrix (BECM):

- 1. Physical Properties:
 - a. Water Holding Capacity: Greater than or equal to 850 percent when tested in accordance with ASTM D7367.
 - b. Material Color: Brown.
 - c. Cure Time: 12 to 24 hours.
 - d. Functional Longevity: Less than or equal to 12 months when tested in accordance with ASTM D5338.
 - e. Cover Factor: Less than or equal to 0.05 when tested in accordance with ASTM D8298/D8298M.
 - f. Application Rate: 6,500 lb per acre.
 - g. Seed Germination and Vegetation Enhancement: Greater than or equal to 100 percent when tested in accordance with ASTM D7322/D7322M.
- 2. Manufacturers:
 - a. Profile Products; ProGanics DUAL: www.profileevs.com.
 - b. Substitutions: See Section 01 25 00 – Substitution Procedures.

2.03 ACCESSORY MATERIALS

- A. Fill Material: See Section 31 23 23.
- B. Geotextiles: Permeable, synthetic fabric used to stabilize loose soil and prevent erosion.
- C. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- D. Grass Seed for Permanent Cover: See Section 32 92 19.
- E. Sod for Permanent Cover: Cultivated grass sod, type as indicated; with strong fibrous root system, free of stones, burned or bare spots.
- F. Plants for Permanent Cover: Specie and sizes identified in plant schedule, grown in climatic conditions similar to those in locality of the work.
- G. Crushed Stone and Gravel: See Section 32 11 23 for aggregate.
- H. Coarse Aggregate: AASHTO M 147; with a liquid limit of not more than 25 and a plasticity index of not more than 5 in accordance with ASTM D4318.
- I. Riprap: See Section 31 37 00.
- J. Riprap: Granite type; broken stone; solid and nonfriable; 6-inch minimum size, 12-inch maximum size.
- K. 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.
- B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish documentation required to obtain applicable permits.
 - 1. Owner will obtain permits and pay for securities required by authority having jurisdiction.
 - 2. Obtain and pay for permits and provide security required by authority having jurisdiction.

3. Owner will withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.

C. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

3.03 FIELD QUALITY CONTROL

- A. Provide analysis of topsoil fill; see Section 01 40 00.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- C. Submit minimum 10 oz sample of proposed topsoil. Forward sample to approved testing laboratory in sealed containers to prevent contamination.
- D. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

3.04 INSTALLATION

- A. Hydroseeding: Apply seeded slurry with a hydraulic seeder evenly in two intersecting directions.
 1. Soil Amendment: Provide soil amendments for application with hydroseeding slurry at manufacturer's recommended rates based on soil test results.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Immediately following seeding, apply mulch to a thickness of 1/8 inch. Maintain clear of shrubs and trees.
- D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
- E. Following germination, immediately reseed areas without germinated seeds that are larger than 4 by 4 inches.

3.05 PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 42 inches. Space stakes at 60 inches.
- B. Cover seeded slopes where grade is 4 inches per foot or greater with geotextile fabric. Roll fabric onto slopes without stretching or pulling.
- C. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 12-inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- D. Secure outside edges and overlaps at 36-inch intervals with stakes.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.06 MAINTENANCE

- A. See Section 32 01 90 for post-occupancy maintenance.
- B. Provide maintenance of seeded areas for three months from Date of Substantial Completion.
- C. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.
- D. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- E. Immediately reseed areas that show bare spots.
- F. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

- G. Repair deficiencies immediately.
 - H. Place sediment in appropriate locations on site; do not remove from site.
 - I. Protect seeded areas with warning signs during maintenance period.
- 3.07 CLEAN UP
- A. Clean out sediment control structures that are to remain as permanent measures.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

- A Furnish all labor, materials, tools, equipment, supervision, coordination, services, etc., required for complete execution of soil treatment for termite control as specified herein.
- B Furnish all labor, materials, tools, equipment, supervision, coordination, services, etc., required for complete execution of borate treatment for any new and existing structural wood members for termite control as specified herein.

1.02 RELATED DOCUMENTS

- A Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1, General Requirements, apply to the work under this section.

1.03 SUBMITTALS

- A. Product Data: Submit general information, MSDS and EPA-Registered Label for all products.
- B. Product Certificates: For termite control products, signed by product manufacturer.
- C. Qualification Data: For Installer of termite control products.
- D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following:
 - 1. Date and time of application.
 - 2. Moisture content of soil before application.
 - 3. Brand name and manufacturer of termiticide.
 - 4. Quantity of undiluted termiticide used.
 - 5. Dilutions, methods, volumes, and rates of application used.
 - 6. Areas of application.
 - 7. Water source for application.
- E. Wood Treatment Application Report: After application of borate is completed, submit report for Owner's record information, including the following:
 - 1. Date and time of application.
 - 2. Brand name and manufacturer of borate.
 - 3. Quantity of undiluted borate used.
 - 4. Dilutions, methods, volumes, and rates of application used.
 - 5. Areas of application.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located, and who employs workers trained and approved by bait-station system manufacturer to install manufacturer's products.
- B. Regulatory Requirements: Formulate and apply termiticides according to the EPA-Registered Label.
- C. Source Limitations: Obtain termite control products from a single manufacturer for each product.

1.05 PROJECT CONDITIONS

- A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.

1.06 COORDINATION

- A. Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.
- B. Apply borate treatment after framing, sheathing, and exterior weather protection is completed but before electrical and mechanical systems are installed.

1.07 WARRANTY

- A. Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

- 1. Warranty Period: **Five** years from date of Substantial Completion.

1.08 MAINTENANCE SERVICE

- A. Continuing Service: Beginning at Substantial Completion, provide 12 months' continuing service including monitoring, inspection, and re-treatment for occurrences of termite activity. Provide a standard continuing service agreement. State services, obligations, conditions, and terms for agreement period; and terms for future renewal options.

PART 2 PRODUCTS

2.01 MANUFACTURERS

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

- 1. Termiticides:

- a. Aventis Environmental Science USA LP; Termidor.
- b. Bayer Corporation; Premise 75 / Centerfire 75 WSP.
- c. Dow AgroSciences LLC; Dursban TC orEquity.
- d. FMC Corporation, Agricultural Products Group; Talstar, Prevail FT, Torpedo.
- e. Syngenta; Demon TC.

- 2. Borates:

- a. Nisus Corp.; Bora-Care, Jecta.
- b. NovaGuard Technologies, Inc.; Armor-Guard, Shell-Guard.
- c. U.S. Borax Inc.; Tim-Bor.

2.02 SOIL TREATMENT

- A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to product's EPA-Registered Label.

2.03 WOOD TREATMENT

- A. Borate: Provide an EPA-registered borate complying with requirements of authorities having jurisdiction, in an aqueous solution for spray application and a gel solution for pressure injection, formulated to prevent termite infestation in wood. Provide quantity required for application at the label volume and rate for the maximum diffusible borate concentration allowed for each specific use, according to product's EPA-Registered Label.

PART 3 EXECUTION

3.01 GENERAL

- A Perform application only after excavation, filling and grading operations are completed except as otherwise required in construction operations.
- B Do not perform soil treatment to frozen or excessively wet soil, or during inclement weather.

3.02 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control.
 - 1. Proceed with application only after unsatisfactory conditions have been corrected.

3.03 PREPARATION

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparation before beginning application of termite control treatment. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.
- B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.
 - 1. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.04 APPLICATION, GENERAL

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.05 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute treatment evenly.
 - 1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.

2. Foundations: Adjacent soil including soil along the entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating the slab, and around interior column footers, piers, and chimney bases; also along the entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.
 3. Crawlspace: Soil under and adjacent to foundations as previously indicated. Treat adjacent areas including around entrance platform, porches, and equipment bases. Apply overall treatment only where attached concrete platform and porches are on fill or ground.
 4. Masonry: Treat voids.
 5. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.
- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
- D. Post warning signs in areas of application.
- E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.06 APPLYING BORATE TREATMENT

- A. Application: Mix wood treatment borate solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of borate, according to manufacturer's EPA-Registered Label, so that wood framing, sheathing, siding, and structural members subject to infestation receive treatment.
1. Framing and Sheathing: Apply borate solution by spray to bare wood for complete coverage.
 2. Wood Members Thicker Than 4 Inches (100 mm): Inject borate gel solution under pressure into holes of size and spacing required by manufacturer for treatment.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Riprap in sacks.

1.02 RELATED REQUIREMENTS

- A. Section 31 23 23 - Fill: Aggregate requirements.

1.03 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Tennessee Highways standard.
- B. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Riprap: Provide in accordance with State of Tennessee Highways standards.
- B. Riprap: Granite type; broken stone; solid and nonfriable; 6 inch minimum size, 12 inch maximum size.
- C. Riprap: Broken stone, 6 inch minimum size, 12 inch maximum size; solid and nonfriable.
- D. Aggregate: Granular fill, see Section 31 23 23.
- E. Bags: Woven jute.
- F. Binder: Portland cement.
- G. Geotextile: Non-biodegradable, woven.
- H. Geotextile: See Section 31 05 19.

2.02 BAGGED RIPRAP

- A. Mix riprap, cement, sand and aggregate dry. Limit quantity of cement to 10 percent of dry mixed materials by volume.
- B. Fill bags with dry ingredients to 70 percent capacity and close by sewing or stapling to a straight seam.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not place riprap bags over frozen or spongy subgrade surfaces.

3.02 PLACEMENT

- A. Place geotextile over substrate, lap edges and ends.
- B. Place riprap at culvert pipe ends, embankment slopes, and as indicated.
- C. Place bags into position. Knead, ram, or pack filled bags to fit with the contour of adjacent material and other bags previously placed.
- D. Place bags in a staggered pattern. Remove foreign matter from bag surfaces.
- E. Installed Thickness: 5 inch average.
- F. Place rock evenly and carefully over bagged riprap to minimize voids, do not tear bag fabric, place bags and rock in one consistent operation to preclude disturbance or displacement of substrate.
- G. After placement, spray with water to moisten the bagged mix. Maintain moist for 24 hours.

3.03 SCHEDULES

- A. Culvert Pipe Ends: Bagged, placed one layer thick, 6 inch average thickness, concealed with topsoil fill.
- B. Sloped Grade At Retaining Wall: Individual riprap units, 6 inch thickness; placed prior to finish topsoil.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes water-distribution piping and specialties outside the building for the following:
 1. Water services.
 2. Combined water service and fire-service mains.
 3. Utility-furnished products include water meters that will be furnished to the site, ready for installation.

1.02 RELATED DOCUMENTS

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

1.03 DEFINITIONS

- A. Combined Water Service and Fire-Service Main: Exterior water piping for both domestic-water and fire-suppression piping.
- B. Water Service: Exterior domestic-water piping
- C. PVC: Polyvinyl chloride plastic
- D. DIP: Ductile Iron Pipe

1.04 SUBMITTALS

- A. Product Data: For the following:
 1. Piping materials and fittings.
 2. Piping specialties.
 3. Valves and accessories.
 4. Water meters and accessories.
 5. Backflow preventers and assemblies.
 6. Protective enclosures.
 7. Fire hydrants.
 8. Flushing hydrants.
 9. Post hydrants.
- B. Shop drawings for precast concrete vaults, including frames and covers, ladders, and drains.
- C. Shop drawings for power, signal, and control wiring diagrams.
- D. Coordination Drawings: For piping and specialties including relation to other services in same area. Show piping and specialty sizes and valves, meter and specialty locations, and elevations.
- E. Field Quality-Control Test Reports.
- F. Operation and Maintenance Data: For specialties to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section 013300,"Submittals" include the following:
 1. Water meters.
 2. Valves.
 3. Backflow preventers.
 4. Protective enclosures.
 5. Fire hydrants.
 6. Flushing hydrants.
 7. Post hydrants.

1.05 QUALITY ASSURANCE

- A. Product Options: Drawings indicate sizes, profiles, and dimensional requirements of piping and specialties and are based on specific system indicated.
- B. Regulatory Requirements:
 - 1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
 - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
 - 3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
- C. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.
- F. Comply with FM's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.
- G. Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:
 - 1. Ensure that valves are dry and internally protected against rust and corrosion.
 - 2. Protect valves against damage to threaded ends and flange faces.
 - 3. Set valves in best position for handling. Set valves closed to prevent rattling.
- B. During Storage: Use precautions for valves, including fire hydrants, according to the following:
 - 1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
 - 2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
- C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.
- D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
- F. Protect flanges, fittings, and specialties from moisture and dirt.
- G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.07 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
1. Notify Architect not less than two days in advance of proposed utility interruptions.
 2. Do not proceed with utility interruptions without Architect's written permission.

1.08 COORDINATION

- A. Coordinate connection to water main with utility company.

PART 2 PRODUCTS

2.01 MANUFACTURERS

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

2.02 DUCTILE-IRON PIPE AND FITTINGS

- A. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint, bell- and plain-spigot end unless grooved or flanged ends are indicated.
- B. Push-on-Joint, Ductile-Iron Fittings: AWWA C153, ductile-iron compact pattern.
- C. Gaskets: AWWA C111, rubber.
- D. Ductile-Iron Expansion Joints: Three-piece, ductile-iron assembly consisting of telescoping sleeve with gaskets and restrained-type, ductile-iron, bell-and-spigot end sections complying with AWWA C110 or AWWA C153. Select and assemble components for expansion indicated. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.

2.03 COPPER TUBE AND FITTINGS

- A. Soft Copper Tube: ASTM B 88, Type K (ASTM B 88M, Type A), water tube, annealed temper.
- B. Copper Fittings: ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings.
- C. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.
- D. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

2.04 PVC PIPE AND FITTINGS

- A. PVC, Schedule 40 Pipe: ASTM D 1785. Socket Fittings: ASTM D 2466.

- B. PVC, AWWA Pipe: AWWA C900, Class 200, with bell end with gasket, and with spigot end.
 1. Comply with UL 1285 for fire-service mains if indicated.
 2. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 3. Gaskets: AWWA C111, rubber.
 4. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.

2.05 JOINING MATERIALS

- A. Refer to Division 2 Section "Utility Materials" for commonly used joining materials.
- B. Transition Couplings:
 1. Underground Piping, NPS 1-1/2 (DN 40) and Smaller: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
 2. Underground Piping, NPS 2 (DN 50) and Larger: AWWA C219, metal, sleeve-type coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
 3. Aboveground or Vault Piping: Pipe fitting same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- C. Brazing Filler Metals: AWS A5.8, BCuP Series.
- D. Soldering Flux: ASTM B 813, water-flushable type.
- E. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.
- F. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.06 JOINING MATERIALS

- A. Refer to Division 2 Section "Utility Materials" for commonly used joining materials.
- B. Transition Couplings:
 1. Underground Piping, NPS 1-1/2 (DN 40) and Smaller: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
 2. Underground Piping, NPS 2 (DN 50) and Larger: AWWA C219, metal, sleeve-type coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
 3. Aboveground or Vault Piping: Pipe fitting same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- C. Brazing Filler Metals: AWS A5.8, BCuP Series.
- D. Soldering Flux: ASTM B 813, water-flushable type.
- E. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.
- F. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.07 PIPING SPECIALTIES

- A. Flexible Connectors:
 1. Nonferrous-Metal Piping: Bronze hose covered with bronze wire braid; with copper-tube, pressure-type, solder-joint ends or bronze flanged ends brazed to hose.
 2. Ferrous Piping: Stainless-steel hose covered with stainless-steel wire braid; with ASME B1.20.1, threaded steel pipe nipples or ASME B16.5, steel pipe flanges welded to hose.

- B. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- C. Tubular-Sleeve Pipe Couplings:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cascade Waterworks Manufacturing.
 - b. Dresser, Inc.; Dresser Piping Specialties.
 - c. Ford Meter Box Company, Inc. (The); Pipe Products Div.
 - d. Hays Fluid Controls; a division of ROMAC Industries Inc.
 - e. JCM Industries.
 - f. Smith-Blair, Inc.
 - g. Viking Johnson.
 - 2. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.
 - a. Standard: AWWA C219.
 - b. Center-Sleeve Material: Manufacturer's standard.
 - c. Gasket Material: Natural or synthetic rubber.
 - d. Pressure Rating: 200 psig (1380 kPa) minimum.
 - e. Metal Component Finish: Corrosion-resistant coating or material.
- D. Split-Sleeve Pipe Couplings:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Victaulic Depend-O-Lok.
 - 2. Description: Metal, bolted, split-sleeve-type, reducing or transition coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.
 - a. Standard: AWWA C219.
 - b. Sleeve Material: Manufacturer's standard.
 - c. Sleeve Dimensions: Of thickness and width required to provide pressure rating.
 - d. Gasket Material: O-rings made of EPDM rubber, unless otherwise indicated.
 - e. Pressure Rating: 200 psig (1380 kPa) minimum.
 - f. Metal Component Finish: Corrosion-resistant coating or material.
- E. Dielectric Fittings:
 - 1. Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
 - 2. Dielectric Unions:
 - a. Standard: ASSE 1079.
 - b. Pressure Rating: 250 psig (1725 kPa).
 - c. End Connections: Solder-joint copper alloy and threaded ferrous.
 - 3. Dielectric Flanges:
 - a. Standard: ASSE 1079.
 - b. Factory-fabricated, bolted, companion-flange assembly.
 - c. Pressure Rating: 300 psig (2070 kPa).
 - d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.
 - 4. Dielectric-Flange Insulating Kits:
 - a. Nonconducting materials for field assembly of companion flanges.
 - b. Pressure Rating: 150 psig (1035 kPa).
 - c. Gasket: Neoprene or phenolic.
 - d. Bolt Sleeves: Phenolic or polyethylene.
 - e. Washers: Phenolic with steel backing washers.
 - 5. Dielectric Nipples:
 - a. Standard: IAPMO PS 66
 - b. Electroplated steel nipple. complying with ASTM F 1545.

- c. Pressure Rating: 300 psig (2070 kPa) at 225 deg F (107 deg C).
- d. End Connections: Male threaded or grooved.
- e. Lining: Inert and noncorrosive, propylene.

2.08 CORROSION-PROTECTION ENCASEMENT FOR PIPING

- A. Encasement for Underground Metal Piping: ASTM A 674 or AWWA C105, PE film, 0.008-inch (0.20-mm) minimum thickness, tube or sheet.

2.09 CAST IRON GATE VALVES

- A. Available Manufacturers:

- 1. American AVK Co.; Valves & Fittings Div.
- 2. American Cast Iron Pipe Co.; American Flow Control Div.
- 3. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
- 4. Crane Co.; Crane Valve Group; Stockham Div.
- 5. East Jordan Iron Works, Inc.
- 6. Grinnell Corporation; Mueller Co.; Water Products Div.
- 7. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
- 8. McWane, Inc.; Kennedy Valve Div.
- 9. McWane, Inc.; Tyler Pipe; Utilities Div.
- 10. NIBCO INC.
- 11. United States Pipe and Foundry Company.

- B. Nonrising-Stem, Resilient-Seated Gate Valves: AWWA C509, gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.

- 1. Minimum Working Pressure: 200 psig (1380 kPa).
- 2. End Connections: Mechanical joint.
- 3. Interior Coating: Complying with AWWA C550.

- C. OS&Y, Rising-Stem, Resilient-Seated Gate Valves: Cast- or ductile-iron body and bonnet, with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem.

- 1. Standard: AWWA C509.
- 2. Minimum Pressure Rating: 200 psig (1380 kPa).
- 3. End Connections: Flanged.

2.10 GATE VALVE ACCESSORIES AND SPECIALTIES

- A. Tapping-Sleeve Assemblies: Comply with MSS SP-60. Include sleeve and valve compatible with drilling machine.

- 1. Available Manufacturers:

- a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
- b. East Jordan Iron Works, Inc.
- c. Grinnell Corporation; Mueller Co.; Water Products Div.
- d. International Piping Services Company.
- e. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
- f. McWane, Inc.; Kennedy Valve Div.
- g. McWane, Inc.; M & H Valve Company Div.
- h. United States Pipe and Foundry Company.

- 2. Tapping Sleeve: Ductile-iron two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.

- 3. Valve: AWWA, cast-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.

- B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over valve, and approximately 5-inch- (125-mm-) diameter barrel.
 - 1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.11 CORPORATION VALVES AND CURB VALVES

- A. Available Manufacturers:
 - 1. Amcast Industrial Corporation; Lee Brass Co.
 - 2. Ford Meter Box Company, Inc. (The).
 - 3. Grinnell Corporation; Mueller Co.; Water Products Div.
 - 4. Jones, James Company.
 - 5. Master Meter, Inc.
 - 6. McDonald, A. Y. Mfg. Co.
 - 7. Red Hed Manufacturing Co.
- B. Service-Saddle Assemblies: Comply with AWWA C800. Include saddle and valve compatible with tapping machine.
 - 1. Service Saddle: Copper alloy with seal and AWWA C800, threaded outlet for corporation valve.
 - 2. Corporation Valve: Bronze body and ground-key plug, with AWWA C800, threaded inlet and outlet matching service piping material.
 - 3. Manifold: Copper fitting with two to four inlets as required, with ends matching corporation valves and outlet matching service piping material.

2.12 WATER METERS

- A. Water meters will be furnished by utility company.
- B. Description: AWWA C700, displacement-type, bronze main case. Register flow in gallons unless cubic feet are indicated.

2.13 WATER-METER BOXES

- A. Description: Cast-iron body and cover for disc-type water meter with lettering "WATER METER" in cover; and slotted, open-bottom base section of length to fit over service piping.
 - 1. Option: Base section may be cast-iron, PVC, clay, or other pipe.
- B. Description: For traffic areas - Polymer-concrete body and cover for disc-type water meter with lettering "WATER" in cover; and slotted, open-bottom base section of length to fit over service piping. Include vertical and lateral design loadings of 15,000 lb. minimum over 10 by 10 inches (6800 kg minimum over 254 by 254 mm) square.

2.14 BACKFLOW PREVENTERS

- A. Reduced-Pressure-Principle Backflow Preventers:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - a. Ames Fire & Waterworks; a division of Watts Regulator Co.
 - b. Conbraco Industries, Inc.
 - c. FEBCO; SPX Valves & Controls.
 - d. Flomatic Corporation.
 - e. Watts Water Technologies, Inc.
 - f. Wilkins; a Zurn company.
 - 2. Standard: AWWA C511.
 - 3. Operation: Continuous-pressure applications.
 - 4. Pressure Loss: 12 psig (83 kPa) maximum, through middle 1/3 of flow range.

5. Size: Per utility plan.
6. Body: Bronze for NPS 2 (DN 50) and smaller; cast iron with interior lining complying with AWWA C550 or that is FDA approved stainless steel for NPS 2-1/2 (DN 65) and larger.
7. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 (DN 65) and larger.
8. Configuration: Designed for vertical inlet, horizontal center section, and vertical outlet flow.
9. Accessories: Ball type with threaded ends on inlet and outlet of NPS 2 (DN 50) and smaller; OS&Y gate type with flanged ends on inlet and outlet of NPS 2-1/2 (DN 65) and larger. Air-Gap Fitting: ASME A112.1.2, matching backflow preventer connection.

B. Double-Check, Backflow-Prevention Assemblies:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - a. Ames Fire & Waterworks; a division of Watts Regulator Co.
 - b. Conbraco Industries, Inc.
 - c. FEBCO; SPX Valves & Controls.
 - d. Flomatic Corporation.
 - e. Watts Water Technologies, Inc.
 - f. Wilkins; a Zurn company.
2. Standard: AWWA C510.
3. Operation: Continuous-pressure applications, unless otherwise indicated.
4. Pressure Loss: 5 psig (35 kPa) maximum, through middle 1/3 of flow range.
5. Size: Per utility plan.
6. Body: Bronze for NPS 2 (DN 50) and smaller; cast iron with interior lining complying with AWWA C550 or that is FDA approved stainless steel for NPS 2-1/2 (DN 65) and larger.
7. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 (DN 65) and larger.
8. Configuration: Designed for horizontal, straight through flow.
9. Accessories: Ball valves with threaded ends on inlet and outlet of NPS 2 (DN 50) and smaller; OS&Y gate valves with flanged ends on inlet and outlet of NPS 2-1/2 (DN 65) and larger.
10. Backflow Preventer Test Kits: Factory calibrated, with gages, fittings, hoses, and carrying case with test-procedure instructions. Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - a. Conbraco Industries, Inc.
 - b. FEBCO; SPX Valves & Controls.
 - c. Flomatic Corporation.
 - d. Watts Water Technologies, Inc.
 - e. Wilkins; a Zurn company.

2.15 CONCRETE VAULTS

- A. Description: Precast, reinforced-concrete vault, designed for A-16 load designation according to ASTM C 857 and made according to ASTM C 858.
- B. Ladder: ASTM A 36/A 36M, steel or polyethylene-encased steel steps.
- C. Manhole: ASTM A 48, Class No.35 (ASTM A48M, Class No.250) minimum tensile strength, gray-iron traffic frame and cover, 24-inch (610-mm) diameter or greater, unless otherwise indicated.
- D. Drain: ASME A112.21.1M, cast-iron floor drain with outlet of size indicated. Include body anchor flange, light-duty cast-iron grate, bottom outlet, and integral or field-installed clapper-type backwater valve.

2.16 PROTECTIVE ENCLOSURES

- A. Available Manufacturers:
 1. G&C Enclosures, Inc.
 2. Hot Box, Inc.

3. HydroCowl, Inc.
 4. Watts Industries, Inc.; Water Products Div.
- B. Freeze-Protection Enclosures: Insulated and with heat source to maintain minimum internal temperature of 40° F (4° C) when external temperatures reach as low as -34° F (-36° C).
1. Class I: For equipment or devices other than pressure or atmospheric vacuum breakers.
 2. Class I-V: For pressure or atmospheric vacuum breaker equipment or devices. Include drain opening in housing.
 - a. Housing: Reinforced -fiberglass construction.
 - i. Drain opening for units with drain connection.
 - ii. Access doors with locking devices.
 - iii. Insulation inside housing.
 - iv. Anchoring devices for attaching housing to concrete base.
 3. Electric heating cable or heater with self-limiting temperature control.
- C. Precast concrete base of dimensions required to extend at least 6 inches (150 mm) beyond edges of enclosure housings. Include openings for piping.

2.17 FREESTANDING FIRE HYDRANTS

- A. Dry-Barrel, High-Pressure Fire Hydrants: AWWA C502, one NPS 4-1/2 (DN 115) and two NPS 2-1/2 (DN 65) outlets, 5-1/4 inch (133 mm) main valve, drain valve, and NPS 6 (DN 150) mechanical-joint inlet. Include interior coating according to AWWA C550. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure, and 250-psig (1725-kPa) minimum working-pressure design.
1. Available Manufacturers:
 - a. American AVK Co.; Valves & Fittings Div.
 - b. American Cast Iron Pipe Co.; American Flow Control Div.
 - c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - d. American Foundry Group, Inc.
 - e. East Jordan Iron Works, Inc.
 - f. Grinnell Corporation; Mueller Co.; Water Products Div.
 - g. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - h. McWane, Inc.; Kennedy Valve Div.
 - i. McWane, Inc.; M & H Valve Company Div.
 - j. Troy Valve.
 - k. United States Pipe and Foundry Company.
 2. Outlet Threads: NFPA 1963, with external hose thread used by local fire department. Include cast-iron caps with steel chains.
 3. Operating and Cap Nuts: Pentagon, 1-1/2 inches (40 mm) point to flat.
 4. Operation: Open hydrant valve by turning operating nut to left or counterclockwise.
 5. Exterior Finish: Red alkyd-gloss enamel paint, unless otherwise indicated. Verify color requirements with jurisdiction having authority.

2.18 FIRE DEPARTMENT CONNECTIONS

- A. Fire Department Connections:
1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - a. Elkhart Brass Mfg. Co., Inc.
 - b. Fire End & Croker Corporation.
 - c. Guardian Fire Equipment, Inc.
 - d. Kidde Fire Fighting.
 - e. Potter Roemer.
 - f. Reliable Automatic Sprinkler Co., Inc.
 2. Description: Freestanding, with cast-bronze body, thread inlets according to NFPA 1963 and matching local fire department hose threads, and threaded bottom outlet. Include lugged caps,

gaskets, and chains; lugged swivel connection and drop clapper for each hose-connection inlet; 18-inch- (460-mm-) high brass sleeve; and round escutcheon plate.

- a. Standard: UL 405.
- b. Connections: Two NPS 2-1/2 (DN 65) inlets and one NPS 4 (DN 100) outlet.
- c. Inlet Alignment: Inline, horizontal.
- d. Finish Including Sleeve: Polished bronze.
- e. Escutcheon Plate Marking: "AUTO SPKR."

2.19 ALARM DEVICES

- A. Alarm Devices, General: UL 753 and FMG approved, of types and sizes to mate and match piping and equipment.
- B. Supervisory Switches: Single pole, double throw; designed to signal valve in other than fully open position.

PART 3 EXECUTION

3.01 EARTHWORK

- A. Refer to Division 31 Section for excavating, trenching, and backfilling.

3.02 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.
- C. Do not use flanges, unions, or keyed couplings for underground piping.
- D. Flanges, unions, keyed couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
- E. Underground Water-Service Piping NPS $\frac{3}{4}$ to NPS 3. Use the following piping materials for each size range unless otherwise indicated on the drawings:
 1. Soft copper tube, ASTM B 88, Type K (ASTM B 88M, Type A); wrought-copper, solder-joint fittings; and brazed joints; or
 2. PVC, Schedule 40 pipe; PVC, Schedule 40 socket fittings; and solvent-cemented joints.
- F. Underground water-service piping NPS 4 to NPS 8. Use the following piping materials for each size range unless otherwise indicated on the drawings:
 1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints; or
 2. PVC, AWWA Class 200 pipe; mechanical-joint, ductile-iron fittings; and gasketed joints.
- G. Water Meter Box Water-Service Piping NPS $\frac{3}{4}$ to NPS 3 shall be same as underground water-service piping.
- H. Underground Fire-Service-Main Piping NPS 4 to NPS 12. Use the following piping materials for each size range unless otherwise indicated on the drawings:
 1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints; or
 2. PVC, AWWA Class 200 pipe listed for fire-protection service; mechanical-joint, ductile-iron fittings; and gasketed joints.

- I. Underground Combined Water-Service and Fire-Service-Main Piping NPS 6 to NPS 12. Use the following piping materials for each size range unless otherwise indicated on the drawings:
1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints.
 2. PVC, AWWA Class 200 pipe listed for fire-protection service; mechanical-joint, ductile-iron fittings; and gasketed joints.

3.03 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 (DN 80) and larger underground installation. Use flanged-end valves for installation in vaults. Use UL/FM, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 (DN 50) and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
1. Underground Valves, NPS 3 (DN 80) and Larger: AWWA, cast-iron, nonrising-stem, resilient seated gate valves with valve box.

3.04 JOINT CONSTRUCTION

- A. Make pipe joints according to the following:
1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
 2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
 3. Copper Tubing Soldered Joints: ASTM B 828. Use flushable flux and lead-free solder.
 4. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
 5. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 2 Section "Utility Materials" for joining piping of dissimilar metals.

3.05 PIPING INSTALLATION

- A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.
- B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.
- C. Make connections larger than NPS 2 (DN 50) with tapping machine according to the following:
1. Install tapping sleeve and tapping valve according to MSS SP-60.
 2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
 3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
 4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.
- D. Make connections NPS 2 (DN 50) and smaller with drilling machine according to the following:
1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by utility company standards.
 2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
 3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
 4. Install corporation valves into service-saddle assemblies.
 5. Install manifold for multiple taps in water main.

- 6. Install curb valve in water-service piping with head pointing up and with service box.
 - E. Comply with NFPA 24 for fire-service-main piping materials and installation.
 - 1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.
 - F. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.
 - 1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.
 - G. Install copper tube and fittings according to CDA's "Copper Tube Handbook."
 - H. Install PVC, AWWA pipe according to AWWA M23 and ASTM F 645.
 - I. Unless otherwise indicated on drawings, bury piping with depth of cover over top at least 36 inches, with top at least 12 inches below level of maximum frost penetration, and according to the following:
 - 1. Under Driveways and Roads: With at least 36 inches cover over top.
 - 2. Under Railroad Tracks: With at least 48 inches cover over top.
 - 3. In Loose Gravelly Soil and Rock: With at least 12 inches additional cover.
 - 4. Under Roads: With at least 36 inches cover over top.
 - J. Install piping by tunneling, jacking, or combination of both, under streets and other obstructions that cannot be disturbed.
 - K. Extend water-service piping and connect to water-supply source and building water piping systems at outside face of building wall in locations and pipe sizes indicated.
 - 1. Terminate water-service piping at building wall until building water piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building water piping systems when those systems are installed.
 - L. Sleeves and mechanical sleeve seals are specified elsewhere.
 - M. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.
 - N. Anchor service-entry piping to building wall.
 - O. See Division 22 sections for potable-water piping inside the building.
 - P. See Division 21 sections for fire-suppression water piping inside the building.
 - Q. Install water-supply piping with shutoff valve in water supply to each and any post hydrant and drinking fountain indicated. Use curb valve and service box.
 - R. Install trap below frost line on drain outlet of each and any drinking fountain indicated.
- 3.06 ANCHORAGE INSTALLATION
- A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
 - 1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
 - 2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
 - B. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.
- 3.07 VALVE INSTALLATION
- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.

- B. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

3.08 WATER-METER INSTALLATION

- A. Install water meters, piping, and specialties according to utility company's written requirements.
- B. Water Meters: Install displacement-type water meters, NPS 2 (DN 50) and smaller, in meter boxes with shutoff valves on water-meter inlets. Include valves on water-meter outlets and valved bypass around meters unless prohibited by authorities having jurisdiction.

3.09 ROUGHING-IN FOR WATER METERS

- A. Rough-in piping and specialties for water-meter installation according to utility company's written instructions and requirements.

3.10 BACKFLOW-PREVENTER INSTALLATION

- A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.
- B. Do not install backflow preventers with relief drain in vault or other space subject to flooding.
- C. Do not install bypass piping around backflow preventers.
- D. Support NPS 2-1/2 (DN 65) and larger backflow preventers, valves, and piping near floor and on brick or concrete piers.

3.11 VAULT CONSTRUCTION /INSTALLATION

- A. See Section 03 30 00 "Concrete Work" for concrete vaults.
- B. Install precast concrete vaults according to ASTM C 891.
- C. Connect drain outlet to storm drainage piping. Refer to Division 33 41 00 for Storm Drainage

3.12 PROTECTIVE ENCLOSURE INSTALLATION

- A. Install concrete base level and with top approximately 2 inches (50 mm) above grade.
- B. Install protective enclosure over valves and equipment.
- C. Anchor protective enclosure to concrete base.

3.13 FIRE HYDRANT INSTALLATION

- A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.
- B. AWWA-Type Fire Hydrants: Comply with AWWA M17.

3.14 POST HYDRANT INSTALLATION

- A. Install post hydrants in pavement or with concrete anchor.

3.15 FIRE DEPARTMENT CONNECTION INSTALLATION

- A. Install ball drip valves at each check valve for fire department connection to mains.

- B. Install protective pipe bollards on two sides of each fire department connection. Pipe bollards are specified in Division 05 Section "Metal Fabrications."

3.16 ALARM DEVICE INSTALLATION

- A. General: Comply with NFPA 24 for devices and methods of valve supervision. Underground valves with valve box do not require supervision.
- B. Supervisory Switches: Supervise valves in open position.
 1. Valves: Grind away portion of exposed valve stem. Bolt switch, with plunger in stem depression, to OS&Y gate-valve yoke.
 2. Indicator Posts: Drill and thread hole in upper-barrel section at target plate. Install switch, with toggle against target plate, on barrel of indicator post.
- C. Locking and Sealing: Secure unsupervised valves as follows:
 1. Valves: Install chain and padlock on open OS&Y gate valve.
 2. Post Indicators: Install padlock on wrench on indicator post.
- D. Pressure Switches: Drill and thread hole in exposed barrel of fire hydrant. Install switch.
- E. Connect alarm devices to building fire alarm system. Wiring and fire-alarm devices are specified in Division 28 Section "Fire Detection and Alarm."

3.17 CONNECTIONS

- A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.
- B. See Plumbing Sections for piping connections to valves and equipment.
- C. Connect water-distribution piping to utility water main. Use tapping sleeve and tapping valve or to local utility specifications.
- D. Connect water-distribution piping to interior domestic-water and fire-suppression piping.
- E. Connect waste piping from drinking fountains to sanitary sewerage system. See Section 33 30 00 "Sanitary Sewerage" for connection to sanitary-sewer piping.
- F. Ground equipment according to Division 26 requirements for Grounding.
- G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.18 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests: Test at not less than 1-1/2 times working pressure for 2 hours.
 1. Increase pressure in 50-psig (350-kPa) increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig (0 kPa). Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts (1.89 L) per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- C. Prepare reports of testing activities.

3.19 IDENTIFICATION

- A. Install continuous underground detectable warning tape during backfilling of trench for underground water-service piping. Locate below finished grade, directly over piping. See Earthwork Section for underground warning tapes.
- B. Permanently attach equipment nameplate or marker, indicating plastic water-service piping, on main electrical meter panel. See Plumbing Specifications for additional identification requirements.

3.20 CLEANING

- A. Clean and disinfect water-distribution piping as follows:
 - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
 - 2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
 - 3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or as described below:
 - a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
 - b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
 - c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
 - d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
- B. Prepare reports of purging and disinfecting activities.
- C. After completing drinking fountain installation, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish. Clean drinking fountains, on completion of installation, according to manufacturer's written instructions.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

- A. Extent of storm sewer collection system work is shown on drawings. Storm Sewer collection system work includes, but is not limited to, the following:
 - 1. Pipe and fittings.
 - 2. Non-pressure transition couplings.
 - 3. Cleanouts.
 - 4. Drains.
 - 5. Manholes.
 - 6. Channel drainage systems.
 - 7. Catch basins.
 - 8. Stormwater inlets.
 - 9. Pipe outlets.

1.02 RELATED DOCUMENTS

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

1.03 QUALITY ASSURANCE

- A. Installer: A firm specializing and experienced in sewer collection system work for not less than two (2) years.
- B. Comply with the requirements of applicable Division 2 sections for excavation and backfilling required in connection with exterior water service piping.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings:
 - 1. Manholes: Include plans, elevations, sections, details, frames, and covers.
 - 2. Catch basins and stormwater inlets. Include plans, elevations, sections, details, frames, covers, and grates.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Do not store plastic manholes, pipe, and fittings in direct sunlight.
- B. Protect pipe, pipe fittings, and seals from dirt and damage.
- C. Handle manholes according to manufacturer's written rigging instructions.
- D. Handle catch basins and stormwater inlets according to manufacturer's written rigging instructions.

1.06 PROJECT CONDITIONS

- A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify Architect no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of service without Architect's written permission.

PART 2 PRODUCTS

2.01 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 74, Service class.
- B. Gaskets: ASTM C 564, rubber.

2.02 STEEL PIPE AND FITTINGS

- A. Corrugated-Steel Pipe and Fittings: ASTM A 760/A 760M, Type I with fittings of similar form and construction as pipe.
 - 1. Standard-Joint Bands: Corrugated steel.
 - 2. Coating: Zinc.

2.03 PVC PIPE AND FITTINGS

- A. PVC Type PSM Sewer Piping:
 - 1. Pipe: ASTM D 3034, SDR 35, PVC Type PSM sewer pipe with bell-and-spigot ends for gasketed joints.
 - 2. Fittings: ASTM D 3034, PVC with bell ends.
 - 3. Gaskets: ASTM F 477, elastomeric seals.

2.04 CONCRETE PIPE AND FITTINGS

- A. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76.
 - 1. Tongue-and-groove ends and gasketed joints with ASTM C 443
 - 2. Class III.

2.05 NONPRESSURE TRANSITION COUPLINGS

- A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground non-pressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials:
 - 1. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.
- C. Unshielded, Flexible Couplings:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dallas Specialty & Mfg. Co.
 - b. Fernco Inc.
 - c. Logan Clay Pipe.
 - d. Mission Rubber Company; a division of MCP Industries, Inc.
 - 2. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
- D. Shielded, Flexible Couplings:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cascade Waterworks Mfg.
 - b. Dallas Specialty & Mfg. Co.
 - c. Mission Rubber Company; a division of MCP Industries, Inc.
 - 2. Description: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

- E. Ring-Type, Flexible Couplings:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Fernco Inc.
 - b. Logan Clay Pipe.
 - c. Mission Rubber Company; a division of MCP Industries, Inc.
 2. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.06 CLEANOUTS

- A. Cast-Iron Cleanouts:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Josam Company.
 - b. MIFAB, Inc.
 - c. Smith, Jay R. Mfg. Co.
 - d. Tyler Pipe.
 - e. Watts Water Technologies, Inc.
 - f. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.
 2. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.
 3. Top-Loading Classification: Heavy Duty.
 4. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

2.07 DRAINS

- A. Cast-Iron Area Drains:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Josam Company.
 - b. MIFAB, Inc.
 - c. Smith, Jay R. Mfg. Co.
 - d. Tyler Pipe.
 - e. Watts Water Technologies, Inc.
 - f. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.
 2. Description: ASME A112.6.3 gray-iron round body with anchor flange and round grate. Include bottom outlet with inside calk or spigot connection, of sizes indicated.
 3. Top-Loading Classification(s): Heavy Duty.
- B. Cast-Iron Trench Drains:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Josam Company.
 - b. MIFAB, Inc.
 - c. Smith, Jay R. Mfg. Co.
 - d. Tyler Pipe.
 - e. Watts Water Technologies, Inc.
 - f. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.
 2. Description: ASME A112.6.3, 6-inch wide top surface, rectangular body with anchor flange or other anchoring device, and rectangular grate. Include units of total length indicated and quantity of bottom outlets with inside calk or spigot connections, of sizes indicated.
 3. Top-Loading Classification(s): Heavy Duty.

2.08 MANHOLES

A. Standard Precast Concrete Manholes:

1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Diameter: 48 inches minimum unless otherwise indicated.
3. Ballast: Increase thickness of precast concrete sections or add concrete to base section as required to prevent flotation.
4. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
5. Riser Sections: 4-inch minimum thickness, and lengths to provide depth indicated.
6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated, and top of cone of size that matches grade rings.
7. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
8. Steps: Individual FRP steps wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 60 inches.
9. Grade Rings: Reinforced-concrete rings, 6-inch total thickness, to match diameter of manhole frame and cover, and height as required to adjust manhole frame and cover to indicated elevation and slope.

B. Manhole Frames and Covers:

1. Description: Ferrous; 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange and 26-inch diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "STORM SEWER."
2. Material: ASTM A 536, Grade 60-40-18 ductile or ASTM A 48/A 48M, Class 35 gray iron unless otherwise indicated.

2.09 POLYMER-CONCRETE, CHANNEL DRAINAGE SYSTEMS

A. General Requirements for Polymer-Concrete, Channel Drainage Systems: Modular system of precast, polymer-concrete channel sections, grates, and appurtenances; designed so grates fit into channel recesses without rocking or rattling. Include quantity of units required to form total lengths indicated.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. ABT, Inc.
2. ACO USA.
3. Innovative Plastic, Inc.; a subsidiary of T-H Marine Supplies, Inc.
4. Mea-Josam Div.; Josam Company.
5. Poly-Cast.

C. Sloped-Invert, Polymer-Concrete Systems:

1. Channel Sections:
 - a. Interlocking-joint, precast, modular units with end caps.
 - b. 4-inch inside width and deep, rounded bottom, with built-in invert slope of 0.6 percent and with outlets in quantities, sizes, and locations indicated.
 - c. Extension sections necessary for required depth.
 - d. Frame: Include gray-iron or steel frame for grate.
2. Grates:
 - a. Manufacturer's designation "ADA Heavy Duty," with slots or perforations that fit recesses in channels.
 - b. Material: Stainless steel.
3. Covers: Solid gray iron if indicated.
4. Locking Mechanism: Manufacturer's standard device for securing grates to channel sections.

D. Drainage Specialties: Precast, polymer-concrete units.

1. Large Catch Basins:
 - a. 24-by-12-inch polymer-concrete body, with outlets in quantities and sizes indicated.
 - b. Gray-iron slotted grate.
 - c. Frame: Include gray-iron or steel frame for grate.
 2. Small Catch Basins:
 - a. 19- to 24-inch by approximately 6-inch polymer-concrete body, with outlets in quantities and sizes indicated.
 - b. Gray-iron slotted grate.
 - c. Frame: Include gray-iron or steel frame for grate.
 3. Sediment Interceptors:
 - a. 27-inch square, polymer-concrete body, with outlets in quantities and sizes indicated.
 - b. 24-inch square, gray-iron frame and slotted grate.
- E. Supports, Anchors, and Setting Devices: Manufacturer's standard unless otherwise indicated.
- F. Channel-Section Joining and Fastening Materials: As recommended by system manufacturer.

2.10 CATCH BASINS

- A. Standard Precast Concrete Catch Basins:
1. Description: ASTM C 478 precast, reinforced concrete, of depth indicated, with provision for sealant joints.
 2. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
 3. Riser Sections: 4-inch minimum thickness, 48-inch diameter, and lengths to provide depth indicated.
 4. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
 5. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
 6. Grade Rings: Include two or three reinforced-concrete rings, of 6-inch total thickness, that match 24-inch diameter frame and grate.
 7. Steps: Individual FRP steps wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12-inch intervals. Omit steps if total depth from floor of catch basin to finished grade is less than 60 inches.
 8. Pipe Connectors: ASTM C 923 resilient, of size required, for each pipe connecting to base section.

2.11 STORMWATER INLETS

- A. Combination Inlets: Made with vertical curb and horizontal gutter openings, of materials and dimensions according to City standards. Include heavy-duty frames and grates.
- B. Frames and Grates: Heavy duty, according to City standards.

2.12 PIPE OUTLETS

- A. Head Walls: Cast-in-place reinforced concrete, with apron and tapered sides.
- B. Riprap Basins: Broken, irregularly sized and shaped, graded stone according to NSSGA's "Quarried Stone for Erosion and Sediment Control."
1. Average Size: NSSGA No. R-5, screen opening 5 inches.
- C. Filter Stone: According to NSSGA's "Quarried Stone for Erosion and Sediment Control," No. FS-2, No. 4 screen opening, average-size graded stone.

- D. Energy Dissipaters: According to NSSGA's "Quarried Stone for Erosion and Sediment Control," No. A-1, 3-ton average weight armor stone, unless otherwise indicated.

PART 3 EXECUTION

3.01 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.02 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.
- D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.
- F. Install gravity-flow, non-pressure drainage piping according to the following:
 1. Install piping pitched down in direction of flow.
 2. Install piping NPS 6 and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.
 3. Install piping with 24-inch minimum cover.
 4. Install hub-and-spigot, cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook."
 5. Install corrugated steel piping according to ASTM A 798/A 798M.
 6. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.
 7. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."
- G. Install corrosion-protection piping encasement over the following underground metal piping according to ASTM A 674 or AWWA C105:
 1. Hub-and-spigot, cast-iron soil pipe and fittings.

3.03 PIPE JOINT CONSTRUCTION

- A. Join gravity-flow, non-pressure drainage piping according to the following:
 1. Join hub-and-spigot, cast-iron soil piping with gasketed joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
 2. Join corrugated steel sewer piping according to ASTM A 798/A 798M.
 3. Join PVC sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasketed joints.
 4. Join reinforced-concrete sewer piping according to ACPA's "Concrete Pipe Installation Manual" for rubber-gasketed joints.
 5. Join dissimilar pipe materials with non-pressure-type flexible couplings.

3.04 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron, or PVC, soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
 - 1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
 - 2. Use Medium-Duty, top-loading classification cleanouts in asphalt or Portland cement concrete paved foot-traffic areas.
 - 3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
- B. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding earth grade.
- C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.05 DRAIN INSTALLATION

- A. Install type of drains in locations indicated.
 - 1. Use Light-Duty, top-loading classification drains in earth or unpaved foot-traffic areas.
 - 2. Use Medium-Duty, top-loading classification drains in paved foot-traffic areas.
- B. Embed drains in 4-inch minimum concrete around bottom and sides.
- C. Fasten grates to drains if indicated.
- D. Set drain frames and covers with tops flush with pavement surface.
- E. Assemble trench sections with flanged joints.
- F. Embed trench sections in 4-inch minimum concrete around bottom and sides.

3.06 MANHOLE INSTALLATION

- A. General: Install manholes, complete with appurtenances and accessories indicated.
- B. Install precast concrete manhole sections with sealants according to ASTM C 891.
- C. Where specific manhole construction is not indicated, follow manhole manufacturer's written instructions.
- D. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 3 inches above finished surface elsewhere unless otherwise indicated.

3.07 CATCH BASIN INSTALLATION

- A. Construct catch basins to sizes and shapes indicated.
- B. Set frames and grates to elevations indicated.

3.08 STORMWATER INLET AND OUTLET INSTALLATION

- A. Construct inlet head walls, aprons, and sides of reinforced concrete, as indicated.
- B. Construct riprap of broken stone, as indicated.
- C. Install outlets that spill onto grade, anchored with concrete, where indicated.
- D. Install outlets that spill onto grade, with flared end sections that match pipe, where indicated.
- E. Construct energy dissipaters at outlets, as indicated.

3.09 CONCRETE PLACEMENT

- A. Place cast-in-place concrete according to ACI 318.

3.10 CHANNEL DRAINAGE SYSTEM INSTALLATION

- A. Install with top surfaces of components, except piping, flush with finished surface.
- B. Assemble channel sections to form slope down toward drain outlets. Use sealants, adhesives, fasteners, and other materials recommended by system manufacturer.
- C. Embed channel sections and drainage specialties in 4-inch minimum concrete around bottom and sides.
- D. Fasten grates to channel sections if indicated.
- E. Assemble channel sections with flanged or interlocking joints.
- F. Embed channel sections in 4-inch minimum concrete around bottom and sides.

3.11 CONNECTIONS

- A. Connect non-pressure, gravity-flow drainage piping in building's storm building drains specified in Division 22 Section "Facility Storm Drainage Piping."
- B. Connect force-main piping to building's storm drainage force mains specified in Division 22 Section "Facility Storm Drainage Piping." Terminate piping where indicated.
- C. Make connections to existing piping and underground manholes.
 - 1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
 - 2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
 - 3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes and structures by cutting into existing unit and creating an opening large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe, manhole, or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.
 - a. Use concrete that will attain a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.
 - b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.
 - 4. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.
- D. Connect to sediment interceptors specified in Division 22 Section "Sanitary Waste Interceptors."
- E. Pipe couplings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
 - 1. Use non-pressure-type flexible couplings where required to join gravity-flow, non-pressure sewer piping unless otherwise indicated.
 - a. Shielded flexible couplings for same or minor difference OD pipes.
 - b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
 - c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.12 CLOSING ABANDONED STORM DRAINAGE SYSTEMS

- A. Abandoned Piping: Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:
 - 1. Close open ends of piping with at least 8-inch thick, brick masonry bulkheads.
 - 2. Close open ends of piping with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.
- B. Abandoned Manholes and Structures: Excavate around manholes and structures as required and use one procedure below:
 - 1. Remove manhole or structure and close open ends of remaining piping.
 - 2. Remove top of manhole or structure down to at least 36 inches below final grade. Fill to within 12 inches of top with stone, rubble, gravel, or compacted dirt. Fill to top with concrete.
- C. Backfill to grade according to Division 31 Section "Earth Moving."

3.13 IDENTIFICATION

- A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
 - 1. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.14 CLEANING

- A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building Perimeter, Retaining Wall, and Under-Slab Drainage Systems.
- B. Filter aggregate and fabric and bedding.

1.02 RELATED REQUIREMENTS

- A. Section 31 23 16 - Excavation: Excavating for subdrainage system piping and surrounding filter aggregate.
- B. Section 31 23 16.13 - Trenching: Excavating and backfilling for site subdrainage systems.
- C. Section 31 23 23 - Fill: Backfilling over filter aggregate, up to subgrade elevation.

1.03 REFERENCE STANDARDS

- A. ASTM C4 - Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile; 2004 (Reapproved 2014).
- B. ASTM C412 - Standard Specification for Concrete Drain Tile; 2015.
- C. ASTM C412M - Standard Specification for Concrete Drain Tile (Metric); 2015.
- D. ASTM D1603 - Standard Test Method for Carbon Black Content in Olefin Plastics; 2020.
- E. ASTM D1621 - Standard Test Method for Compressive Properties Of Rigid Cellular Plastics; 2016.
- F. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.
- G. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus; 2014.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe drainage products, and pipe accessories.
- C. Shop Drawings: Indicate dimensions, layout of piping, high and low points of pipe inverts, and gradient of slope between corners and intersections.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Project Record Documents: Record location of pipe runs, connections, cleanouts and principal invert elevations.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with applicable code for materials and installation of the work of this section.

2.02 PIPE MATERIALS

- A. Manufacturers:
 - 1. Substitutions: 01 25 00 - Substitution Procedures.
- B. Polyvinyl Chloride Pipe: ASTM D2729; plain end, 4 inch inside diameter; with required fittings.
- C. Bituminous Fiber Pipe: With Type split collar or internal coupling joints; 4 inch inside diameter; with necessary fittings.
- D. Clay Pipe: ASTM C4 Standard Class, 4 inch inside diameter, with required fittings.
- E. Concrete Pipe: ASTM C412 (ASTM C412M) Standard-Quality, 4 inch inside diameter, with required fittings.
- F. Corrugated Plastic Tubing: Flexible type; 4 inch diameter, with required fittings.
- G. Use perforated pipe at subdrainage system; unperforated through sleeved walls.

2.03 AGGREGATE AND BEDDING

- A. Filter Aggregate and Bedding Material: Granular fill as specified in Section 31 23 23.
- B. Filter Sand and Bedding Material: Sand as specified in Section 31 23 23.
- C. Impervious Fill Material: As specified in Section 31 23 23.
- D. Geosynthetic Drainage: Plastic rings overlaid on grids, interlocking, nonwoven geotextile bottom.
 - 1. Ring Thickness: 1 inch, minimum.
 - 2. Grid Opening: 3 inches (76.2 mm), maximum.
 - 3. Recycled Content: 100 percent.
 - 4. Material: High density polyethylene, minimum 1-1/2 percent carbon black, when tested in accordance with ASTM D1603.
 - 5. Ultraviolet Stability: 65 percent, minimum, when tested in accordance with ASTM D4355/D4355M.
 - 6. Compressive Strength: 100 psi (690 kPa), minimum, when tested in accordance with ASTM D1621.
 - 7. Manufacturers:
 - a. Invisible Structures; Draincore2: www.invisiblestructures.com/#sle.
 - b. Substitutions: 01 25 00 - Substitution Procedures.

2.04 ACCESSORIES

- A. Pipe Couplings: Solid plastic.
- B. Joint Covers: No. 15 asphalt saturated roofing felt.
- C. Filter Fabric: Water pervious type, black polyolefin.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

3.02 PREPARATION

- A. Hand trim excavations to required elevations.
- B. Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.

3.03 INSTALLATION

- A. Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.
- B. Place drainage pipe on clean cut subsoil.
- C. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Loosely butt pipe ends. Place joint cover strip 12 inches wide, around pipe diameter centered over joint.
- E. Place pipe with perforations facing down. Mechanically join pipe ends.
- F. Install pipe couplings.
- G. Install filter aggregate at sides, over joint covers and top of pipe. Provide top cover compacted thickness of 12 inches.
- H. Place filter fabric over levelled top surface of aggregate cover prior to subsequent backfilling operations.
- I. Place aggregate in maximum 4 inch lifts, consolidating each lift.
- J. Refer to Section 31 23 23 for compaction requirements. Do not displace or damage pipe when compacting.
- K. Place impervious fill over drainage pipe aggregate cover and compact.

- L. Connect to storm sewer system with unperforated pipe, through installed sleeves.
- M. Coordinate the Work with connection to municipal sewer utility service, and trenching.

3.04 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspection and testing.
- B. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.05 PROTECTION

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

3.06 SCHEDULE

END OF SECTION