PROJECT MANUAL

June 11, 2012

For The

HALE STADIUM RENOVATION
TENNESSEE STATE UNIVERSITY

Nashville, Tennessee

SBC #166/001-02-2011

HFR Project No. 2011171.00

Owner

TENNESSEE BOARD OF REGENTS

Nashville, Tennessee

HFR DESIGN

7101 Executive Center Drive, Suite300
Brentwood, Tennessee 37027
Tel (615) 370-8500
Fax (615) 370-8530

HALE STADIUM RENOVATION
Tennessee State University
Nashville, Tennessee
SBC #166/001-02-2011
HFR #2011171.00
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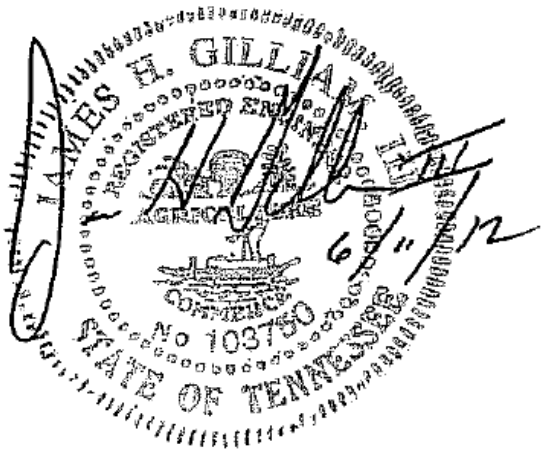

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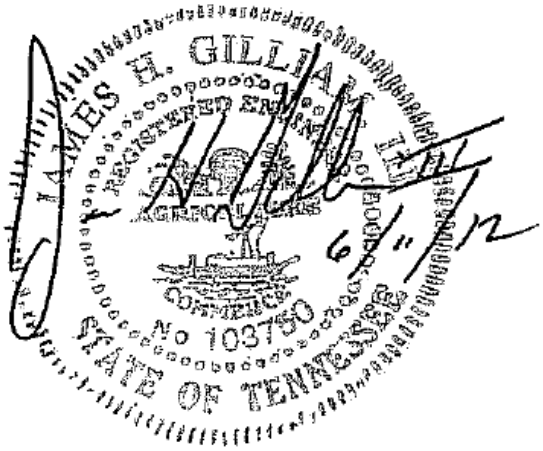

SECTION 000110

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END OF SECTION 000110

INVITATION TO BID

PROJECT:

HALE STADIUM RENOVATION
TENNESSEE STATE UNIVERSITY
Nashville, Tennessee
SBC #166/001-02-2011

DESIGNER:

HART, FREELAND, ROBERTS, INC.
PO Box 1974
Brentwood, Tennessee 37024
615-370-8500
Attention: Jim Gilliam PE

BRIEF PROJECT DESCRIPTION:

Generally consisting of site work, asphalt and concrete paving, fencing, and concrete.

Bids are invited for a General Contract for the Work of the above project.

Bids will be received by the State of Tennessee at

Tennessee Board of Regents (Central Office)
Office of Facilities Development
Suite 664 (6th floor, southwest) Genesco Office Park
1415 Murfreesboro Road
Nashville, Tennessee 37217-2833

until

3:00 pm June 27, 2012

at which time and place bids will be publicly opened. Bids sent by mail should be directed to the attention of

Cindy Potts
(615) 366 – 4431

Bidding documents may be examined at the Designer's office and at the following Plan Rooms:

iSqFt Plan Room & Associated General Contractors - Nashville, McGraw Hill Construction Dodge – website, Builders Exchange of Tennessee, Minority Business Development Center, and Reed Construction Data – Norcross, GA.

Bidding Documents may be obtained from the Designer in accordance with the Instructions to Bidders upon the Designer's receipt of a certified or cashier's check payable to STATE OF TENNESSEE, payable in U.S. Dollars drawn on a U.S. bank, in the amount per set of **$ 250.00**

Bidders submitting bids equal to or greater than $25,000 in value are required to be licensed in accordance with state law. A statement of public contract crime status is required in the Bid form. A five percent (5%) Bid Security is required. Prevailing Wage law applies to any contract equal to or greater than $50,000 in value, or which has been determined to require Highway rates. Non-Discrimination policy applies to this project. The Owner reserves the right to waive informalities and to reject bids. A pre-bid conference will be held at the Facilities Management Building, Conference Room at 10:00 am on June 13, 2012.

INSTRUCTIONS TO BIDDERS

BIDDING DOCUMENTS

1.1 Bonafide prime Bidders and major subcontractors may obtain one Bid Pack, including Bidding Documents, Bid Envelope, and Bid Form, in accordance with provisions of the Invitation to Bid.

1.2 Individuals or firms securing Bid Packs become Bidders of Record, are automatically issued subsequent addenda, and will have deposit refunded upon returning complete Bidding Documents unmarked and in good condition within 15 days after the scheduled opening of bids. Bidders of Record who do not submit a bid are also required to return the unused Bid Envelope. Upon failure to meet these conditions, deposit shall be forfeited.

1.3 Bidders of Record may obtain additional copies of Bidding Documents at cost from Designer, but costs will not be refundable.

EXAMINATION

2.1 Bidders shall carefully examine site and documents to obtain first-hand knowledge of existing conditions and Work proposed. Copies of standards referenced in Project Manual are available for review through Designer's office.

2.2 Contractor will not be given extra payment for conditions which can be determined by examining site and documents.

PRE-BID CONFERENCE

3.1 Pre-Bid Conference may be held approximately 10 days prior to bid opening date at time and place to be announced. Bidders of Record will be notified in writing whether or not a pre-bid conference will be held.

QUESTIONS

4.1 Bidders shall submit questions about bidding documents to Designer in writing. Replies will be issued to Bidders of Record by addenda and will become part of Contract Documents. Designer and Owner will not make oral clarifications.

4.2 Questions must be received by Designer at least six calendar days before bid opening date.

4.3 No addenda will be issued less than three calendar days before bid opening date.

SUBSTITUTIONS

5.1 Substitutions before receipt of bids shall be as identified in Supplementary Conditions and Division 1 specifications. To request pre-bid approval of substitution, data required by Designer for evaluation must be received 10 calendar days before date set to receive bids. Acceptable substitutions will be identified in addenda.

5.2 Bidders submitting bids in reliance upon a substitution when the substitution has not been approved prior to bidding do so at their own risk.

QUALIFICATIONS of CONTRACTORS

6.1 Bidders shall be familiar with the Contractors Licensing Act of 1976, as currently amended, codified in Tennessee Code Annotated Sections (TCA §) 62-6-101, et seq. A contract will not be awarded that conflicts with state licensing law.

6.2 In compliance with TCA § 50-9-114(a), potential bidders are advised that the Owner does not operate a certified drug-free workplace program providing for testing.

6.3 Bids submitted for this project shall not include a contractor or subcontractor that has been disqualified from participating in State construction projects under the supervision of the State Building Commission. As a matter of public record, the State Architect maintains a list of those that have been disqualified, and the Owner endeavors to include a current copy of that list in Bidding Requirements for its projects as Information Available to Bidders. Failure to include a current list shall not negate the effect of disqualification.

BID SECURITY

7.1 Bid Security is required in the amount of five percent (5%) of total amount bid, including alternates, made payable to State of Tennessee.

7.2 Bid Bonds shall be issued by Surety company licensed to do business in Tennessee by Tennessee Department of Commerce and Insurance, and shall have certified and current Power-of-Attorney for Attorney-in-Fact attached.

7.3 Checks shall be certified or cashier's, payable in U.S. Dollars drawn on a U.S. bank. Bid security submitted in the form of a check is deposited by the Owner until conditions for a refund are met, and then refunded in accordance with normal State requirements for prompt payment. In order to obtain such a refund, the bidder must submit a completed Substitute W-9 Form, using the form of Section 00 54 35, within 30 days of the bid opening. Bid Security that has been deposited is valid for only the one bid, and is not transferrable to another bid.

7.4 Owner may retain Bid Security of bidders to whom award is being considered until either: 1) Contract has been executed; 2) specified time has elapsed so that bid is not binding; or, 3) bid has been rejected. If Bidder refuses to enter into Contract or fails to furnish all required attachments properly executed, the amount of bid security shall be forfeited to Owner as liquidated damages, not as penalty.

BID FORM

8.1 Make bids on an unaltered bid form furnished by the Designer in Bid Pack and duplicated in Project Manual. Submit one Bid Form. Failure to completely fill out Bid Form may cause bid to be rejected.

8.2 If a Bidder chooses not to bid an Alternate, Unit Price, or Base Bid in a multiple Base Bid project, write "no bid" in the space. To indicate availability of an Add Alternate at no additional charge, write "no charge" in the space. Additional stipulations or qualifications on Bid Form may cause bid to be rejected.

8.3 Bid Form shall be signed by person or persons legally authorized to bind Bidder to contract.

BID SUBMITTAL

9.1 Submit Bid Form, with required attachments, in Owner's Bid Envelope furnished by Designer in Bid Pack. Blank spaces on face of Envelope shall be filled in by Bidder, except blank provided for Designer's approval.

9.2 If work is required for Electrical, Plumbing, HVAC, Geothermal, or Masonry, list subcontractor(s) that will perform that work. If there is no work in a category, write "None Required" in space. If Bidder will perform that work with Bidder's own forces, so indicate. If acceptance of alternate or combination of alternates changes subcontractor, indicate change on bid envelope.

9.3 Provide state contractor license number, expiration date, and applicable classifications for bidder and listed subcontractors.

9.4 Bidders are solely responsible for ensuring that bids are received by the time and at the place identified for receipt of bids. A bid sent by mail shall be enclosed in an envelope clearly marked "Bid Envelope Enclosed". Bids received late will be returned unopened.

WITHDRAWAL and MODIFICATION PRIOR to CLOSE of BIDDING

10.1 Bids, once submitted, may be withdrawn or modified before the scheduled opening time only upon receipt of request signed by a person legally authorized to bind bidder to contract. If bid is withdrawn, it may not be resubmitted. Modifications to bid may be made as "add" or "deduct" only. Oral, telephonic or telegraphic withdrawal or modification will not be considered. After time and date designated for receipt of bids, bid may not be modified during time period stipulated in Bid Form.

RECEIPT and OPENING of BIDS

11.1 Bids will be received and opened at time and place identified in Invitation to Bid.

POST-BID WITHDRAWAL of BID from CONSIDERATION DUE to MISTAKE

12.1 Request to withdraw bid due to mistake must be in writing to the Owner, delivered in person or postmarked certified or registered mail not later than twenty-four hours after the time fixed for receipt and opening of bids. Request shall acknowledge that bidder refuses to enter into contract based on bid and intends to submit original work papers, documents, and materials used in preparation of the bid in like manner within five working days following date of bid opening.

12.2 Bidder making such request will be removed from consideration for award of contract; and, a duly appointed review panel shall consider whether forfeiture of Bid Security should be waived.

POST BID INFORMATION

13.1 Each Bidder shall be prepared, if requested by Owner or Designer, to present evidence, within ten days of the request, of experience, qualifications, and financial ability to carry out the terms of the contract.

CONSIDERATION of BIDS

14.1 To be considered, Bids shall be made in accordance with these Instructions to Bidders. Failure to comply with these bidding requirements may cause bid to be rejected.

14.2 The Owner reserves right to: reject Unit Prices proposed in a bid without invalidating other portions of bid; reject a bid which does not provide all required Unit Prices; waive informalities; and, reject any or all bids.

14.3 It is Owner's intent to award contract, or multiple contracts in the case of multiple base bids, based upon lowest evaluated responsive bid submitted by responsible bidder for base bid plus alternates (if any) taken in order up to, but not to exceed the Bid Target. When alternates are included in bidding, Bid Target will be announced at bid opening prior to opening bids. Alternates may be accepted or rejected at Owner's discretion, provided that final combination of base bid and accepted alternates does not change low bidder as established by above method.

14.4 In the event of tie bids, preference will be given to in-state bidder over out-of-state bidder; and, if a tie still exists, successful bidder will be determined by chance.

14.5 In the case of a multiple Base Bid, Owner may award a combined contract for the Work of more than one Base Bid if the same bidder is the successful low bidder on each.

AGREEMENT FORMS and BONDS

15.1 Agreement form will be the Standard Form of Agreement Between Owner and Contractor included in this Project Manual. The following information and provisions will be filled in prior to the presentation of the Agreement form to Contractor by Owner: 1) Contracting Agency, Contractor, Project, and Designer will be identified on page one; 2) A full enumeration of the Contract Documents which make up the Agreement will be provided in Article 1; 3) Provisions for Contract Time and Liquidated Damages will be incorporated in Article 2; 4) The Contract Sum and the basis upon which it is determined, and Unit Prices proposed as a part of the successful bid which are accepted by the Owner, will be stated in Article 3; and, 5) The signature page will provide for a single signature by the Contractor, and will provide for the several signatures on behalf of the Owner as required by law and policy.

15.2 Successful Bidder shall complete and provide an Authorization Agreement for Automatic Deposits on the ACH Credits Form included in this Project Manual.

15.3 If the Contract Sum exceeds $100,000, the successful Bidder shall provide Contract Bond in the amount of one-hundred percent (100%) of the Contract Sum, and a Three Year Roof Bond, if and as stipulated in the Bid Form. Bonds shall be provided in accordance with paragraph 11.5 of the Conditions of the Contract and paragraph 17.2 below on the Owner's standard bond forms included in this Project Manual.

EXECUTION and AWARD of CONTRACT

16.1 Presentation of Agreement form by Owner to Successful Bidder for signature does not constitute award of Contract. Contract shall not be considered awarded until Bidder has received a fully executed Agreement.

16.2 If a Bidder is presented the written Agreement form for signing, then that Bidder shall deliver to the identified Owner's representative, within five calendar days after presentation, the required number of counterparts of the signed Agreement Form, Contract Bond, Roof Bond (if required), certificates of insurance, ACH Credits Form, and substitute W-9 federal tax form.

16.3 For the purpose of computing time, the five days referred to in paragraph 17.2 commence the day after receipt of the agreement form by Bidder. Should the fifth day fall on an State holiday, weekend, or other day of Owner's closing, Bidder shall provide required documents as directed no later than the next working day; however, regardless of circumstances or causes for Bidder exceeding delivery time, Owner shall be entitled to either require forfeiture of bid security or to add for each day the Bidder exceeds the five day period a corresponding extra day in which to return a fully executed contract, which return will be considered effectuated by mailing Agreement to the Contractor within the required time plus any extensions provided herein.

16.4 Owner will fill in date of Agreement on all forms when last signature is affixed. Last signature will be by Owner.

LIQUIDATED DAMAGES and TIME

17.1 Conditions for liquidated damages are established in Supplementary Conditions. Time for completion and amount of liquidated damages are identified in Bid Form.

MINORITY PARTICIPATION

18.1 It is the express desire of the State Building Commission to include an emphasis on diversity in its contractual relationships with contractors for the construction, demolition, or renovation of State projects under jurisdiction of the Commission. The Commission acknowledges that firms who demonstrate and embrace diversity within their programs and policies are assisting the State in achieving its goals in building a more reflective marketplace of the community within this state. The State will require the successful bidder to report to the State the names and amounts of contracts entered into with minority-owned businesses on State projects in order for the State to collect data on such participation, as set forth in the Conditions of the Contract.

END of INSTRUCTIONS to BIDDERS

MAP TO THE BID OPENING LOCATION

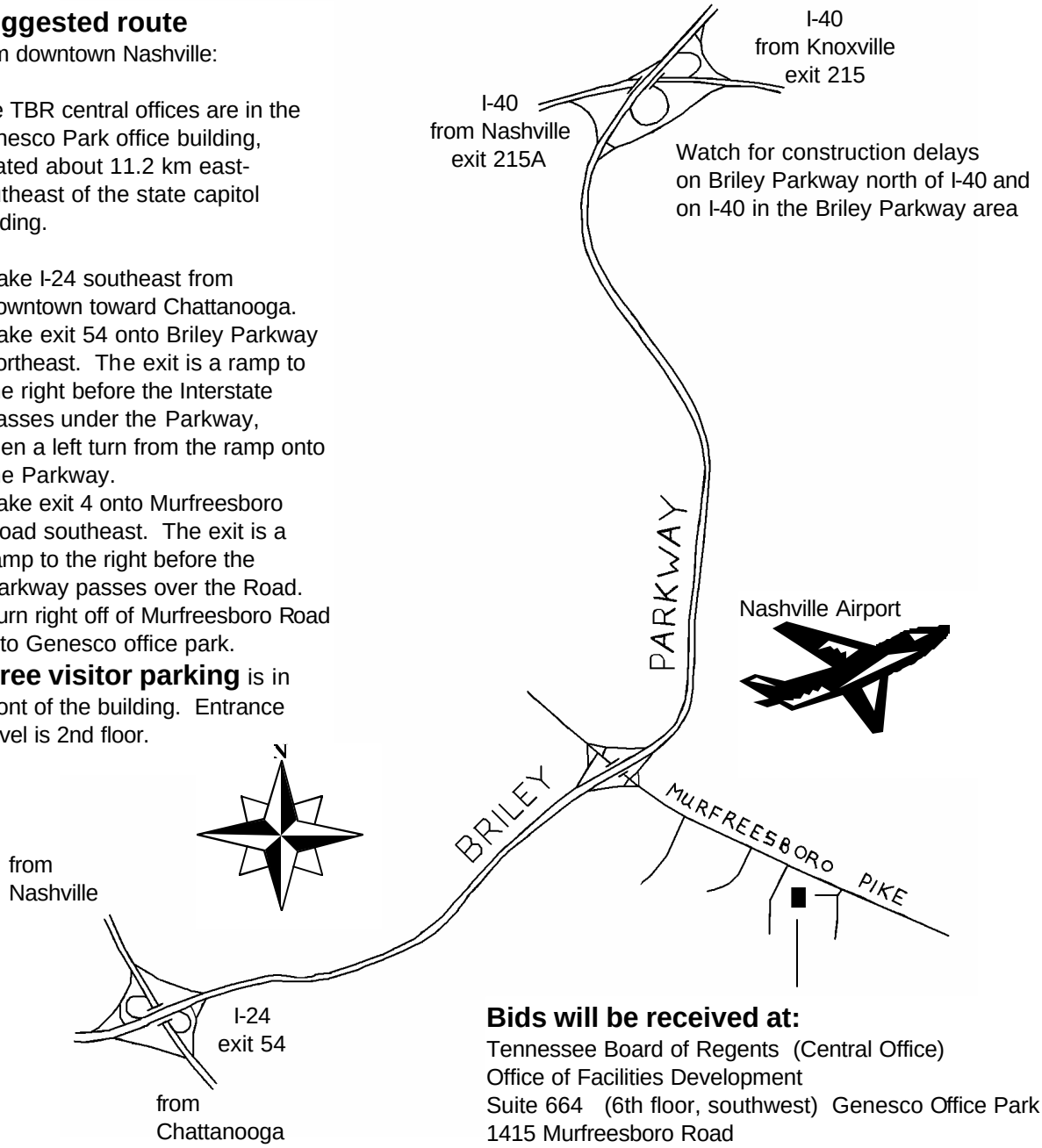
in Nashville

Suggested route

from downtown Nashville:

The TBR central offices are in the Genesco Park office building, located about 11.2 km east-southeast of the state capitol building.

- Take I-24 southeast from downtown toward Chattanooga.
- Take exit 54 onto Briley Parkway northeast. The exit is a ramp to the right before the Interstate passes under the Parkway, then a left turn from the ramp onto the Parkway.
- Take exit 4 onto Murfreesboro Road southeast. The exit is a ramp to the right before the Parkway passes over the Road.
- Turn right off of Murfreesboro Road into Genesco office park.
- **Free visitor parking** is in front of the building. Entrance level is 2nd floor.



Bids will be received at:

Tennessee Board of Regents (Central Office)
Office of Facilities Development
Suite 664 (6th floor, southwest) Genesco Office Park
1415 Murfreesboro Road
Nashville, Tennessee 37217-2833

Bids sent by mail
should be directed to the attention of

Cindy Potts

(615) 366 - 4431

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BID FORM

TO: **STATE OF TENNESSEE**
for the **PROJECT:** HALE STADIUM RENOVATION
TENNESSEE STATE UNIVERSITY
Nashville, Tennessee
SBC #166/001-02-2011

A. This Bidder hereby acknowledges, attests, certifies, warrants, and assures that:

1. This Bidder has received, read, and understands the Bidding Documents, has visited the site and become familiar with local conditions under which work is to be performed, has correlated observations with requirements of Bidding Documents, and makes this bid in accordance therewith.

2. Procurement Requirements documents included or referenced in Sections 00 30 00 through 00 39 99 provide Available Information that was prepared solely for Designer's use in design of this Work and have not been relied upon in the preparation of this bid. The use and interpretation of such information for any purposes is entirely the responsibility of the using party.

3. Contractors and subcontractors disqualified from participating in State Building Commission projects shall not be used to perform work under the contract that may result.

4. This Bidder shall not knowingly utilize the services of an illegal immigrant in the performance of this Contract and shall not knowingly utilize the services of any subcontractor or consultant who will utilize the services of an illegal immigrant in the performance of this Contract.

5. Failure to complete Bid Form, provide required attachments, or comply otherwise with the Instructions to Bidders, may be cause for rejection of bid.

6. The person who signs this bid on behalf of Bidder is legally empowered to bind Bidder to a Contract.

7. Bid Security, in the amount of five percent (5%) of the total amount bid, is attached hereto.

8. The following statement is (mark the one that is applicable)

¨ True
¨ False

The Bidder and/or any of the Bidder's employees, agents, independent contractors and/or proposed subcontractors have been convicted of, pled guilty to, or pled nolo contendere to any contract crime involving a public contract.

9. This Bidder has received the following addenda:

Addendum No _____ dated _____
Addendum No _____ dated _____
Addendum No _____ dated _____

B. This Bidder agrees to:

1. Honor this bid for a period of forty five (45) days following the date of the scheduled opening of bids.

2. Enter into and execute a contract, if presented on the basis of this bid, and furnish certificate(s) of insurance and other documents related to the contract as required, including, if the Contract Sum exceeds one-hundred-thousand dollars ($100,000), the Contract Bond.

3. Accomplish the Work in accordance with the Contract Documents.

5. Achieve Substantial Completion of the Work and each Phase thereof in accordance with the number of calendar days Contract Time allotted each, from and including the Commencement of each; and accept the conditions for Liquidated Damages in the amount set forth for each, wholly and severally for the Work and each Phase.

Phase	Commencement	Contract Time	Liquidated Damages
1	General Notice to Proceed	25	$1,000
2	General Notice to Proceed	50	$1,000

C. BASE BID:

This Bidder agrees to complete the Work of the Base Bid for this project for the lump sum of (show amount in both words and figures):

_____and_____/100ths Dollars

$_____

D. ALTERNATES:

This Bidder agrees to include work of the following alternates as specified (See Section 01 23 00) for the additional amounts listed:

Alternate No. 1: Add Concrete Steps

_____and_____/100ths Dollars

$_____

Alternate No. 2: Change Paving

_____and_____/100ths Dollars

$_____

E. UNIT PRICES:

This Bidder has included Base Quantities of Unit Price Items in the Base Bid, as specified, and proposes the following Unit Prices for use in the construction contract, if accepted by Owner:

Item	**Name** (See Sections *01 22 00 through 01 22 99*)	**Unit Price**
1.	Over Excavation and Fill	$ per CY
2.	Asphalt Paving	$ _____ Per SY

Submitted by:

Authorized signature: _____ Date: _____

Name and title: (Type or print) _____

On behalf of: (Name of Bidder) _____

Bidder's address: (Please give Street and Mailing address if different) _____

Bidder's Telephone Number: _____ Bidder's Fax Number: _____

Bidder's contact's email address: _____

Agreement

Between Owner and Contractor

where the Basis of Payment is a
STIPULATED SUM

Use only with the coordinated documents identified in the current
Designers' Manual
for projects of the State Building Commission of Tennessee and the Tennessee Board of Regents

AGREEMENT

made as of the day of in the year of

BETWEEN the Owner: **STATE OF TENNESSEE**
via the Contracting Agency: **Tennessee Board of Regents**

and the Contractor:

the Project:

the Designer:

The Owner and the Contractor agree as set forth below.

ARTICLE 1
THE WORK AND THE CONTRACT DOCUMENTS

1.1 The Contractor shall perform all the Work required by the Contract Documents for the Project identified on page one.

1.2 The Contract Documents are identified in the Conditions of the Contract (General, Supplementary, and other Conditions). These form the Contract and constitute the entire agreement between the Owner and the Contractor, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. An enumeration of the Contract Documents appears in paragraph 1.4.

1.3 Terms used in this Agreement which are defined in the Conditions of the Contract shall have the meanings designated in those Conditions.

1.4 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:

ARTICLE 2
TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

2.1 The Work to be performed under this Contract shall be commenced on the date stipulated in the Notice to Proceed; and, subject to authorized adjustments, Substantial Completion shall be achieved

2.2 Liquidated Damages, as set forth in paragraph 9.12 of the Conditions of the Contract, are

ARTICLE 3
CONTRACT SUM

3.1 The Owner shall pay the Contractor in current funds for the performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, the Contract Sum of

3.2 The Contract Sum is determined as follows:

3.3 The following Unit Prices will be used as specified:

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

BY CONTRACTOR:

Signature: _____

Name: _____

Title: _____

AND BY OWNER: STATE OF TENNESSEE
Tennessee Board of Regents

APPROVED: _____

APPROVED: _____

APPROVED: _____

BY: _____

END of AGREEMENT FORM for the Project titled:

ACH CREDITS FORM

Automated Clearing House Credits (not wire transfers)

Authorization Agreement for Automatic Deposits

Name: _____

Federal Identification Number or Social Security Number under which you are doing business with the State: _____

I/we hereby authorize the State of Tennessee, hereinafter called the STATE, to initiate credit entries to my/our *select type of account* ☐ Checking or ☐ Savings account indicated below and the depository named below, hereinafter called DEPOSITORY, to credit the same to such account. This authority to remain in full force and effect until the STATE has received notification from me (or either of us) of its termination in such time and in such manner as to afford the STATE and DEPOSITORY a reasonable opportunity to act on it.

Do you currently receive payments from the State through ACH? ☐ Yes ☐ No

If yes, do you intend for this account information to replace other existing account information currently used by the State? ☐ Yes ☐ No

If yes, please specify the account that should be changed:

ABA Number: _____ *Account Number:* _____

Is this authorization only for certain types of payments? ☐ Yes ☐ No

If yes, please indicate types:

_____

_____

_____

Many banking institutions use different numbers for ACH.
Please call your bank for verification of ACH transit and account number.

Bank official contacted: _____ Phone number: _____

Depository / Bank:

Name: _____ Branch: _____

City: _____ State: _____

Transit/ABA No. _____ Account No.: _____

please print name(s) of authorized account signatory

Name(s) _____

Date _____ Signed: _____ Signed: _____

Please attach a deposit slip (or for checking accounts, a voided check).

Please indicate address to which you would like your remittance advisories routed when payments are processed:

On pay requests during performance of the contract, you will be required to show this address.

For State use only:
Contact Agency: _____
Contact Person: _____
Telephone No.: _____

SUBSTITUTE W-9 FORM

Request for Taxpayer identification number and certification

1. Please complete general information:

Taxpayer Name _____ Phone Number _____

Business Name (if applicable) _____

Address _____

City _____ State _____ Zip Code _____

2. Circle the most appropriate category below: (please circle only one)

1) Individual (not an actual business)
2) Joint account (two or more individuals)
3) Custodian account of a minor
4) a. Revocable savings trust (grantor is also trustee)
   b. So-called trust account that is not a legal or valid trust under state law
5) Sole proprietorship (using a social security number for the taxpayer ID)
6) Sole proprietorship (using a federal employer identification number for taxpayer ID) **OR** Limited Liability Company (LLC) formed as a Disregarded Entity
7) A valid trust, estate, or pension trust
8) Corporation **OR** Limited Liability Company (LLC) formed as a Corporation
9) Association, club, religious, charitable, educational, or other non-profit organization **(for entities that are exempt from federal tax, use category 13 below)**
10) Partnership **OR** Limited Liability Company (LLC) formed as a Partnership
11) A broker or registered nominee
12) Account with the US Department of Agriculture in the name of a public entity that receives agricultural program payments
13) Government Agencies and organizations which are tax-exempt under Internal Revenue Service guidelines (i.e., IRC 501(c)3 entities)

3. Fill in your taxpayer identification number below: (please complete only one)

1) If you circled number 1-5 above, fill in your Social Security Number.

___ ___ ___ - ___ ___ - ___ ___ ___ ___

2) If you circled number 6-13 above, fill in your Federal Employer Identification Number (EIN).

___ ___ - ___ ___ ___ ___ ___ ___ ___

4. Sign and date the form:

Certification - Under penalties of perjury, I certify that the number shown on this form is my correct taxpayer identification number. If I circled category 13 above, I also certify that my agency or organization is tax-exempt per Internal Revenue Service guidelines and not subject to backup withholding.

Signature _____ Date _____

Title (if applicable) _____

CONTRACT BOND

standard form for construction contracts under the State Building Commission of Tennessee

BOND NO. _____

Know all men by these presents: that we

(hereinafter called the "Principal") and

hereinafter called the "Surety") do hereby acknowledge ourselves indebted and securely bound and held unto

(hereinafter called the "Owner"), and in the penal sum of

good and lawful money of the United States of America, for the use and benefit of those entitled thereto, for the payment of which, well and truly to be made, we bind ourselves, our heirs, our administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

But the condition of the foregoing obligation or bond is this:

Whereas, the Owner has engaged the principal for the sum of

to complete the Work of the project titled:

as more fully appears in a written agreement or contract bearing the date of

a copy of which said agreement or contract is by reference hereby made a part hereof, as fully and to the same extent as if copied at length herein, and it is the desire of the Owner that the Principal shall assure all undertakings under said agreement or contract and shall assure and protect all laborers and furnishers of material on said Work both as provided by Tennessee Code Annotated Sections 4-15-102(f)(2) and 12-4-201 through 12-4-206, and any and all amendments thereto, and shall assure the prompt payment of claims as provided by Tennessee Code Annotated Sections 12-4-207 through 12-4-208, and any and all amendments thereto. The Principal shall also comply with provisions of Tennessee Code Annotated Sections 12-4-401 through 12-4-415, and any and all amendments thereto, pertaining to the payment of the prevailing wage rate.

Now, therefore, if the Principal shall fully and faithfully perform all undertakings and obligations under the contract hereinbefore referred to and shall fully indemnify and hold harmless the Owner from all costs and damage whatsoever which it may suffer by reason of any failure on the part of the Principal to do so, and shall fully reimburse and repay the Owner any and all outlay and expense which it may incur in making good any such default, and shall fully pay for all of the labor, material and work used by the Principal and any immediate or remote sub-contractor or furnisher of material under him in the performance of said contract, in lawful money of the United States, as the same shall become due, then this obligation or bond shall be null and void, otherwise to remain in full force and effect.

And for value received, it is hereby stipulated and agreed that no change, extension of time, alteration or addition to the terms of the contract or to the Work to be performed thereunder or to the specifications accompanying the same shall in any wise affect the obligation under this bond, and notice is hereby waived of any such change, extension of time, alteration or addition to the terms of the contract or to the Work or to the specifications.

In witness whereof the Principal has hereunto affixed its signature and Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers, on this _____ day of _____, 20___.

Executed in _____ counterparts.

Witness:

_____	_____
(name of Principal)	*(name of Surety)*
_____	_____
(authorized signature)	*(signature of Attorney-in-fact)*
_____	_____
(name of signatory)	*(name of Attorney-in-fact)*
_____	_____
(title of signatory)	*(Tennessee license number of Agent or Attorney-in-fact)*
	_____
	(countersignature of resident Agent if not same as Attorney-in-fact)

Surety Company issuing bond shall be licensed to transact business in State of Tennessee by Tennessee Department of Commerce and Insurance. Bonds shall have certified and current Power-of-Attorney for the Surety's Attorney-in-Fact attached. Attorney-in-fact who executes bond on behalf of Surety shall be licensed by and a resident of State of Tennessee, and shall affix license number to bond; or, countersignature by a licensed agent who is a resident of State of Tennessee, and the agent's license number, shall be affixed to the bond in addition to the signature of the Attorney-in-Fact.

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

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

Section 00 72 13 of all General Work of the Owner as of June 2009

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

THE OWNER:
~~*(Name, legal status and address)*~~

Tennessee Board of Regents

THE ~~ARCHITECT:~~
~~*(Name, legal status and address)*~~
DESIGNER:

The Designer as identified in the Agreement

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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.~~ Designer. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the ~~Architect~~ Designer or the ~~Architect's~~ Designer's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the ~~Architect~~ Designer or the ~~Architect's~~ Designer's consultants or (4) between any persons or entities other than the Owner and the Contractor. The ~~Architect~~ Designer shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the ~~Architect's~~ Designer'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~~ Designer and the ~~Architect's~~ Designer's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the ~~person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.~~ Designer.

§ 1.1.9 PROJECT MANUAL

The Project Manual is a volume or set that may include portions of the Contract Documents and other documents.

§ 1.1.10 PROVIDE OR PROVIDED

"Provide" or "Provided" as used in Contract Documents includes furnishing and installing a thing, product, system or the like.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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

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

§ 1.2.4 Within the Specifications, the sections of Division One (01) are General Requirements, and apply to all sections of the Specifications.

§ 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~~ Designer and the ~~Architect's~~ Designer's consultants shall be deemed the authors and owners of their respective Instruments of Service, ~~including the Drawings and Specifications,~~ except the design and the Contract Documents, and will retain all common law, statutory and other reserved rights, including copyrights. The design and the Contract Documents are property of the State of Tennessee, and may be used again only for the benefit of the State and on authority of the State Building Commission (SBC). The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of ~~Service.~~ Service, the design, or the Contract Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of ~~the Architect's or Architect's consultants'~~ reserved rights.

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

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the ~~parties intend to transmit Instruments of Service or any other information or documentation in digital form, they~~ Contractor intends to transmit Instruments of Service in digital form, it shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization.

Except as otherwise provided in Section 4.2.1, the ~~Architect~~ Designer does not have such authority. The term "Owner" means the Owner or the Owner's authorized ~~representative.~~representative, in accordance with SBC Policy.

§ 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.~~.Public construction projects are not subject to mechanic's liens in Tennessee. The remedy afforded to laborers and furnishers of material on State projects is referenced in Section 15.2.8.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

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

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

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

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

§ 2.2.5 ~~Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.~~The Contractor will be furnished, free of charge, such copies of Contract Documents as are reasonably necessary for execution of the Work.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

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

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

~~If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If~~

~~payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.~~

§ 2.4.1 If Contractor defaults or neglects to carry out the Work in accordance with Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies.

§ 2.4.2 If the Contractor fails to complete the Work in accordance with the time limit stipulated in the Certificate of Substantial Completion, then Owner may take over the completion of Work without advance notice to Contractor and without prejudice to any other remedy that Owner may have.

§ 2.4.3 In such cases as described in Sections 2.4.1 and 2.4.2, an appropriate modification will be issued deducting from the Contract Sum the reasonable cost of correcting such deficiencies or completing such Work, regardless of whether Owner actually undertakes completing such Work, in which case the deduction shall be based on the Designer's estimate in accordance with Section 7.3.6, including Owner's expenses and compensation for the Designer's additional services made necessary by such default, neglect, or failure. Such action by the Owner and amounts charged to Contractor are both subject to prior approval of the Designer. If the unpaid balance of the Contract Sum is not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

§ 2.4.4 In the case of a Contract Sum based upon a Guaranteed Maximum Price that includes a GMP Contingency, the unused GMP Contingency shall not be included in the calculation required by Section 2.4.3 of unpaid balance of the Contract Sum, and the reduction in the Contract Sum shall not be applied to the GMP Contingency.

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~~ term "Contractor" means the Contractor or the Contractor's authorized representative. When the Agreement is a Construction Services Agreement between the Owner and a Construction Manager / General Contractor, the term "Contractor" means Construction Manager / General Contractor or its authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

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

§ 3.1.4 At the time of bid and award, Contractor shall not be currently disqualified from participating in State construction projects under the supervision of the SBC. Such disqualification extends to succeeding or related corporations, partnerships, joint ventures, and other business organizations having substantial factual or legal connections, continuity, or identity with those that have been disqualified.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, ~~the Contractor~~

~~shall promptly report to the Architect~~ any errors, inconsistencies or omissions discovered by or made known to the Contractor shall be promptly reported by the Contractor to the Designer as a request for information in such form as the ~~Architect~~ Designer 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. Contractor shall not perform construction activity when Contractor knows, or should know in exercise of reasonable diligence, that the activity involves error, inconsistency, or omission in 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 shall be promptly reported by the Contractor to the Designer as a request for information in such form as the ~~Architect~~ Designer may require.

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

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

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

§ 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. Contractor shall receive neither material, equipment, labor, nor services from one who submitted a competing general bid for the same Contract and subsequently withdrew, reneged, or otherwise failed to enter into the contract.

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

materials, equipment, and systems are essential elements of the Contract. If Contractor desires to use another material, equipment, or system in lieu thereof, Contractor shall request approval in writing and shall submit samples and data, including an estimate of difference in cost, as required for Designer's consideration. Designer and Owner will be final judge of acceptability of substitution. No substitution shall be made without authority in writing from Designer. Not later that 21 days after award of contract, Contractor shall provide a list showing names of manufacturers proposed for each specified product, and applicable name of installer, whether Contractor or subcontractor. Designer will within 14 days reply in writing to Contractor stating whether Owner or Designer, after due investigation, has reasonable objection to any such manufacturer or installer. If adequate data on proposed manufacturer or installer is not available, Designer may state that action will be deferred until Contractor provides further data. Contractor shall not make use of a manufacturer, or installer to which Owner or Designer has reasonably objected. Contractor shall receive appropriate adjustment in Contract Sum, Contract Time, or both for making such change unless objection was based on failure of manufacturer or installer to meet requirements of Contract Documents, in which case neither Contract Sum nor Contract Time shall be adjusted. Failure to object to a manufacturer shall not constitute waiver of requirements of Contract Documents. Products furnished by listed Contractor's manufacturers must conform to requirement of Contract Documents.

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

§ 3.4.4 Contractor shall disclose existence and extent of financial interests, whether direct or indirect, which Contractor has in proposed subcontractors and material suppliers.

§ 3.4.5 PROHIBITION OF ILLEGAL IMMIGRANTS

§ 3.4.5.1 The requirements of Public Acts of 2006, Chapter Number 878, of the State of Tennessee, addressing the use of illegal immigrants in the performance of any contract to supply goods or services to the State of Tennessee, shall be material provision of this Contract, a breach of which shall be grounds for monetary and other penalties, including termination of this Contract.

§ 3.4.5.2 The Contractor by entering into this contract attests, certifies, warrants, and assures that the Contractor shall not knowingly utilize the services of an illegal immigrant in the performance of this Contract and shall not knowingly utilize the services of any subcontractor or consultant who will utilize the services of any illegal immigrant in the performance of this Contract.

§ 3.4.5.3 The Contractor understands and agrees that failure to comply with this section will be subject to the sanctions of Public Chapter 878 of 2006 for acts or omissions occurring after its effective date. This law provides for the prohibition of a Contractor from contracting with, or submitting an offer, proposal, or bid to contract with the State of Tennessee to supply goods or services for a period of one year after a Contractor is discovered to have knowingly used the services of illegal immigrants during the performance of this Contract.

§ 3.4.5.4 For purposes of this Contract, "illegal immigrant" shall be defined as any person who is not either a United States citizen, a lawful permanent resident, or a person whose physical presence in the United States is authorized or allowed by the Department of Homeland Security and who, under Federal immigration laws and/or regulations, is authorized to be employed in the U.S. or is otherwise authorized to provide services under the Contract.

§ 3.4.6 NON-DISCRIMINATION IN EMPLOYMENT

§ 3.4.6.1 Contractor shall not discriminate against any employee nor applicant for employment because of race, creed, color, religion, sex, age, or national origin as defined in Tennessee Code Annotated (TCA) § 4-21-401, et seq, nor because of handicap, in accordance with TCA § 8-50-103.

§ 3.4.6.2 Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to handicap, race, creed, color, religion, sex, age, or national origin, including but not limited to practices in recruitment, recruitment advertising, employment, selection for training or apprenticeship, rates of pay or other forms of compensation, upgrading, demotion, transfer, layoff, or termination.

§ 3.4.6.3 Contractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth these policies of non-discrimination.

§ 3.4.6.4 Solicitations or advertisements for employees placed by or in behalf of Contractor shall state that qualified applicants shall receive consideration for employment without regard to handicap, race, creed, color, religion, sex, age, or national origin.

§ 3.4.7 PREVAILING WAGE SCALE

§ 3.4.7.1 Contractor is required to comply with policies, conditions and rules of the Tennessee Department of Labor and Workforce Development pursuant to TCA § 12-4-401, et seq, which include that if the Contract Sum exceeds $50,000, Contractor is required to pay Prevailing Wage Scale current in the area of the Project to laborers and mechanics employed on the Work, as set forth in said rules, policies, and statute, and to furnish weekly payrolls with the decision number noted on each to the Tennessee Department of Labor and Workforce Development.

§ 3.4.7.2 When a Federal Wage Scale will apply to the Project, it will be included in Contract Documents, and Contractor shall pay not less than rates set forth. If both federal and State wage rates apply to project, Contractor shall pay the higher of the two wage scales for each craft or trade.

§ 3.4.7.3 Current Prevailing Wage Scale Determination(s) for this project will be included in Contract Documents as part of the Conditions of the Contract, if Owner's estimate of the value of Work indicates that it is required. Failure of Owner or Designer to provide current wage scale decision prior to bidding does not relieve Contractor of obligations set forth above.

§ 3.4.7.4 If Prevailing Wage Rates applicable to the Project change during the course of the Contract, or differ from those provided in Contract Documents, equitable adjustment in Contract Sum shall be made.

§ 3.4.8 REPORTING OF SUBCONTRACTORS

If the total Contract Sum equals or exceeds $100,000 (whether under the terms of the initial contract or by Modification), and the time of performance is more than six (6) months, Contractor shall fully comply with its obligations under TCA § 50-7-404(g) including but not limited to the subcontractor reporting requirements of subsection (g)(1).

§ 3.5 WARRANTY

The Contractor warrants to the Owner and ~~Architect~~ Designer 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,~~ Designer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

~~The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.~~**§ 3.6.1** 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.

§ 3.6.2 If the State of Tennessee enacts, after bids are received or negotiations concluded, a change in a sales, consumer, use, or similar state tax for the Work or a portion thereof provided by the Contractor, the Contract Sum shall be accordingly adjusted by appropriate modification or the Owner may make other lawful provision to mitigate the change.

§ 3.6.3 Neither Contract Sum nor Contract Time shall be adjusted for impacts resulting from a change in a tax by a governmental body other than the State of Tennessee, regardless of when the tax is enacted or goes 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~~ Contractor, except as provided in Section 3.7.3, 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~~ Contractor, except as provided in this section 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. The Owner is an agency of state government, and as such has sovereign immunity from the laws, ordinances, rules, regulations, and lawful orders of local governments within the state; however, the Contractor shall obtain all normal permits whenever possible as if the Owner had no such immunity. If a delay or denial in securing a local permit occurs, the Contractor shall continue the Work, inform the Designer and the Owner of the situation, propose corrective measures, and continue to pursue the customary permits.

§ 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 taking into account that unless otherwise stipulated in Contract Documents, excavations and other subsurface construction activity shall be considered unclassified down to design depth, regardless of substrate and abandoned or inactive infrastructure 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~~ Designer in accordance with Section 15.1.4 before continuing activities that could lead to a claim for additional cost and in no event later than 21 days after first observance of the conditions. The ~~Architect~~ Designer will promptly investigate such conditions and, if the ~~Architect~~ Designer determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an ~~equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect~~ adjustment in the Work, Contract Sum and/or Contract Time. If the Designer 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~~ Designer shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the ~~Architect's~~ Designer's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and ~~Architect.~~ Designer. 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.~~ Modification. The amount of the ~~Change Order~~ Modification 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.~~3.8.2.2; and

.4 Contractor shall monitor the costs included in allowances, and shall not incur excess costs without first obtaining a Modification adjusting the allowance sufficient for the excess.

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

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

§ 3.9.3 The Contractor shall not employ a ~~proposed~~ superintendent to whom the Owner or ~~Architect~~ Designer has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

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

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the ~~Architect's~~ Designer's approval. The ~~Architect's~~ Designer's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the ~~Architect~~ Designer reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

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

§ 3.10.4 SCHEDULING ASSISTANCE

Owner may provide the Scheduling Assistance. If provided, such services will be set forth in the specification of Progress Schedules. If provided, the purpose of such services is to assist in producing a progress schedule for the Work; however, no express or implied guarantee or warrantee is provided by the Owner regarding the suitability of the derived schedules, and the Contractor retains full responsibility for the suitability of the schedules and for conforming to them. Contractor shall fully cooperate in developing a schedule, and shall require the necessary forces assisting the Contractor to likewise cooperate fully.

§ 3.10.5 COMMISSIONING CONSULTANT

Owner may provide the services of a Commissioning Consultant, either as a consultant engaged by the Owner, or as Subcontractor under a specified allowance and selected by the Owner. If provided, such services will be set forth in the Specifications. The Contractor retains full responsibility for compliance with the Contract Documents. Contractor shall fully cooperate in commissioning, and shall require the necessary forces assisting the Contractor to

likewise cooperate fully. If commissioning activities are included in the Work, they shall not be a cause for delay or cost claims.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

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

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

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

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

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

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the ~~Architect~~ Designer is subject to the limitations of Section 4.2.7. Informational submittals upon which the ~~Architect~~ Designer 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~~ Designer without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the ~~Architect~~ Designer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the ~~Architect~~ Designer 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~~ Designer 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 prior to providing that which is the subject of the submittal, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. If a portion of Work demonstrated by a submittal deviates from the requirements of the Contract Documents, the Contractor shall specifically identify the deviation and its difference in cost as a part of the submittal.

§ 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.~~Designer.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the ~~Architect's~~ Designer's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the ~~Architect~~ Designer in writing of such deviation and its difference in cost at the time of submittal and (1) the ~~Architect~~ Designer 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~~ Designer'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~~ Designer on previous submittals. In the absence of such written notice, the ~~Architect's~~ Designer's approval of a resubmission shall not apply to such revisions.

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

§ 3.13 USE OF SITE

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

§ 3.14 CUTTING AND PATCHING

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

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

§ 3.15 CLEANING UP

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

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

§ 3.16 ACCESS TO WORK

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

§ 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~~ the Owner 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~~ property, including loss of use resulting therefrom, (other than the Work itself), but only to the extent caused by the willful or negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.18. Contractor agrees to indemnify the Designer and Designer's consultants based on the willful or negligent acts or omissions of the Contractor, except that Contractor shall not indemnify the Designer and Designer's consultants based on design mistakes and errors or omissions.

§ 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.

§ 3.19 RELATIONS WITH OWNER"S REPRESENTATIVES

§ 3.19.1 Contractor, subcontractors, material suppliers, and sub-subcontractors shall neither offer nor give a product, service, payment, negotiable instrument, gift, gratuity, or other compensation in connection with this project to a representative or employee of the State of Tennessee, the Designer, or the Designer's consultants without Owner's consent. Evidence of a violation of this requirement may be cause for termination of this Contract.

§ 3.20 PARTICIPATION OF MINORITY-OWNED BUSINESSES:

§ 3.20.1 To the extent that the Contractor or a subcontractor is a Minority-owned Business, the Contractor shall report to the State its own status in this regard and the names and amounts of contracts entered into with Minority-owned Businesses on State projects in order for the State to collect data on such participation.

§ 3.20.2 "Minority-owned Business" means a business which is solely owned, or at least 51percent of the assets of outstanding stock of which is owned, by an individual who personally manages and controls the daily operations of such business, and who is impeded from normal entry into the economic mainstream because of past practices of discrimination based on race, religion, ethnic background, sex, or disability.

§ 3.20.3 To be a "Minority-owned Business" for the purposes of this contract, a business must be certified as a "Minority-owned Business" by an agency of the federal government or the government of the State of Tennessee which is normally engaged in the practice of providing such certification.

ARTICLE 4 DESIGNER

~~ARTICLE 4 ARCHITECT~~

§ 4.1 GENERAL

§ 4.1.1 ~~The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the~~

~~Agreement and is referred to throughout the Contract Documents as if singular in number.~~ "Designer" is the licensed prime design professional or firm lawfully practicing architecture, landscape architecture, or engineering, identified in the Bidding Documents and Agreement form for project, or the authorized representative thereof.

§ 4.1.2 Duties, responsibilities and limitations of authority of the ~~Architect~~ Designer as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and ~~Architect.~~ Designer. Consent shall not be unreasonably withheld.

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

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The ~~Architect~~ Designer 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~~ (1) during construction, (2) until final payment is due and (3) at the Owner's request during the one-year period for correction of Work described in Section 12.2. The Designer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The ~~Architect~~ Designer will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, (1) to become generally familiar with the progress and quality of the portion of the Work completed, (2) endeavor to guard the Owner against defects and deficiencies in the Work, and (3) 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~~ Designer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The ~~Architect~~ Designer 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~~ which are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

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

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

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

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

§ 4.2.6 The ~~Architect~~ Designer has authority to reject Work that does not conform to the Contract Documents. Whenever the ~~Architect~~ Designer considers it necessary or advisable, the ~~Architect~~ Designer will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the ~~Architect~~ Designer 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~~ Designer to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The ~~Architect~~ Designer 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~~ checking for compliance with the requirements and conformance with the intent of the Contract Documents. The Designer's action will be taken in accordance with the submittal schedule approved by the ~~Architect~~ Designer or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the ~~Architect's~~ Designer'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~~ Designer'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~~ Designer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the ~~Architect,~~ Designer, of any construction means, methods, techniques, sequences or procedures. The ~~Architect's~~ Designer'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~~ Designer will assist the Owner in preparing Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The ~~Architect~~ Designer will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The ~~Architect~~ Designer 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~~ Designer agree, the ~~Architect~~ Designer will provide one or more project representatives to assist in carrying out the ~~Architect's~~ Designer's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract ~~Documents.~~Documents if requested by the Contractor.

§ 4.2.11 The ~~Architect~~ Designer 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~~ Designer'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~~ Designer 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~~ Designer 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.~~accordance with a reasonable and professional standard of care .

§ 4.2.13 The ~~Architect's~~ Designer'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~~ Designer will review and respond to requests for information about the Contract Documents. The ~~Architect's~~ Designer's response to such requests will be made in writing within any time limits agreed upon or otherwise ~~with reasonable promptness.~~ within 15 days. If appropriate, the ~~Architect~~ Designer will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

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

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

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

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, ~~as soon as practicable~~ within 21 days after award of the Contract, shall furnish in writing to the Owner through the ~~Architect~~ Designer the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The ~~Architect~~ Designer may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the ~~Architect~~ Designer has reasonable objection to any such proposed person or entity or (2) that the ~~Architect~~ Designer requires additional time for review. Failure of the Owner or ~~Architect~~ Designer to reply within the 14 day period shall constitute notice of no reasonable objection. No construction activity shall be commenced by a person or entity in question until all objections have been resolved. If required, Contractor shall furnish evidence satisfactory to Designer, showing each proposed Subcontractor is competent to execute work covered by the subcontract. Subcontractors identified as a part of Contractor's bid for this project shall be used in the capacity listed, unless otherwise approved by the Owner in accordance with State Building Commission policy.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or ~~Architect~~ Designer 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~~ Designer has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or ~~Architect~~ Designer has no reasonable objection. If the proposed but rejected Subcontractor was able to meet requirements of Contract Documents and reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

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

§ 5.2.5 Contractor shall not award subcontract to one who submitted a competing general bid for the same Contract and subsequently withdrew, reneged, or otherwise failed to enter into contract.

§ 5.2.6 Contractor shall not allow work under the Contract to be performed contrary to the requirements of Section 3.4.5 nor by a Contractor or Subcontractor that has been disqualified from participating in State construction projects under the supervision of the State Building Commission. Such disqualification extends to succeeding or related corporations, partnerships, joint ventures, and other business organizations having substantial factual or legal connections, continuity, or identity with those that have been disqualified. If such a participant is discovered, Contractor shall immediately discontinue the participation and provide a suitable substitute at no additional cost to the Owner, and provide documentation to the Owner of the action taken to comply with this requirement.

§ 5.3 SUBCONTRACTUAL RELATIONS

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

Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

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

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

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

Assignment is at the option of Owner, and creates no duty or obligation upon Owner to exercise this option, nor is any right created for any subcontractor to expect or rely upon such assignment. When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

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

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to ~~insurance and waiver of subrogation.~~ insurance. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

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

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

§ 6.2 MUTUAL RESPONSIBILITY

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

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the ~~Architect~~ Designer apparent discrepancies or defects in such other construction that would render it

unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

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

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

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

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the ~~Architect~~ Designer 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;~~ Designer; a Construction Change Directive requires agreement by the Owner and ~~Architect~~ Designer 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~~ Designer alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument ~~prepared by the Architect and~~ signed by the Owner, Contractor and ~~Architect~~ Designer 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 that the price includes all eligible overhead and profit, and represents all direct and indirect costs associated with the change; and

.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Unless otherwise agreed in writing by Owner and Contractor, the method of determining adjustments in Contract Sum shall be by one or more of the methods set forth in Section 7.3.3, and shall be based on reasonable expenditures and savings as set forth in Section 7.3.7.

§ 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,~~ Designer, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

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

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

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.7.

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

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

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

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the ~~Architect~~ Designer shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit ~~as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount.~~ in accordance with Section 7.3.11. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the ~~Architect~~ Designer may prescribe, an itemized accounting together with appropriate supporting data. ~~Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:~~

§ 7.3.7.1 Costs for the purpose of this Section 7.3.7 shall be limited to the following:

.1 ~~Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;~~Payroll Expense of labor;

.2 Costs of materials, supplies and equipment, including cost of transportation, thereof, whether incorporated or consumed;

.3 Rental costs of machinery and ~~equipment, exclusive of hand tools, whether rented from the Contractor or others;~~equipment rented from others, and not more than 80 percent of the Associated Equipment Distributors Nationally Averaged Rental Rates for Construction Equipment for machinery and equipment belonging to the Contractor;

.4 Costs of premiums for ~~all bonds and insurance,~~ bonds and insurance to the extent required by Contract Documents, permit fees, and sales, use or other similar taxes related to the Work; ~~and~~

.5 Additional ~~costs of supervision and field office personnel directly attributable to the change.~~Direct Payroll Expense of superintendence directly attributable to authorized overtime; and ,

.6 reasonable Direct Payroll Expense of project manager and clerical work directly attributable to estimating and coordinating the change

.7 The following items are "Class 1 Time-Related Expenses", and shall be considered as costs when Contract Time is extended due to additional work or a Class 1 cause defined in Section 8.3, and solely to the extent directly attributable to extension of time: field offices, sheds, phones, sanitary facilities, on-site utilities, drinking fountains, cleaning, safety programs, and other construction facilities and temporary controls not specifically required for additional work; costs of superintendence; superintendent's vehicle; and other general use vehicles, being those requiring a class D, H, or M license, and excluding those requiring a class A, B, or C license, as set forth in the Tennessee Driver Handbook or comparable current successor publication of the Tennessee Department of Safety.

.8 If the Contract Sum is a Guaranteed Maximum Price between the Owner and a Construction Manager / General Contractor, the costs for project manager, clerical work, and Class 1 Time-Related Expenses included by Sections 7.3.7.1.6 and 7.3.7.1.7 and the extra 5 percent for the Contractor in Section 7.3.11.1 shall not apply. In such cases, the CM/GC Fee and General Conditions costs shall apply in accordance with the Master Contract provisions for Modifications and Change in GMP.

§ 7.3.7.2 DIRECT PERSONNEL EXPENSE (DPE)

§ 7.3.7.2.1 Direct payroll expense (DPE) costs delineated in Sections 7.3.7.1.1, 7.3.7.1.5, 7.3.7.1.6, and 7.3.7.1.7 shall be limited to base salary or hourly wage plus a maximum of 39 percent of base salary or hourly wage, and further limited to a maximum of $155 per hour, including all labor burden.

§ 7.3.7.2.2 If the Contract Sum is a Guaranteed Maximum Price between the Owner and a Construction Manager / General Contractor, and the proposal on which the CM/GC Master Contract is based identified a Labor Burden multiplier as a cost consideration, then the 39 percent maximum in Section 7.3.7.2.1 shall not apply, and the Labor Burden multiplier provided in the Proposal shall be used.

§ 7.3.7.3 Specifically excluded from costs and included in overhead or general requirements are: corporate, home office, and branch office overhead, rent, mortgage, off-site utilities, project management, and personnel not otherwise mentioned; capital expenses and interest on capital; hand tools; and the items listed in Section 7.3.7.1.7 when Contract Time is not extended due to additional work or a Class 1 clause.

§ 7.3.7.4 To facilitate checking for increases or decreases in the Contract Sum, proposals shall be accompanied by Contractor's complete itemization of costs of work including labor, materials and equipment, plus an amount for overhead and profit.

§ 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.~~ Designer. When both additions and credits covering related Work or substitutions are involved in a change, the ~~allowance~~ amount 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.~~ amounts included in the Contract Sum by the Construction Change Directive for such changes shall be included in the Schedule of Values.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the ~~Architect~~ Designer 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~~ shall be recorded by preparation and execution of an appropriate Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.3.11 OVERHEAD AND PROFIT

§ 7.3.11.1 The amount for overhead and profit on costs as stipulated in Section 7.3.7 shall be: 10 percent overhead added to the itemized cost: plus 5 percent profit added to the itemized cost and overhead; plus 5 percent for the Contractor added to the itemized cost, overhead, and profit, when the itemized cost is for work performed by a subcontractor or sub-subcontractor.

§ 7.3.11.2 When the Contract Sum is a Guaranteed Maximum Price between the Owner and a Construction Manager / General Contractor, the extra 5 percent for the Contractor in Section 7.3.11.1 shall not apply. In such cases, the CM/GC Fee shall apply in accordance with the Master Contract provisions for Modifications and Change in GMP.

§ 7.4 MINOR CHANGES IN THE WORK

The ~~Architect~~ Designer has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the ~~Architect~~ Designer and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

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

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

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

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

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

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

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

§ 8.3 DELAYS AND EXTENSIONS OF TIME AND FORCED ACCELERATION

§ 8.3.1 ~~If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.~~ The basis exists for an extension of time if Contractor is delayed in performing Work, but solely to the extent that delays are unforeseeable, unavoidable, and beyond the control and without fault or negligence, in whole or in part, of Contractor, subcontractors, sub-subcontractors, and suppliers at every tier, and said delays directly impact the Contractor's ability to achieve Substantial Completion in accordance with the Contract Time requirements, and said delays cannot be made up by reasonable efforts otherwise, and said delays stem from the following causes:

§ 8.3.1.1 Class 1 causes: an act or failure to act that is contrary to the Contract Documents on the part of Owner or Designer or an employee of either, or of a separate Contractor employed by Owner, or an injunction against Owner or Owner's representatives.

§ 8.3.1.2 Class 2 causes: abnormal weather, acts of God, riots, civil commotion, acts of War, fire, unavoidable casualties, epidemics, quarantine restrictions, labor disputes, unusual delay in transportation, freight embargoes, or insolvency of subcontractors, sub-subcontractors, or suppliers

§ 8.3.2 ~~Claims relating to time shall be made in accordance with applicable provisions of Article 15.~~ If the basis exists for an extension of time under Section 8.3.1, Owner may either:

§ 8.3.2.1 in the case of additional work or a Class 1 cause, assign the Class 1 Time-Related Expenses, defined in Section 7.3.7.1.7, plus the overhead and profit allowed in Section 7.3.11, to a special allowance that can be earned based upon the extent of actual use of the related Time Extension in completion of the Work;

§ 8.3.2.2 accept the reasonable and appropriate time extension as determined by Designer to cover such delay, and in the case of a Class 2 cause, there will be no corresponding adjustment in Contract Sum, and the sole recourse of Contractor will be entitlement to time extension as provided by Designer regardless of actual source or cause of delay;

§ 8.3.2.3 order Contractor to accelerate construction activity by working overtime and by adding extra forces in order to overcome such delays, and adjusting the Contract Sum in accordance with Article 7 to compensate Contractor for such directed acceleration; however, direct costs used in determining such compensation shall be limited to properly substantiated and documented premium or overtime labor costs; or,

§ 8.3.2.4 employ a combination of the above remedies.

§ 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.~~ Neither Owner nor Designer will be obligated or liable to Contractor for, and Contractor hereby expressly waives claims against Owner and Designer on account of damages, costs, expenses, or related impacts which Contractor, subcontractors, sub-subcontractors, suppliers, or other persons may incur as a result of a Class 2 cause enumerated in Section 8.3.1. Contractor's sole and exclusive remedy and full compensation in such event shall be extension of Contract Time in accordance with provisions of the Contract Documents. Contractor likewise waives claims of damages, costs, or expenses due to a delay resulting from a Class 1 cause except and solely to the extent of costs allowed under Section 7.3.7.

§ 8.3.4 Claims relating to time shall be made in accordance with applicable provisions of Article 15 or shall receive no consideration. If monthly Weather Delay Reports are required by the specifications, then claims for time extension based upon weather delays will be denied if a submitted report does not corroborate the Claim or if no report was submitted when it was required, and Contractor waives the right to such claims.

§ 8.3.5 Extensions of time shall be implemented in accordance with Article 7.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents. The Contract Sum is not subject to change due to commodity, equipment, or labor cost fluctuations.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the ~~Architect,~~ Designer, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the ~~Architect~~ Designer may require. This schedule, unless objected to by the ~~Architect,~~ Designer, shall be used as a basis for reviewing the Contractor's Applications for Payment. If during construction the Schedule of Values ceases to accurately represent the allocation of the Contract Sum, the Contractor shall submit a revised Schedule of Values.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 ~~At least ten days before~~ Prior to the date established for each progress payment, the Contractor shall submit to the ~~Architect~~ Designer an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2., for completed portions of the Work. ~~Such application shall be notarized, if required,~~ The total completed value in the continuation sheet of the application for payment cannot exceed the scheduled value. Such application shall be notarized, and supported by such data substantiating the Contractor's right to payment as the Owner or ~~Architect~~ Designer may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, ~~or by interim determinations of the Architect,~~ but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the ~~site for such materials and equipment stored off the site.~~extent those costs have been included in the Contract Sum and actually incurred. Additional costs, which may be attendant to the off-site storage, are the responsibility of the Contractor, and cannot be claimed by Contractor against Owner.

§ 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.~~ at the time payment is received by the Contractor. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.3.4 In Applications for Payment, the amount represented as total completed and stored to date shall reflect the portion of the Contract Sum properly allocable to labor, materials, and equipment incorporated in the Work and materials and equipment suitably stored in accordance with Section 9.3.2, and not exceed the Contract Sum less the value of incomplete Work and corrections required. This total completed and stored to date shall not be construed to define completion as determined by substantial completion or final completion of the Work according to Sections 9.8, 9.9, or 9.10.

§ 9.3.5 Applications for Payment shall indicate retainage withheld from the total completed and stored to date as follows: 5 percent until acceptance of a certificate of Substantial Completion; and, thereafter 2 percent until final payment. The resulting amount shall be indicated as the total earned less retainage. Applications that reduce retainage shall be accompanied by Consent or Surety, if a bond was required according to Section 11.4.

§ 9.3.6 Applications for Payment shall indicate the total earned less retainage, and the aggregate of previous payments made subtracted therefrom, and an amount requested.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The ~~Architect~~ Designer will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the ~~Architect~~ Designer determines is properly due, or notify the Contractor and Owner in writing of the ~~Architect's~~ Designer's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the ~~Architect~~ Designer to the Owner, based on the ~~Architect's~~ Designer's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the ~~Architect's~~ Designer's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the ~~Architect.~~ Designer. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the ~~Architect~~ Designer has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the

Work, (2) reviewed construction means, methods, techniques, sequences or procedures, ~~(3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or~~ (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The ~~Architect~~ Designer 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~~ Designer's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the ~~Architect~~ Designer is unable to certify payment in the amount of the Application, the ~~Architect~~ Designer will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and ~~Architect~~ Designer cannot agree on a revised amount, the ~~Architect~~ Designer will promptly issue a Certificate for Payment for the amount for which the ~~Architect~~ Designer is able to make such representations to the Owner. The ~~Architect~~ Designer 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~~ Designer's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or a separate contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; ~~or~~

.7 ~~repeated~~ failure to carry out the Work in accordance with the Contract ~~Documents.~~ Documents; or

.8 potential liquidated damages and other unsettled claims.

§ 9.5.2 When any of the above reasons for withholding certification are removed, certification will be made for respective amounts previously withheld.

§ 9.5.3 If the ~~Architect~~ Designer withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the ~~Architect~~ Designer and the ~~Architect~~ Designer will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the ~~Architect~~ Designer 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.~~accordance with TCA § 12-4-701 et seq. as may from time to time be amended.

.1 Payment is due not later than 45 days after an undisputed Certificate for Payment has been received by Owner. Owner will endeavor to make payment within 21 days, but shall not be obligated to do so.

.2 Based upon Certificates for Payment issued by the Designer, correcting the Application for Payment as appropriate, the Owner shall make progress payments to the Contractor as provided in the Contract Documents.

§ 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~~ entitled for 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~~ Designer and Owner 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~~ Designer and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor ~~Architect~~ Designer shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 ~~Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.~~ When Contract Sum meets the statutory threshold, the Contractor shall comply with the procedures established by the Tennessee State Treasurer and Department of Finance and Administration for establishment of an interest-bearing retainage escrow account.

§ 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 payment is due as established in the Contract Documents the amount ~~certified by the Architect or awarded by binding dispute resolution,~~ currently due as of that date pursuant to the terms of the Contract Documents (including certification by the Designer), then the Contractor may, upon seven additional days' written notice to the Owner and ~~Architect,~~ Designer, stop the Work until payment of the amount ~~owing~~ due has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. In order to occupy or utilize the Work for its intended use, Owner must have received complete Product Data, Operating and Maintenance Data, orientation, and training, as may be required by specifications, and use and occupancy permits.

§ 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~~ Designer 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~~ Designer will make an inspection to determine whether the Work or designated portion thereof is substantially complete. ~~If the Architect's~~ Not later than at the time of this inspection, the Contractor will submit its application for payment commensurate with Substantial Completion. If the Designer'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.~~ Designer. In such case, the Contractor shall then submit a request for another inspection by the ~~Architect~~ Designer to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the ~~Architect~~ Designer will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying ~~the Certificate.~~ the Certificate, subject to the provisions of Section 9.12.2. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. ~~Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.~~

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the ~~Architect~~ Designer 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.~~Designer.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and ~~Architect~~ Designer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the ~~Architect~~ Designer will promptly make such inspection and, when the ~~Architect~~ Designer finds the Work acceptable under the Contract Documents and the Contract fully performed, the ~~Architect~~ Designer will promptly issue a final Certificate for Payment stating that to the best of the ~~Architect's~~ Designer's knowledge, information and belief, and on the basis of the ~~Architect's~~ Designer's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The ~~Architect's~~ Designer'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~~ Designer (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and ~~waivers of liens,~~ waivers, 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~~ shall furnish acknowledgement of the matter from the Surety satisfactory to the Owner to indemnify the Owner against ~~such lien. If such lien~~ such matter in lieu of such a release or waiver. If such matter

remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such ~~lien,~~ matter, 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~~ Designer so confirms, the Owner shall, upon application by the Contractor and certification by the ~~Architect,~~ Designer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the ~~Architect~~ Designer 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 not constitute a waiver of Claims by the Owner ~~except those arising from~~ for the following:

.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;~~ Documents, irrespective of when such failure is discovered; or

.3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment ~~by the Contractor, a Subcontractor or material supplier~~ shall constitute a waiver of claims ~~by that payee~~ except those previously made in writing and identified ~~by that payee~~ as unsettled at the time of final Application for Payment.

§ 9.10.6 Final payment constituting the entire unpaid balance of Contract Sum, shall be paid by Owner to Contractor when Work has been completed, the Contract fully performed, and a final Certificate for Payment issued by Designer.

§ 9.11 METHOD OF PAYMENT

§ 9.11.1 Payments to Contractor shall be made through Owner's automated clearing house wire transfer system. Contractor shall have completed an Authorization Agreement for Automatic Deposits ACH Credits Form prior to commencing Work and prior to submitting a first application for payment.

§ 9.11.2 Debit entries to correct errors authorized by the Authorization Agreement for Automatic Deposits ACH Credits Form shall be limited to those errors detected prior to the effective date of the credit entry. The remittance advice shall note that a correcting entry was made. Corrections shall be made within two banking days of the effective date of the original transaction. Other errors detected at a later date shall take the form of a refund, or in some instances, a credit memo if additional payments are to be made.

§ 9.11.3 The Owner reserves the right to deduct from amounts which are or shall become due and payable to Contractor under this or any contract between the parties any amounts which are or shall become due and payable to the State by the Contractor.

§ 9.12 LIQUIDATED DAMAGES

§ 9.12.1 Time being of the essence, Contractor further agrees to accept conditions for liquidated damages in the amount set forth in Contract Documents for each calendar day in excess of allotted time for Substantial Completion, or approved extension thereof, parties agreeing that the amount of damages resulting from delay would be uncertain and difficult to prove, and further agreeing that such liquidated damages set forth in the Owner-Contractor Agreement are a reasonable estimate of those damages which could result from delay.

§ 9.12.2 If a portion of the Work is certified Substantially Complete, the amount of Liquidated Damages applicable to the remaining Work may be reduced by written mutual agreement.

§ 9.12.3 Secondary Liquidated Damages shall be 25 percent of that originally required by the Contract Documents, and shall accrue until such time that Work has been completed and the Contract fully performed if:

.1 the time for completion stipulated in the Certificate of Substantial Completion has passed; or, if no such time was stipulated, then 30 calendar days has passed following the certified date of Substantial Completion and;

.2 the Contract Time, including approved extensions, plus 30 calendar days, has passed.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or ~~Architect~~ Designer 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. Owner reserves the right to effect repairs to damaged property and deduct all costs from the Contract Sum. 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.~~Designer.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with ~~any~~ requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to

persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and ~~Architect~~ Designer in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, pursuant to circumstances described in Section 10.3.1, Owner will have the option to either terminate the contract as provided in Article 14, proceed with Contractor in a mutually agreed plan of action, or as follows: 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~~ Designer the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the ~~Architect~~ Designer 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~~ Designer has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the ~~Architect~~ Designer 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,~~ Following claim and modification processes in accordance with Articles 15 and 7, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

~~**§ 10.3.3** To the fullest extent permitted by law, 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 materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

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

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance required by the Contract Documents as will protect the Contractor and the Owner from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible ~~property,~~ property on or away from the site, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations; and

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until ~~the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.~~ one year after final payment. Specific lines of coverage and limits of liability provided by the Contractor shall be written in a comprehensive form satisfactory to the Owner in the following minimum requirements:

.1 Comprehensive General Liability, with combined single limits for bodily injury and property damage of
Each Occurrence.....**$1,000,000**
Aggregate.....**$2,000,000**
and including:
premises & operations;
underground, explosion, & collapse;
products & completed operations;
contractual;
independent contractors;
Owner / Contractor protective;
broad form property damage; and,
personal injury (employment exclusion deleted).

.2 Asbestos abatement insurance:
Non-friable asbestos: If removal or abatement of non-friable asbestos is included in the Work, and Contractor's General Liability Insurance coverage excludes risks associated with asbestos, Contractor shall provide evidence of a Special Endorsement.
Friable asbestos: If removal or abatement of friable asbestos is included in the Work, Contractor shall provide evidence of a special endorsement.
Special Endorsement: Evidence of a Special Endorsement shall be in the form of a Certificate of Insurance certifying a special endorsement for asbestos abatement insurance with a minimum **$500,000** limit of liability. If Contractor is performing no portion of the asbestos removal or abatement with its own forces, Contractor, in lieu of its own such endorsement, may substitute a Certificate showing such special endorsement covering the subcontractor or sub-subcontractor which is actually performing the asbestos removal or abatement.

.3 Comprehensive Automobile Liability, with combined single limits for bodily injury and property damage of
Each Occurrence..... **$500,000**
and including owned, hired, and non-owned vehicles; or, if there are no owned vehicles, Contractor may provide written certification of such and provide coverage limited to hired and non-owned vehicles.

.4 Workers Compensation and Employer's Liability, (without restriction as to whether covered by Workmen's Compensation law), with Workers Compensation according to statute, and
Employer's Liability: ..... **$100,000**.

.5 If an exposure exists, Aircraft and Watercraft Liability (owned & non-owned), with limits approved by Owner shall be provided.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. ~~These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner.~~ Certificate(s) of insurance provided to attest to coverage shall specifically cite each element of coverage and not less than limits set forth in Section 11.1.2, as confirmation of complete coverage, and shall identify Contractor, Producer, Insurance Carrier, Project, and certificate holder, and state Producer's notice requirements as set forth in Section 11.1.4. The term "Commercial General Liability" shall mean all of the coverage listed in Section 11.1.2.1.a unless specifically noted otherwise in the certificate. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the ~~Architect~~ Designer and the ~~Architect's~~ Designer's Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.1.5 Contractor shall notify Owner in writing of changes in coverage or carrier not later than ten days after notification of Contractor by Producer, or ten days before Contractor makes a change, whichever occurs first. Contractor shall require that if policies are cancelled or modified before expiration date thereof, Producer shall endeavor to mail ten days prior written notice to certificate holder named therein.

~~§ 11.2 OWNER'S LIABILITY INSURANCE~~

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

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 ~~Unless otherwise provided, the~~ Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications ~~and cost of materials supplied or installed by others, comprising total value for the entire~~ for the covered Project at the site on a replacement cost ~~basis without optional deductibles.~~ basis. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall ~~include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.~~specify the Owner as named insured, and the Contractor, Subcontractors and Sub-subcontractors as additional insured under the policy.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, ~~falsework, testing and startup, temporary buildings~~ and debris removal ~~including demolition occasioned by enforcement of any applicable legal requirements,~~ and shall cover reasonable compensation for ~~Architect's~~ Designer's services and Contractor's ~~services and expenses~~ work required as a result of such insured loss. Such insurance carried by Owner will include a $10,000 deductible clause. The deductible is the responsibility of the Contractor.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Owner as named insured, Contractor, Subcontractors and Sub-subcontractors in the Work, and ~~by appropriate Change Order~~ if not included in the Contract Sum the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

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

§ 11.3.1.4 ~~This~~ The Owner's property insurance shall ~~cover~~ exclude portions of the Work stored off the site, ~~and also portions of the Work in transit.~~or in transit; and, Contractor shall provide insurance upon such portions to protect the Owner's Interest.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. ~~The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.~~

~~**§ 11.3.4** If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.~~

~~**§ 11.3.5** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.~~

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the ~~policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.~~issuing company will endeavor to provide ten days written notice to the Contractor should the policy be canceled prior to the expiration date. Failure to mail such notice shall impose no obligation or liability of any kind upon the Owner or issuing company.

~~**§ 11.3.7 WAIVERS OF SUBROGATION**~~

~~The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance~~

~~premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.~~

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If ~~required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such~~ after an insured loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article ~~7.~~7; however, this shall not preclude Owner's emergency repairs under Section 10.2.5.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with ~~insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.~~ insurers.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 ~~The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.~~. If the initial Contract Sum as awarded exceeds $100,000, Contractor shall provide Contract Bond, in the amount of 100 percent of Contract Sum covering faithful performance of contract and payment of obligations arising thereunder. If a Contract Bond is required, and a Three Year Roof Bond is also stipulated in the Bidding Documents, then the Three Year Roof Bond shall be provided as stipulated. Bond(s) shall be executed on Tennessee State Building Commission Standard Form(s) exhibited in Bidding Documents for project, and subject to provisions of Section 11.4.3.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor and Owner shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.4.3 Surety is the person or entity identified as such in a bond and is referred to throughout the Contract Documents as if singular in number. The term "Surety" means the Surety or the Surety's authorized representative. Surety Company issuing bond shall be licensed to transact business in Tennessee by Department of Commerce and Insurance. Bonds shall have certified and current Power-of-Attorney for the Surety's Attorney-in-Fact attached. Attorney-in-Fact who executes bond on behalf of Surety shall be one who is licensed by Tennessee as a resident agent, and shall affix license number to bond; or, countersignature by and license number of a licensed resident agent shall be affixed to the bond in addition to the signature of the Attorney-in-Fact.

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~~ Designer's written request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the ~~Architect,~~ Designer, be uncovered for the ~~Architect's~~ Designer'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~~ Designer has not specifically requested in writing to examine prior to its being covered, the ~~Architect~~ Designer may request in writing to see such Work and it

shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of uncovering, correction and recovering shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the ~~Architect~~ Designer or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the ~~Architect's~~ Designer's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor of known noncomplying Work 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~~ noncomplying Work within a reasonable time ~~during that period~~ after receipt of notice from the Owner or ~~Architect,~~ Designer, the Owner may correct it in accordance with Section 2.4. If Three Year Roof Bond has been provided, then with regard to the total roofing system, its installation, and materials, the one year time period hereunder is extended for two additional years for a total period of three years. Until such time as the three years hereunder have expired, Contractor's obligations hereunder shall be joint and several with Company as defined and set forth in the Roofing System Warranty. For the purpose of Section 12.2.2, all of Company's actions, whether of omission or commission, pursuant to the Roofing System Warranty are likewise actions of Contractor hereunder and shall in no way negate or reduce the responsibilities of Contractor hereunder.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 and time period of applicable special warranties 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~~ACCEPTANCE OF INCOMPLETE OR 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 completion or 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 except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.~~located.

§ 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~~ Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 ~~The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.~~

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, ~~Architect~~ Designer or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.4.3 If normal procedures within the Contract fail to satisfy a Claim against the Owner, further action is to be taken up with the Tennessee Claims Commission, pursuant to TCA § 9-8-101, et seq. Damages recoverable against the State shall be limited expressly to claims awarded by the Commission.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the ~~Architect~~ Designer timely notice of when and where tests and inspections are to be made so that the ~~Architect~~ Designer may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the ~~Architect,~~ Designer, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the ~~Architect~~ Designer 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~~ Designer of when and where tests and inspections are to be made so that the ~~Architect~~ Designer may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the ~~Architect's~~ Designer's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the ~~Architect.~~Designer.

§ 13.5.5 If the ~~Architect~~ Designer is to observe tests, inspections or approvals required by the Contract Documents, the ~~Architect~~ Designer will do so promptly and, where practicable, at the normal place of testing.

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

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is ~~due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~past due as stated in Section 9.6.1 in accordance with TCA § 12-4-704 as may from time to time be amended.

§ 13.7 TIME LIMITS ON CLAIMS

~~The Owner and~~ Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the ~~other~~ Owner arising out of or related to the Contract in accordance with the requirements of the ~~final dispute resolution method selected in the Agreement~~ Contract Documents and Section 13.4.3 within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. ~~The Owner and Contractor waive~~ Contractor waives all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped; or,

.3 Because the ~~Architect~~ Designer has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract ~~Documents; or~~

~~**.4** The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.~~Documents.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and ~~Architect,~~ Designer, terminate the Contract and recover from the Owner payment for

Work executed, including ~~reasonable overhead and profit, costs incurred by reason of such termination, and damages.~~ eligible overhead, profit, and costs as defined in Section 7.3.7 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 or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the ~~Architect,~~ Designer, 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 repeatedly fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 ~~repeatedly disregards~~ disregards or repeatedly fails to comply with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the ~~Initial Decision Maker~~ Designer that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all Work, the site, and 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~~ Designer'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,~~ Designer, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; including materials for which Owner has paid and which are stored off-site, and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for ~~Work executed, and costs~~ the completed portion of the Work, eligible costs as defined in Section 7.3.7 incurred by reason of such termination, ~~along with reasonable overhead and profit on the Work not executed.~~ plus a fraction of 5 percent of the remaining balance of the Contract Sum, which fraction shall be equal to the value of Work completed divided by the Contract Sum.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor except claims of liquidated damages, must be initiated by written notice to the other party and to the ~~Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker.~~ Designer. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. If the effect of the condition giving rise to the Claim cannot be fully evaluated, a preliminary notice of pending claim shall be made within the stated time limit subject to further action in a timely manner.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The ~~Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.~~ Designer will issue recommendations for change orders and certificates for payment in accordance with its decisions issued pursuant to Section 15.2.5.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as ~~provided herein shall be given before proceeding to execute the Work.~~ required by the Contract Documents shall be given to the Owner by the Contractor, and written notice received by the Contractor from Owner acknowledging the claim and authorizing construction activity to proceed, before the Contractor shall proceed to execute the construction activity giving rise to the claim; thence, the claim shall be addressed under provisions of Section 15.2. Documentation of claims shall conform to the requirements of Article 7. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 ~~If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the~~ To make Claim for an increase in Contract Time, Contractor shall give written notice as provided herein, and include an estimate of cost, which shall be limited to that allowed by Section 8.3.3, and an explanation of the cause and probable effect on progress of Work. In the case of a continuing delay, only one Claim is ~~necessary.~~ necessary, and Contractor shall subsequently detail the full scope of the delay.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

~~The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes~~

~~.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and~~

~~.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.~~The Contractor waives Claims against the Owner for consequential damages arising out of or relating to this Contract including but not limited to either party's termination in accordance with Article 14, principal office expenses, including the compensation of personnel stationed at the principal office, and any damages for losses of financing, business, and reputation, and for loss of profit.

~~This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.~~

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, ~~excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision~~ shall be referred to the Designer for initial decision. An initial decision or other action by the Designer in accordance with Section 15.2.2 shall be required as a condition precedent to ~~mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.~~Claims or action pursuant to remedies provided by law for Claims between Owner and Contractor, unless the Designer fails to timely comply with Section 15.2.2.

§ 15.2.2 The ~~Initial Decision Maker~~ Designer will review Claims and within ten days of the receipt of a Claim or information preliminary or pursuant to a Claim or modification to a Claim and 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~~ Designer is unable to resolve the Claim if the ~~Initial Decision Maker~~ Designer lacks sufficient information to evaluate the merits of the Claim or if the ~~Initial Decision Maker~~ Designer concludes that, in the ~~Initial Decision Maker's~~ Designer's sole discretion, it would be inappropriate for ~~the Initial Decision Maker to resolve the Claim.~~ the Designer to resolve the Claim. If Designer approves or rejects the Claim, parties have ten days to request reconsideration based upon additional information, or the decision shall be final. If Designer suggests compromise, parties have ten days to respond. If the Designer declines to resolve the claim, the Owner may, but is not obligated to, take the lead in resolving the Claim.

§ 15.2.3 In evaluating Claims, the ~~Initial Decision Maker~~ Designer 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~~ Designer in rendering a decision. The ~~Initial Decision Maker~~ Designer may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the ~~Initial Decision Maker~~ Designer requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the ~~Initial Decision Maker~~ Designer when the response or supporting data will be furnished or (3) advise the ~~Initial Decision Maker~~ Designer that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the ~~Initial Decision Maker~~ Designer will either reject or approve the Claim in whole or in part.

§ 15.2.5 The ~~Initial Decision Maker~~ Designer 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,~~ parties, 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.~~to the provisions in Section 15.2.2, and thereafter to mediation if consented to by both parties, and to remedies as otherwise provided by law.

~~**§ 15.2.6** Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.~~

~~**§ 15.2.6.1** Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.~~

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

§ 15.2.8 ~~If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.~~ As a matter of law, the State of Tennessee and its property are not subject to mechanic's and material suppliers liens. Subcontractors, suppliers, and other claimants are protected through the Contract Bond as required by TCA § 12-4-201 et seq., the policies of the State Building Commission, and Section 11.4 of these Conditions. Specific requirements for notice of Claims on the bond are set forth in the TCA § 12-4-205.

§ 15.3 ~~MEDIATION~~

The State of Tennessee is not subject to mandatory mediation.

~~**§ 15.3.1** Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.~~

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

The state of Tennessee is not subject to mandatory arbitration.

~~**§ 15.4.1** If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party~~

filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

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

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, 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 the Owner and Contractor under this Agreement.

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Dick Tracy, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with this certification at 13:18:38 on 07/09/2009 under Order No. 1234567890_1 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2007 - General Conditions of the Contract for Construction, as published by the AIA in its software, other than changes shown in the attached final document by underscoring added text and striking over deleted text.

_____

(Signed)

_____

(Title)

_____

(Dated)

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Combined Request and Decision form for

Wage Determination

Request made by	
Name of person	Trish Whitlock
Title	Project Manager
Department, Agency, or Bureau	Tennessee Board of Regents Office of Facilities Development
Address and phone	Suite 664 1415 Murfreesboro Road Nashville, Tennessee 37217-2833 Fax: (615) 366-3992

Date of request	Date of Advertisement	Supercedes Decision
06/06/2012	**06/06/2012**	**T-34017**

If Work is in multiple building rate regions, a separate request is required for each region; and, if in multiple counties within a region, all counties must be listed.

The Project		
City	**State**	**County**
Nashville	**TN**	**Davidson**

Project Identification

Hale Stadium Renovation
Tennessee State University
Nashville, TN
SBC No. 166/001-02-2011

Brief Project Description

Site work, asphalt and concrete paving, fencing, masonry partitions, and associated mechanical and electrical work for south plaza areas of the stadium.

Decision rendered by
State of Tennessee Dept. of Labor and Workforce Development Labor Standards Division 220 French Landing Drive Nashville, Tennessee 37243-1002

Wage Determination

Decision Number **T-34082**

Building Rates	[X]	Apply
	[ ]	Do not apply
Highway Rates	[ ]	Apply
	[X]	Do not apply

Report to

INSPECTOR THOMAS HAMLETT
DEPT. OF LABOR & WORKFORCE DEV.
DIVISION OF LABOR STANDARDS
220 FRENCH LANDING DRIVE
NASHVILLE, TN. 37243-1002

Date assigned	Assigned by
06/06/2012	**Michael Dattilo**

The project identification and brief project description given herein shall not act to define, expand, or limit the Work required by the Contract Documents. Such information provided herein is intended only as information to the Department of Labor and Workforce Development. No other use or interpretation is intended.

2011-2012 BUILDING PREVAILING WAGE RATES

CLASSIFICATION	CLASSIFICATION	REGIONS	1	2	3	4	5	6	7	8	9	10	11	12
Boilermaker	Constructor de Calderas	01	21.72	17.22	18.56	15.90	16.66	15.51	20.71	21.35	19.43	19.71	13.89	16.43
Bricklayer	Ladrillero	02	19.23	23.71	19.01	15.76	25.62	25.44	18.93	24.25	20.75	17.80	12.25	20.47
Carpenter	Carpintero	03	19.21	15.91	19.97	17.58	17.21	17.74	20.63	20.77	17.81	18.27	14.99	17.10
Cement Finisher, Plaster	Terminador de Cemento	04	17.66	14.32	15.51	14.51	14.12	15.16	22.19	18.52	16.75	18.00	14.37	16.84
Class "A" Operator	Operador Clase “A”	05	20.90	18.29	20.46	16.78	17.44	19.09	23.18	17.65	14.69	20.17	14.52	17.77
Class "B" Operator	Operador Clase “B”	06	13.82	12.83	14.89	12.92	11.13	12.12	14.32	14.77	11.87	11.50	8.72	12.01
Class "C" Operator	Operador Clase “C”	07	16.26	18.94	13.62	13.12	12.82	12.73	15.42	17.48	10.54	16.14	11.23	12.55
Electrician	Electricista	08	22.58	22.55	18.63	19.28	21.51	21.85	23.79	26.54	20.83	22.07	17.98	22.33
Low Voltage Electrician <70 Volts	Electricista De Bajo Voltaje <70 Volts	09	20.78	17.03	17.03	17.03	15.87	17.69	17.03	17.03	17.03	16.70	17.03	17.64
Elevator Constructor	Constructor de Elevadores	10	20.80	16.34	18.13	15.07	25.40	25.23	18.80	20.87	18.96	19.59	19.49	25.78
Glazier	Vidriero/Enbarnizador	11	20.60	18.60	15.00	12.48	18.65	17.86	17.30	16.61	16.27	16.45	16.47	17.80
Insulation Worker for Mechanical Trades / Asbestos Worker	Trabajador de Insulacion para Entrenador de Mecanico/ Trabajadora De Asbesto	12	22.39	23.53	23.56	19.77	18.54	19.55	21.47	21.49	20.39	14.35	13.72	19.50
Iron Worker: Structural, Reinforcing, Ornamental	Herrero	13	21.53	17.50	14.48	19.76	17.24	21.63	21.93	21.70	17.33	15.60	14.13	19.92
Laborer Class A	Obrero Clase A	14	13.88	12.58	12.26	12.19	15.82	13.01	12.05	13.21	12.37	14.78	10.52	12.56
Laborer Class B	Obrero Clase B	15	13.21	10.02	16.17	11.51	12.47	12.06	14.83	11.51	11.41	11.57	10.00	12.49
Millwright	Tornero	16	18.57	14.38	17.11	14.62	15.99	21.06	19.39	19.61	16.27	15.55	24.16	20.27
Painter/Plasterer	Pintor/Transitivo	17	17.95	18.37	20.70	12.61	15.00	13.18	19.99	17.47	13.16	15.68	14.60	16.23
Pipefitter/Plumber	Instalador de Tuberia/Plomero	18	25.82	23.08	23.00	22.09	20.73	27.15	25.06	21.49	15.42	17.91	16.07	26.59
Roofer	Tejero/Instalador de Techos	19	20.05	13.69	15.82	11.81	13.86	13.44	17.67	21.09	14.92	17.23	14.35	20.91
Sheet-Metal Worker	Hojalatero	20	27.13	22.82	24.37	11.84	20.45	23.22	24.36	20.07	16.13	19.48	18.28	22.49
Truck Driver (3 or more axles)	Camionero (3 o más ejes)	21	15.49	10.87	12.24	10.50	13.15	12.73	17.89	18.13	9.93	11.09	11.41	16.59
Truck Driver (2 axles, over 1 ton)	Camionero (2 ejes, más de 1 tonelada)	22	16.38	8.68	9.63	11.06	13.87	9.62	11.27	14.62	10.25	12.34	16.09	18.35
Truck Driver (2 axles, 1 ton & less)	Camionero (2 ejes, menos de 1 tonelada)	23	15.73	9.48	10.51	11.19	11.24	8.53	17.82	14.24	9.63	10.86	14.06	10.88

APPRENTICESHIP REGULATIONS

Under T.C.A., §12-4-415, the Prevailing Wage Commission has promulgated Rule 0800-3-2-.01(1) which provides that: “Apprentices shall mean those persons registered individually under a bona fide apprenticeship program registered with the Bureau of Apprenticeship and Training in the United States Department of Labor. The state agency contracting officer shall require the contractor or sub-contractor using the apprentice to submit evidence of his indenture and/or apprenticeship registration when the apprentice’s name first appears on a submitting payroll.”

AUTHORITY: T.C.A., §12-4-415. **Administrative History**: Original Rule filed June 4, 1976. Effective: July 14, 1976.

Effective 01/01/2011

REGION 1
Shelby

REGION 2
Crockett
Dyer
Fayette
Gibson
Hardeman
Haywood
Lake
Lauderdale
Obion
Tipton
Weakley

REGION 3
Benton
Carroll
Chester
Decatur
Hardin
Henderson
Henry
Houston
Humphreys
McNairy
Perry
Stewart
Wayne

REGION 4
Madison

REGION 5
Cheatham
Dekalb
Dickson
Macon
Montgomery
Robertson
Smith
Sumner
Trousdale
Williamson
Wilson

REGION 6
Bedford
Cannon
Coffee
Franklin
Giles
Grundy
Hickman
Lawrence
Lewis
Lincoln
Marion
Marshall
Maury
Moore
Rutherford
Warren

REGION 7
Anderson
Campbell
Clay
Cumberland
Fentress
Jackson
Morgan
Overton
Pickett
Putnam
Roane
Scott
White

REGION 8
Hamilton

REGION 9
Bledsoe
Blount
Bradley
Loudon
McMinn
Meigs
Monroe
Polk
Rhea
Sequatchie
Sevier
Van Buren

REGION 10
Knox

REGION 11
Carter
Claiborne
Cocke
Grainger
Greene
Hamblen
Hancock
Hawkins
Jefferson
Johnson
Sullivan
Unicoi
Union
Washington

REGION 12
Davidson

SECTION 011000
SUMMARY

PART 1 GENERAL

1.1 SUMMARY

A. General Description: site work, asphalt and concrete paving, and fencing.

B. Project Address: 3500 John A. Merritt Boulevard, Nashville, Tennessee.

1.2 PHASED CONSTRUCTION

A. Phase 1:
1. Asphalt paving at Future Grandstands.
2. Reinforced concrete slab with electrical stub ups at Future Ticket Booths.

B. Phase 2: All remaining construction.

1.3 CONTRACT DESCRIPTION

A. Contract Type: Stipulated Price as described in Document 005213 - Agreement Form.

B. The Contractor will be furnished free of charge a sufficient number of Drawings and Project Manuals to perform the Work.

1.4 OWNER FURNISHED - CONTRACTOR INSTALLED PRODUCTS

A. Schedule of Owner Furnished - Contractor Installed Items: As indicated on Drawings.

B. Owner Responsibilities:
3. Arrange for delivery of shop drawings, product data, samples, manufacturer's instructions and certificates to Contractor.
4. Deliver supplier's bill of materials to Contractor.
5. Arrange and pay for delivery to site. Follow Progress Schedule.
6. Inspect deliveries jointly with Contractor.
7. Submit claims for transportation damage.
8. Arrange for replacement of damaged, defective, or missing items.
9. Arrange for manufacturer's field services. Arrange for and deliver manufacturer's warranties and bonds to Contractor.

C. Contractor Responsibilities:
1. Designate submittals and delivery date for each product in Progress Schedule.
2. Review shop drawings, product data, samples and other submittals. Submit to Designer with notification of any observed discrepancies or problems anticipated because of nonconformance with Contract Documents.

3. Receive and unload products at site.
4. Inspect deliveries jointly with Owner, record shortages and damaged or defective items.
5. Handle products at site, including uncrating and storage.
6. Protect products from damage and from exposure to elements.
7. Assemble, install, connect, adjust and finish products.
8. Provide installation inspections required by public authorities.
9. Repair or replace items damaged by Contractor.

1.5 USE OF PREMISES

A. Limit use of site and premises to allow:
   1. Owner occupancy.
   2. Work by other contractors.
   3. Continued Owner occupancy by the Owner's security force.

B. Coordinate use of premises under direction of Owner.

C. Assume full responsibility for protection and safekeeping of products under this Contract.

D. Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

1.6 OWNER OCCUPANCY

A. Owner will occupy site and premises during entire construction period for conduct of his (or her) normal operations.

B. Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

C. Schedule the Work to accommodate this requirement.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01 22 13
UNIT PRICES

PART 1 - GENERAL

1.01 SUMMARY

A. SECTION INCLUDES administrative and procedural requirements applicable to unit prices either established in these specifications or established in the Agreement based upon Owner's solicitation and Contractor's bid. Solicited unit prices are subject to determination at the time of a change in the Work if the bid unit price was not accepted and not listed in the Agreement. Unit prices may also be established and added to these specifications by appropriate Modification.

B. RELATED SECTIONS are referenced in the definition of each unit price item.

C. ALLOWANCES: For each Unit Price item, an allowance is established in the definition as a Base Quantity included in the Work. If no Base Quantity is stipulated, or if the Base Quantity is zero, then the unit price is invalid.

D. UNIT PRICES include all direct and indirect costs, except overhead and profit, associated with the unit price item. If cumulative adjustments exceed, or are expected to exceed, a cumulative twenty five percent (25%) of the Base Quantity, either party to the Contract may initiate renegotiation for a new unit price. Such a new unit price shall be made a part of the Contract by appropriate Modification.

E. INCREASES AND DECREASES in the Contract Sum by change order or construction change directive will be made based on the unit prices commensurate with either:

1. an interim increase or decrease in base quantities as agreed mutually or as deemed reasonably necessary by the Designer and consistent with actual quantities to date; or,

2. a final increase or decrease in base quantities to equal actual quantities when no further work defined as a unit price item is anticipated.

1.02 SUBMITTALS: Contractor shall keep a daily log of actual quantities of specified work units encountered, consumed, or expended. When submitting an application for payment which includes payment for Unit Price items, Contractor shall provide Designer a copy or report of the log which is acceptable to Designer. Actual quantities and the Contractor's log are subject to verification by Designer.

END OF SECTION

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SECTION 01 22 15
LIST OF UNIT PRICE ITEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES the list of Unit Price items, and applicable established Unit Prices.
Solicited unit prices are denoted in the "Definitions" Article below by having "(S)" as the Unit Price per Unit.
Refer to Section 01 22 13 for general administrative requirements.

1.02 DEFINITIONS for each Unit Price item are as follows:

Item	Related Sections	Base Quantity	Unit	Unit Price per unit	Work Included
1	312000 and 312011	150	CY	$	Over excavation and fill
2	321216	50	SY	$	Asphalt paving

SECTION 01 23 00
ALTERNATES

PART 1 - GENERAL

1.01 SECTION INCLUDES identification of each Alternate by number, and describes the basic changes to be incorporated into the Work if a particular alternate is made a part of the work by specific provisions in the Agreement between the Owner and the Contractor.

1.02 RELATED SECTIONS are referenced in the definition of each Alternate.

1.03 COORDINATION of related work and modifications to surrounding work as required to properly integrate each Alternate, and to provide the complete construction required by the Contract Documents, is the responsibility of the Contractor.

1.04 DESCRIPTION OF ALTERNATES:

Alternate No. 1 – Add Concrete Steps: Add concrete steps and handrails as shown on Drawing C1.02 and other related Drawings. No added days.

Alternate No. 2 – Change Paving: Change paving at south plaza from asphalt to concrete as shown on Drawing C1.02 and other related Drawings. No added days.

SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUPPORTING DOCUMENTATION for PROPOSALS or CLAIMS

A. Propose related changes to Work, Contract Sum, and Contract Time, in writing together. Propose unrelated changes separately. Attach and reference pertinent documents related to the change.

B. For a change in the Work, specifically describe proposed change, or briefly describe the proposed change with specific reference to a completely descriptive attachment, such as a Request for Proposal from the Designer.

C. For a change in Contract Sum, state briefly the reason for change, state the amount, and provide itemization of values on the following forms, or similar forms providing the same information:

1. **Section 01 26 54 Form for Price Summary:** listing the itemizations of work by subcontractors and the Contractor that together apply to an entire related change in work.
2. **Section 01 26 55 Form for Price of Work:** detailing the quantities, units, costs, and extensions for materials, equipment, and labor, subtotaled, plus overhead, and profit related to a specific proposed change in the Work.
3. **Section 01 26 56 Form for Price of Time:** if applicable, deriving an average cost per day.

D. For a change in Contract Time:

1. Fully describe the extent of and reasons for the change and effect of the change on the construction schedule, and attach a revised Progress Schedule. Take into account weekends, holidays, and the specified standard baseline for weather delays during the period of the requested extension.
2. For a change based on weather-related delay, provide and attach:
   a. applicable specified Weather Delay Reports, or, if none is specified, daily work logs that describe actual local weather conditions and their impact on progress.
   b. National Oceanic and Atmospheric Administration (NOAA) weather data, for corroboration.
   c. NOAA comparative data on normals, means, and extremes if such data or another weather baseline is not already provided in Contract Documents.

1.02 SIGNATURES for Change Order:

A. Form shall be similar in format and content to Section 01 26 40, and signed by authorized representatives of each of the entities required by Conditions of the Contract.

B. Normal procedure shall be that:

1. Designer prepares and submits supporting documents to Owner.
2. Owner produces and signs six (6) counterparts of form; transmits by fax, e-mail, or other means, informational copies to its Construction Representative, Designer, and Contractor; and forwards.
3. Owner's Construction Representative receives counterparts, and brings them to next Progress Meeting, unless urgency and opportunity make for a more timely execution.
4. Designer and Contractor both sign at Progress Meeting.

END OF SECTION

SECTION 01 26 20
WEATHER DELAYS

PART 1 - GENERAL

1.01 EXTENSIONS OF CONTRACT TIME

A. If the basis exists for an extension of time in accordance with paragraph 8.3 of the 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 as the Standard Baseline for that month.

1.02 STANDARD BASELINE FOR AVERAGE CLIMATIC RANGE

A. The Owner 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 is as follows:

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

1.03 ADVERSE WEATHER and WEATHER DELAY DAYS

A. Adverse Weather is defined as the occurrence of one or more of the following conditions which prevents exterior construction activity or access to the site within twenty-four (24) hours:

1. precipitation (rain, snow, or ice) in excess of one-tenth inch (0.10") liquid measure

2. temperatures which do not rise above 32 degrees F by 10:00 a.m.

3. temperatures which do not rise above that specified for the day's construction activity by 10:00 a.m., if any is specified

4. sustained wind in excess of twenty-five (25) m.p.h.

5. standing snow in excess of one inch (1.00")

B. Adverse Weather may include, if appropriate, "dry-out" or "mud" days:

1. for rain days above the standard baseline;

2. only if there is a hindrance to site access or sitework, such as excavation, backfill, and footings; and,

3. at a rate no greater than 1 make-up day for each day or consecutive days of rain beyond the standard baseline that total 1.0 inch or more, liquid measure, unless specifically recommended otherwise by the Designer.

C. A Weather Delay Day may be counted if adverse weather prevents work on the project for fifty percent (50%) or more of the contractor's scheduled work day, including a weekend day or holiday if Contractor has scheduled construction activity that day.

1.04 DOCUMENTATION and SUBMITTALS

A. WEATHER DELAY REPORT:
Use a copy of Section 01 26 25 as a Weather Delay Report, indicating for each calendar month the days on which construction activity affecting the critical path of the Work was prevented by weather conditions. Mark the column for the general cause; and, under "Specifics", indicate corresponding measurement of precipitation, temperature, wind, or other influencing factors, and the construction activity that was scheduled and delayed. At the end of the month, add up the number of days delay, subtract the baseline number given in Section 01 26 20, and show the resulting claimable days. Submit a copy of the completed report with the next application for payment and with subsequent claim for time extension. Claims for time extension based upon weather delays will be denied if a submitted report does not corroborate the claim or if no report was submitted when it was required in accordance with this paragraph.

B. Submit daily jobsite work logs showing which and to what extent construction activities have been affected by weather on a monthly basis.

C. Submit actual weather data to support claim for time extension obtained from nearest NOAA weather station or other independently verified source approved by Designer at beginning of project.

D. Use Standard Baseline data provided in this Section when documenting actual delays due to weather in excess of the average climatic range.

E. Organize claim and documentation to facilitate evaluation on a basis of calendar month periods, and submit in accordance with the procedures for Claims established in paragraph 4.3 of the Conditions.

F. If an extension of the Contract Time is appropriate, it shall be implemented in accordance with the provisions of Article 7 of the Conditions, and the applicable General Requirements.

END OF SECTION

SECTION 01 26 25
WEATHER DELAY REPORT

SBC Project Number and project name	Month and Year reported below

Day of month	"X" if Work delayed by this cause				See Section 01 26 20 for instructions on use of this form.
	Precip	Temp	Wind	Dryout	Specifics
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
	Total number of days this month with delay due to weather				
	Baseline number from Section 01 26 20				
	Total – Baseline = claimable days				

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SECTION 01 26 40
FORM FOR AMENDMENT, CHANGE ORDER, OR DIRECTIVE

[ ] Amendment

[ ] Change Order

[ ] Construction Change Directive

Modification Number:

PROJECT:

Original Contract Date:
This Change initiated:

Project Number

The following changes in the Contract are hereby directed:

Item	Reference	Work	Contract-Sum	Contract-Time

The original Contract Sum	**$**
Net Change previously authorized	**$**
The Contract Sum prior to this Modification	**$**
This modification (*increases* / *does not change* / *decreases*) the Contract Sum	**$**
The new Contract sum, including this modification	**$**
This modification (*increases* / *does not change* / *decreases*) the Contract Time	
The new Contract Time, including this modification	
The last day of the Contract Time, including this modification	

CONTRACTOR	DESIGNER	OWNER
Signed	Signed	Signed
Name & Date	Name & Date	Name & Date
For	For	For

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SECTION 01 26 54
FORM FOR PRICE SUMMARY

Type only in shaded areas. Rounding off is permitted on State contracts if rounding up for decreases and rounding down for increases. Math functions in this worksheet show rounded off to nearest penny, but carry exact value for calculations. Let embedded math do its
This spreadsheet is available on Owner's website, Designers' Manual, Bidding Documents, listed by its Section number and title.

SBC Project Number:	Project Name:

Name of General contractor:	

Proposal Number:		Date Itemized:		Page		of		pages

Work by Subcontractors	Name of Subcontractor	Costs and Allowances

Subtotal:			0.00
General Contractor mark-up on Subtotal:		% =	0.00
Subtotal for General Contractor for work by subcontractors:			0.00

Work by General Contractor	

Subtotal (including Subcontractors and the General Contractor):			0.00
Bond Premium:		% =	0.00
Total:			0.00

SECTION 01 26 55
FORM FOR PRICE OF WORK

Type only in shaded areas. Rounding off is permitted on State contracts if rounding up for decreases and rounding down for increases.
Math functions in this worksheet show rounded off to nearest penny, but carry exact value for calculations. Let embedded math do its work.
This spreadsheet is available on Owner's website, Designers' Manual, Bidding Documents, listed by its Section number and title.

SBC Project Number:	Project Name:

Work itemized below provided by:

Proposal Number:		Date Itemized:		Page		of		pages

Description	Material				Equipment				Labor			
	Quantity	Unit	Cost	Extension	Quantity	Unit	Cost	Extension	Quantity	Unit	Cost	Extension
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00
				0.00				0.00				0.00

Materials	Subtotal	0.00	Equipment		Labor	Subtotal	0.00
	% Sales Tax =	0.00				% Burden =	0.00
	Cost:	0.00		Cost: 0.00		Cost:	0.00

Subtotal of Costs of Materials + Equipment + Labor = $	0.00
10% Overhead allowed on costs = $	0.00
Subtotal of Costs + Overhead = $	0.00
5% Profit allowed on Costs + Overhead = $	0.00
Total for this change = $	0.00

SECTION 01 26 56
FORM FOR PRICE OF TIME

Type only in shaded areas. Rounding off is permitted on State contracts if rounding up for decreases and rounding down for increases. Math functions in this worksheet show rounded off to nearest penny, but carry exact value for calculations. Let embedded math do its work. This spreadsheet is available on Owner's website, Designers' Manual, Bidding Documents, listed by its Section number and title.

SBC Project Number:	Project Name:

Work itemized below provided by:

Proposal Number:	Date Itemized:	Page	of	pages

Description	Period Cost	Period (Year, Month, Week, Day)	Cost Per Day
Superintendent Salary			
Superintendent Vehicle			
General Use Vehicles			
Field Office			
Field Office Equipment			
Computer			
Fax Machine			
Copier			
Typewriter			
Calculator			
Field Office Utilities			
Electricity			
Natural Gas			
Water Service			
Drinking Water			
Telephone Service			
On-Site Storage			
Shed			
Trailer			
Safety Program			
Cleaning			
Site Toilet(s)			
		Subtotal of Costs:	
		10% for Overhead:	
		Subtotal with Overhead:	
		5% for Profit:	
		Total per day:	

When filling in the "Period" column, you must use the full word "Year", "Month", "Week", or "Day" for the correct math to be provided to the "Cost Per Day" column.

SECTION 01 29 73
SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. Phases are normally set forth in the Agreement and in the Summary of Work specification, normally from 01 10 00 to 01 10 19, but may differ in this Project Manual.

B. Applications for Payment and the final statement of accounting are normally specified in sections from 01 29 00 to 01 29 99, such as OFD standard Section 01 29 76, but may differ in this Project Manual.

C. Allowances are normally specified in sections from 01 21 00 to 01 21 99, such as OFD standard sections 01 21 13 and 01 21 15. Allowances associated with Unit Prices are normally in sections from 01 22 00 to 01 22 99, such as OFD standard sections 01 22 13 and 01 22 15. The arrangement of sections may differ in this Project Manual.

1.02 FORM and APPROVAL

A. The form for schedule of values shall be AIA Document G703 Continuation Sheet.

B. If objected to by Designer, revise and resubmit to Designer's satisfaction prior to submitting application for payment. If during construction the total completed for payment purposes exceeds or is anticipated to exceed allocations, revise and resubmit a schedule of values such that no values of completed work exceed their allocations.

1.03 ALLOCATION OF VALUES

A. If the Work is divided into defined portions ("Phases"), intended to have distinct commencement, duration, or completion requirements, divide the allocation to correspond to the Phases, then within each Phase, subdivide the allocations as specified in the following paragraphs.

B. Provide at least these three line items to account for General Requirements:

1. Mobilization, staging, and general start-up costs.
2. Construction administration and temporary facilities, prorated over the course of the project.
3. Maintenance of Record Documents, prorated over the course of the project.

C. If sitework is included, other than minor sitework incidental to a building or major structure, include sitework in single line item or group of line items. Within the group, categorize site utilities, roads and parking, and appurtenances according to general type and physical separation. If allowances are stipulated in the Work relating to sitework, provide a line item for each such allowance, including quantity allowances associated with Unit Prices.

D. For each involved building or major structure:

1. If allowances are stipulated in the Work, provide a line item in the Schedule of Values for each allowance, including quantity allowances associated with Unit Prices.
2. Categorize by major trades or units of work corresponding to the current Progress Schedule, and relate to the Divisions and Sections of the Specifications.
3. Further subdivide as desired, but maintain a distinct and identifiable correspondence to this allocation.

E. Account for Modifications by incorporating them into the appropriate allocations, or with a line item for each, until incorporating each into the appropriate allocations for the final statement of accounting.

END OF SECTION

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SECTION 01 29 76
APPLICATIONS AND CERTIFICATES FOR PAYMENT

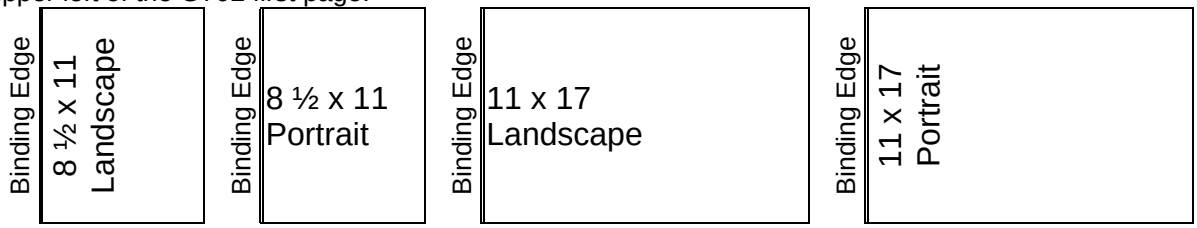
PART 1 - GENERAL

1.01 SUBMITTAL:

A. In each application for payment, according to its context, provide:

Counterpart or Copy	Progress Payment	Reducing Retainage upon SC	Final Payment	Document	1.03
counterpart	YES	YES	YES	G702 Application	A
copy	YES	YES	YES	G703 Continuation	B
copy	no	no	YES	Final Accounting	C
copy	YES	YES	YES	GMP Contingency Log (if CM/GC)	D
copy	if any	if any	no	Off-Site Stored Materials documents	E
counterpart	no	no	YES	Affidavit of Payment	F
counterpart	no	YES	YES	Consent of Surety with Power of Attorney	G
copy	no	no	YES	Insurance Certificate	H
copy	no	no	YES	Statement of continuing insurability	I
copy	no	if any	if any	U&O permit	J
copy	no	YES	YES	Data Binder Receipt(s)	K
copy	no	no	YES	Roof Warranty or warranties	L
copy	no	no	YES	Report of Subcontractors and Suppliers	M
copy	YES	if any	if any	Visitor Log	N
copy	YES	if any	if any	Weather Delay Report	O
copy	YES	YES	no	Progress Schedule	P
copy	YES	YES	YES	Submittal Log	Q

B. Provide application documents assembled in order listed above, on 8½" x 11" pages, except 11" x 17" pages can be used for Progress Schedules and Submittal Logs if folded to fit an 8½" x 11" size. Orient all pages as shown below. Provide application sets bound with a single staple or clip affixed to the upper left of the G702 first page.



C. Counterpart documents shall be original instruments with wet signatures and embossed or wet-stamped seals, in each set of application documents.

D. Provide a draft submission by fax or otherwise to Designer and to the Owner's construction representative three (3) days prior to actual submittal.

E. Provide actual submission of six (6) sets of the application documents to the Designer at Progress Meeting, Substantial Completion inspection meeting, or final inspection meeting. If submitted outside of these meetings, provide conveyance of application to Designer, from Designer to Owner's construction representative, and from Owner's construction representative to Owner's central office.

1.02 INCLUSIONS AND CALCULATIONS:

A. Accurately represent all values with two decimal places, calculated to the penny.

B. STORED MATERIALS: those suitably stored on-site but not yet incorporated into the Work can be included; and, those suitably stored off-site can be included if documented in accordance with later provisions of this Section.

C. Calculation of Retainage and amounts withheld:

1. Credit for completed work and stored materials, and deductions for incomplete work, comprise the "Total Completed and Stored to Date". The "Total Completed and Stored to Date" shall not include the value of Punch List items that remain incomplete after Substantial Completion.

2. Retainage is calculated as a percentage of "Total Completed and Stored to Date": 5% prior to Substantial Completion; 2% after Substantial Completion; then, none at final payment.

3. Other amounts withheld (i.e., potential liquidated damages or in response to subcontractor claims of non-payment) can be added to the continuation sheet and deducted from the Total Completed and Stored to Date, or can be deducted from the resulting Current Payment Due after retainage and prior payments are accounted.

1.03 FORMS, FORMAT, and CONTENT:

A. G702 Application: Use AIA Document G702 Application and Certificate for Payment

1. For Project identification, include the Owner's project number featured prominently, institution name, and work name, which is normally the Project title shown in the Agreement.

2. Provide a unique, sequential application number.

3. Include the Contractor's address exactly as provided in the ACH Form.

4. Show the County where the Work is located, normally where AIA captions "Contract for".

B. G703 Continuation: Use AIA Document G703 Continuation Sheet itemized with the line items and values of the Schedule of Values accepted by Designer, and values and percentages for each line item.

C. Final Accounting: Allocate final Contract Sum as if modifications had been fully incorporated in Contract Sum at award of Contract, and shall follow the same format as the Schedule of Values.

D. GMP Contingency Log applies only to CM/GC contracts.

E. Off-Site Stored Materials: If any, provide:

1. Statement identifying where materials are stored, and assuring that materials are tagged to identify them for use in the project.

2. Bill(s) of sale for materials claimed that list(s) all items.

3. Certificate of insurance covering materials claimed, recognizing Owner's right to make claims.

F. Affidavit of Payment of Debts and Claims: Provide counterpart using AIA Document G706, when requesting final payment for the Work or reduction of retainage to zero for any portion of the Work.

G. Consent of Surety:

1. If seeking reduction in retainage prior to Final Payment for the entire Work, or final payment on only a portion of the Work, provide counterpart using AIA Document G707A Consent of Surety to Reduction in Retainage, or a similarly formed letter.

2. If seeking Final Payment, provide counterpart using AIA Document G707 Consent of Surety Company to Final Payment, or a similarly formed letter.

3. If Contractor has listed exceptions in the Affidavit of Payment, Surety's consent shall acknowledge such exceptions.

4. If Contract is not bonded, Consent of Surety is not required, and Owner will instead advertise a public notice of settlement, and wait 30 days for responses, before accepting the application.

5. Provide counterpart of Power of Attorney with Consent of Surety.

H. Insurance Certificate: If seeking final payment, provide certificate of insurance for products and completed operations as required by Conditions of the Contract sections 9.10.2(2) and 11.1.2.1.c.

I. Statement of continuing insurability: if seeking final payment, a letter written to the effect required by Conditions of the Contract section 9.10.2(3).

J. Use & Occupancy Permit (some jurisdictions have a different name): provide copy with first application following substantial completion.

K. Data Binder Receipt:

1. with first application following substantial completion, provide copy of document identifying to whom Contractor delivered the Operating and Maintenance Data Binders.

2. with application for final payment, provide copy of document identifying to whom Contractor delivered Project Data Binders

L. Roof Warranty or warranties, if any required on the Owner's Section 07 50 35 standard form.

M. Report of Subcontractors and Suppliers, on the standard form.

N. Visitor Log for the period covered by application. After substantial completion, provide Log(s) for periods prior to substantial completion that have not been provided in a prior application.

O. Weather Delay Report for all calendar months completed, up to the date of substantial completion, and not previously submitted.

P. Progress Schedule, updated and current, indicating progress through the period covered by application and scheduled progress through completion of Work. This is not required with the request for final payment.

Q. Shop Drawing Log for entire project through the period covered by application.

1.04 CERTIFICATION

A. Designer, if in disagreement with the amounts claimed in an application, may either return application to Contractor for revision and resubmittal, or revise application by hand to indicate corrections Designer considers appropriate.

B. Designer, finding an application complete and correct, will certify the application and return one of the sets to Contractor to indicate the action taken.

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 - GENERAL

1.01 SCHEDULING AND ATTENDANCE

A. The Designer, in cooperation with the Owner and the Contractor, will schedule and administer a Pre-Construction Conference, periodic Progress Meetings, and other specially called or required meetings.

B. Representatives of the Owner and the Designer will attend.

C. Representatives of the Contractor, subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents. In the case of the Contractor, the representative shall be one who is authorized to sign change orders.

1.02 PRE-CONSTRUCTION CONFERENCE

A. A Pre-Construction Conference will be scheduled and conducted at the project site prior to the issuance of the Notice to Proceed.

B. The Pre-Construction Conference shall be attended by the Contractor's:

1. (Office) Job Manager
2. (Field) Job Superintendent
3. Major subcontractors' representatives
4. Major suppliers' representatives
5. Others, as desired.

C. The Pre-Construction Conference is intended to be an opportunity for the Contractor to review administrative, procedural, and temporary facilities requirements of the Contract Documents, and to ask questions concerning the Work.

1.03 PROGRESS MEETINGS

A. Progress Meetings will be scheduled and conducted at the project site prior to the Contractor's submittal of an application for payment, or when deemed advisable by the Designer.

B. Progress Meetings shall be attended by the Contractor's:

1. (Office) Job Manager
2. (Field) Job Superintendent
3. Subcontractors' representatives, as befits the agenda
4. Suppliers' representatives, as befits the agenda
5. Others, as appropriate.

C. Progress Meetings are intended to be a monthly opportunity for the Contractor to review and submit applications for payment, and attachments, and for a general review of the progress of the Work, aimed at identifying and mitigating impediments to timely completion.

D. Progress Meetings will be scheduled and conducted until final completion.

END OF SECTION

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SECTION 01 31 90
ADMINISTRATIVE LOGS

PART 1 - GENERAL

1.01 SUBMITTALS LOG

A. If any shop drawings, product data, or sample submittals are required by the Contract Documents, maintain a submittals log to record the status of submittals made to the Designer.

1. Submit three (3) copies with each application for payment.

2. Clearly identify the Project.

3. Record activities with respect to shop drawings, product data, samples, and such other submittals which are required by the Contract Documents.

4. Indicate for each submittal made to date:

a. Title or name, and type of submittal.

b. Date submitted to the Designer.

c. Date returned by the Designer.

d. General nature of the Designer's response.

1.02 VISITOR LOG

A. Maintain visitor log in the field office (or with the Project Superintendent when no field office is required) to record visits by all persons not a part of the Contractor's forces, materials suppliers, or subcontractors' forces.

1. Submit three (3) copies with each application for payment.

2. Clearly identify the Project.

3. Indicate:

a. Visitor name and affiliation.

b. Date of visit.

c. Time of arrival and departure.

END OF SECTION

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SECTION 01 32 15
PROGRESS SCHEDULES and REPORTS

PART 1 - GENERAL

1.01 INITIAL PROGRESS SCHEDULE

A. Submit within 21 days of award of the Contract, and not later than the date of submission of the first application for payment. Clearly identify the Project on the schedule.

B. Outline the orderly progress of the Work as planned from the Notice to Proceed through Substantial Completion on the contractually required date. Categorize the Work by Phase (if Phases are specified), major work area, and distinct trade or team, and divide into individual activities of one month or less duration each. Provide an identifiable relationship to the schedule of values. Identify projected monthly progress, points of 50% completion and Substantial Completion, and other major milestones.

C. A bar chart or critical path method is acceptable, or other method which is approved by the Designer.

1.02 SUBMITTALS SCHEDULE

A. Submit with the initial Progress Schedule. Clearly identify the Project, and format in a manner similar to the initial progress schedule, utilizing the same method, or make a part of the initial Progress Schedule.

B. Identify submittals to be made. Show date for submission and date by which Designer should respond, allowing sufficient time for review.

C. Designer may require revision of schedule if times allotted for review are insufficient.

1.03 UPDATED PROGRESS SCHEDULE

A. Submit three (3) copies with each application for payment.

B. Clearly identify the Project. Format in a manner similar to the initial progress schedule, utilizing the same method.

C. Indicate:

1. Work as initially scheduled.

2. Actual progress through the period covered by the current application for payment.

3. Planned progress through Substantial Completion, including extensions of time made by change order or construction change directive.

D. If actual progress falls behind projections, show how the backlog is to be made up so that the Work will be completed on time.

END OF SECTION

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SECTION 013300
SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submitting Shop Drawings, Product Data, Samples, and other submittals.

1.2 SUBMITTALS

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 COORDINATION OF SUBMITTALS

A. Schedule and coordinate specified submittals.

B. Coordinate work of various sections having interdependent responsibilities for installing, connecting to and placing in service, such equipment.

C. Coordinate requests for substitutions to ensure compatibility of space, of operating elements and effect on work of other sections.

D. In instances where submittals affect the work of more than one trade, prepare and submit composite drawings which indicate and define the work under all affected trades, and obtain Designer approval. Upon receipt of approval, distribute print copies of approved drawings to affected trades. All affected trades shall cooperate in preparation of composite drawings to assure proper coordination.

E. Do not include actual or proposed changes on shop drawings or other submittals; none will be considered approved under any circumstances. Even if a reviewed shop drawing or other submittal has deviations from the Contract Documents, a submittal is not a Change Order and will not be considered to be an approval of such change or Contract deviation.

3.2 SUBMITTALS PROCEDURES

A. Deliver submittals to Designer at address listed on cover of Project Manual.

B. Transmit each item under AIA Form G810 or Designer-accepted transmittal form.

C. Identify each submittal item with the following information:
   1. Project Name and Location,
   2. Designer Job Number,

3. Contractor,
4. Subcontractor,
5. Major Supplier,
6. Pertinent Drawing Sheet and Detail Number,
7. Specification Section Number and
8. Deviations from Contract Documents, if any.

D. Submittals which lack required identification information will be returned to Contractor with no action taken. No extensions in Contract time will be granted because of delays caused by Contractor's failure to follow procedure.

E. Provide submittals required by individual specification sections simultaneously. For example, if a specification requires shop drawings, product data and a sample for approval by the Designer, then submit all these items simultaneously. Do not make incomplete or partial submittals. Do not transmit submittals piecemeal. The Designer will take no action on incomplete or partial submittals. The Designer will begin the review process only after having received a complete submittal. The Owner will not grant the Contractor any extensions of time nor any additional money due to delays resulting from incomplete or partial submittals.

F. Edit manufacturers' standard dimension drawings and performance and product data to delete reference to equipment, features, or information that is not applicable to the equipment being supplied for this project.

G. Provide 4 x 8 inch blank space on each submittal for Contractor and Designer stamps. Each submittal shall bear the Contractor’s original hand-written signature.

H. Submit initial progress schedules, submittals schedule, and Schedule of Values in duplicate within 5 days after date of Owner-Contractor Agreement. After review by Designer revise and resubmit as needed to respond to Designer's review comments. Submit 4 revised schedules with each Application for Payment, reflecting changes since previous submittal.

I. Comply with progress schedule for submittal related to Work progress. Coordinate submittal of related items.

J. After Designer review of submittal, revise and resubmit as required, identifying changes made since previous submittal.

K. Duplicate and distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

L. Submittals received by Designer after 2:00 p.m. will be considered as having been received the next business day.

3.3 PRODUCTS LIST

A. Within 10 days after date of Owner-Contractor Agreement, submit complete list of major products proposed for use, with name of manufacturers, trade names, model or catalog designations and reference standards and the name of the installing Subcontractor.

B. Tabulate products by Specifications section number, title and Article number.

C. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards.

D. Designer will reply in writing within a reasonable time stating whether there is objection to listed items. Failure to object to a listed item shall not constitute a waiver of requirements of Contract Documents and products furnished by listed manufacturer must conform to such requirements.

3.4 SHOP DRAWINGS

A. Submit in the form of two opaque reproductions. Provide shop drawings produced using “AutoCAD” or other computer aided drafting software. Freehand drawings and drawings produced by other means are not acceptable and will be returned to Contractor for resubmittal.

B. After review, reproduce and distribute.

C. Submit newly-prepared information. Do not submit shop drawings that are merely tracings or copies of any of the Contract Documents. The re-use of Designer's drawings in whole or in part will not be permitted.

D. Present in a clear and thorough manner. Title each drawing with Project and Contract name and number; identify each element of drawings by reference to sheet number and detail, schedule, or room number of Contract Documents. Use Designer’s original naming conventions for individual items on shop drawings.

E. Identify field dimensions; show relation to adjacent or essential features or Work or products. Designer will not verify dimensions, elevations, or other similar data requested on submittals. Shop drawings containing “please verify,” “GC to verify,” or similar wording indicating field dimensions have not be verified may be subject to automatic rejection by and without further review by Designer.

F. Minimum Sheet Size: 8-1/2 x 11 inches or larger multiples thereof.

3.5 PRODUCT DATA

A. Product Data for Review:
   1. Submitted to Designer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
   2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article.

B. Product Data for Information: Submitted for the Designer's knowledge as contract administrator or for the Owner.

C. Product Data for Project Close-out: Submitted for the Owner's benefit during and after project completion.

D. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Designer.

E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

F. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

G. After review distribute in accordance with the Submittal Procedures article.

3.6 MATERIAL SAFETY DATA SHEETS

A. Do not submit Material Safety Data Sheets (MSDS).

B. Designer will automatically reject submittals containing MSDS's without further review or consideration.

C. Actions in this regard taken by Designer will not give rise to a delay claim by the Contractor under any circumstance.

3.7 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.

B. Submit full range (not less than 3) of manufacturers' standard colors, textures and patterns for Designer's selection. Submit samples for selection of finishes within 30 days after date of Contract.

C. Include identification on each sample, giving full information.

D. Submit the number specified in respective Specification section; one will be retained by Designer. Reviewed samples which may be used in the Work are indicated in the Specification section.

3.8 MANUFACTURER'S INSTRUCTIONS

A. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting and finishing, in quantities specified for product data.

B. Identify conflicts between manufacturers' instructions and Contract Documents.

3.9 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificate to Designer for review, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Designer.

3.10 CONTRACTOR REVIEW OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Review submittals prior to transmittal; decide and verify field measurements, field construction criteria, manufacturer's catalog numbers and conformance of submittal with requirements of Contract Documents.

B. Coordinate submittals with requirements of Work and of Contract Documents.

C. Sign or initial each sheet of shop drawings and product data and each sample label to certify compliance with requirements of Contract Documents. Notify Designer in writing at time of submittal, of any deviations from requirements of Contract Documents.

D. Do not fabricate products or begin work which requires submittals until return of submittal with Designer acceptance.

E. When the phrase, "by others," or words to like effect, appear on Shop Drawings, General Contractor shall indicate on drawing who is to furnish material or operations so marked on submittal.

3.11 NONCOMPLYING SUBMITTALS

A. Submittals not in compliance with this Section will be returned by Designer to Contractor for re-submittal with appropriate deficiencies noted. Time extensions will not be allowed for returned non-complying submittals.

B. The Designer will not review more than two submittals on any one item.

END OF SECTION

SECTION 014000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Administrative and procedural requirements for quality assurance and quality control.

1.2 QUALITY CONTROL, GENERAL

A. Maintain quality control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce work of specified quality.

B. Comply with manufacturers' written instructions and recommendations, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Designer 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. Perform work by persons qualified to produce workmanship of specified quality.

F. Provide submittals, test reports, certificates, and other quality control items as indicated on Structural Drawings under “Structural Quality Assurance Plan.”

G. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

H. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration and racking.

1.3 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 Designer before proceeding.

C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.4 REFERENCES AND STANDARDS

A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents, date for receiving bids, date of Owner-Contractor Agreement when there are no Bids, date specified in the individual specification sections, except where a specific date is established by code.

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

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

E. When required by individual Specifications section, obtain copy of standard. Maintain copy at jobsite during submittals, planning and progress of the specific work, until Substantial Completion.

F. Should specified reference standards conflict with Contract Documents, request clarification from Designer before proceeding.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify that existing substrate will structurally support new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 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.

END OF SECTION

SECTION 01 41 15
BASIC REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 CODES AND REGULATIONS

A. The Regulatory Requirements used for Tennessee Board of Regents projects are listed below as a convenience and may not be inclusive of all that apply. Others may also apply. Comply with all pertinent codes, standards, regulations and laws.

	Document	Source	Phone
1.	2006 International Building Code	International Code Council, Inc. 500 New Jersey Avenue NW, 6th Floor Washington, D.C. 20001	(202) 370-1800
2.	2006 International Mechanical Code Rules of the Tennessee Department of Commerce and Insurance Division of Fire Protection Chapter 0789-02-02 Codes and Standards		
3.	2006 International Fire Code		
4.	2008 National Electrical Code	National Fire Protection Association 1 Batterymarch Park Quincy, Massachusetts 02169	(800) 344-3555
5.	2006 Life Safety Code (NFPA No. 101-2006) (NFPA Standards as listed in NFPA 1, Chapter 2 – excluding NFPA 5000)		
6.	2007 Tennessee Elevator Safety Board Rules Chapter 0800-3-4 Elevators, Dumbwaiters, Escalators, and other Lifts	Tn. Dept. of Labor and Workforce Development Div. of Boiler & Elevator Inspection Elevator Safety Board 3rd Floor Andrew Johnson Tower 710 James Robertson Parkway Nashville, Tennessee 37243	(615) 741-2123
7.	2007 Board of Boiler Rules Chapter 0800-3-3 Boiler Inspections		
8.	ASHRAE standard 90.1-2007 Energy Standards for Bldgs except Low-Rise Residential Buildings	American Society of Heating, Refrigerating & Air Conditioning Engineers 1791 Tullie Circle NE Atlanta, Georgia 30329	(800) 527-4723
9.	ASHRAE standard 90.2-2004 Energy-Efficient Design of New Low-Rise Residential Buildings		
10.	ASHRAE standard 62.1-2007 Ventilation for Acceptable Indoor Air Quality		
11.	Tennessee Chapters 0780-2-1, Electrical Installations 0780-2-2, Codes & Standards 0780-2-3, Plan & Spec Review 0780-2-18, Equitable Restrooms	Tn. Dept. of Commerce and Insurance Div. of Fire Prevention, Codes Enforcement Sec. 3rd Floor Davy Crockett Tower 500 James Robertson Parkway Nashville, Tennessee 37243-1162	(615) 741-7190
12.	ADA Title II, 28 CFR parts 35 and/or 36 or, when applicable to specific Student Housing projects,	U.S. Department of Justice Civil Rights Division, Disability Rights Section-NYA 950 Pennsylvania, NW Washington, DC 20530	(800) 514-0301
	Uniform Federal Accessibility Standards, Fed-Std-795, April 1, 1988	Architectural and Transportation Barriers Compliance Board ATTN: OCE Suite 1000 @ 1331 F Street NW Washington, D.C. 20004	(202) 272-5434 (800) 872-2253 Tracy @ ext 30
13.	and, for Title III applications within Title II sites or facilities, 2002 North Carolina Accessibility Code w/ 2004 Amendments	N.C.Dept. of Insurance P.O.Box 26387 Raleigh, North Carolina 27611	(919) 733-3901

END OF SECTION

SECTION 01 43 25
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 CONTRACTOR'S RESPONSIBILITIES

A. Employ and pay for the services of an independent testing laboratory, approved by the Designer, to perform specified services and testing. Employment of laboratory does not relieve Contractor's obligations to perform the Work of the Contract.

B. Coordinate and pay for inspections and testing required by law, ordinance, rules, regulations, orders, or approvals of public authorities as required by the Contract Documents.

1. Furnish copies of Products Test reports as required.

2. Furnish incidental labor and facilities to facilitate inspections and tests and for storage and curing of test samples.

3. Notify the lab sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

4. Make arrangements with lab and pay for additional samples and tests required for Contractor's convenience.

1.02 TESTING LABORATORY

A. Qualifications:

1. Meet "Recommended Requirements for Independent Laboratory Qualification", published by the American Council of Independent Laboratories, and Basic requirements of ASTM E 329 "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".

2. Be authorized to operate in the State of Tennessee.

3. Submit copies to the Designer of the report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection with the memorandum of remedies of any deficiencies reported by the inspection.

B. Duties and limitations of authority:

1. Perform specified inspections, sampling, and testing of materials and methods of construction and promptly submit five copies of the written report of each test and inspection to the Designer.

2. Laboratory is not authorized to release, revoke, alter or enlarge on requirements of the Contract Documents, approve or accept portions of the Work, or perform duties of the Contractor.

END OF SECTION

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SECTION 014533
SPECIAL INSPECTIONS AND PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Administrative and procedural requirements for special Inspections, structural observations, and load testing during construction.

1.2 DEFINITIONS

A. Approved Fabricator: An established and qualified person, firm, or corporation approved by authority having jurisdiction.

B. Certificate of Compliance: A certificate prepared and submitted by manufacturer, stating that materials and products meet specified standards or that work was done in compliance with approved construction documents.

C. Special Inspection: Inspection as herein required of materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and referenced standards.

D. Special Inspection, Continuous: The full-time observation of work requiring special inspection by an approved special inspector who is present in area where Work is being performed.

E. Special Inspection, Periodic: The part-time or intermittent observation of work requiring special inspection by an approved special inspector who is present in area where Work is being performed and at completion of Work.

1.3 INFORMATIONAL SUBMITTALS

A. Certifications: Provide the following certifications:
   1. That Contractor is aware of special requirements contained within his/her Section and other documents.
   2. That Control shall be exercised to obtain conformance with Construction Documents approved by the Authority Having Jurisdiction.
   3. Provide Special Inspectors' insurance certificates for all applicable coverages, including professional liability, specifically covering such special inspection assignments; general liability; automobile coverage; workmen's compensation and any other appropriate coverage.

B. Quality Control Procedures: Submit descriptions of the following:
   1. Procedures for exercising control within the Contractor's organization, method and frequency of reporting, and report distribution methods.
   2. Persons exercising such control including identities and roles and individual qualifications.

1.4 FABRICATORS

A. Special inspection is required of structural load-bearing members and assemblies fabricated off site at fabricator's shop.

B. Special Inspector shall verify fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of workmanship and fabricator's ability to conform to Contract Documents and referenced standards. Special Inspector shall review procedures for completeness and adequacy relative to code requirements for fabricator's scope of work.

C. Special inspections are not required where work is done on premises of a fabricator registered and approved with the authority having jurisdiction to perform such work without special inspection. Approval shall be based upon review of fabricator's written procedural and quality control manuals and periodic auditing of fabrication practices by an approved special inspection agency.

D. At completion of fabrication, approved fabricator shall submit a certificate of compliance to Contractor who shall forward certificate to Designer stating that work was performed in accordance with Contract Documents.

1.5 OBLIGATIONS

A. Contractor:
1. Contractor shall arrange for all necessary Contract Documents, including two complete sets of documents for project, including all drawings and specifications, geotechnical report and materials test reports, to be furnished to Special Inspector during progress of Work in a timely manner.
2. Contractor shall provide Special Inspector with two copies of all changes, revisions, addenda, and related items.
3. Contractor shall ensure that a qualified testing agency is retained.
4. Contractor shall cooperate with and assist Special Inspector in performance of his/her inspection duties as specified herein. Special Inspector shall have free access to Project at all times.
5. Contractor shall advise Special Inspector, 24 hours in advance, and as indicated, of scheduled construction and planned operations in order to assure timely and appropriate observation and inspection of items specified herein.
6. Contractor shall furnish in a timely manner to Special Inspector copies of all reviewed and accepted submittals (excluding calculations) for applicable elements of project.
7. Contractor shall provide Special Inspector with reasonable access to office facilities at construction site to accommodate his/her needs.
8. Special Inspections do not relieve Contractor of its responsibility to comply with Contract Documents, any statutory or contractual obligations, nor its responsibilities to carry out its quality control inspections and testing. Contractor has sole responsibility for deviations from Contract Documents and costs of rectifying those deviations.
9. Contractor shall correct work that is in non-compliance with Contract Documents.
10. Construction performed without an inspection and that is unable to be inspected may require testing and removal at Contractor's expense as determined by Designer.

B. Special Inspector:

1. The presence of Special Inspector does not relieve Contractor of its responsibilities.
2. Special Inspections are not required where Work is done on premises of a fabricator registered and approved to perform such work without special inspection per Section 1704.2.2 of International Building Code.
3. Before starting with Work, Special Inspector and his/her authorized representative shall become familiar with specific components and systems that Special Inspector will be responsible for inspecting. Special Inspector is responsible for a thorough knowledge of intent and content of Contract Documents and accepted submittals relating to inspection responsibilities, appropriate portions of governing codes and exercise of good judgment.
4. Special Inspector shall not make design decisions or interpretations of Contract Documents.
5. Special Inspector shall write and sign a report each day an inspection is made. The report shall consist of following:
    a. Identify name and location of project, name of Special Inspector, permit number, date, working conditions, including weather and temperature, and type and location of work being performed.
    b. A detailed report of each inspection, including presence and activities of testing agency. Note changes in work sequence or materials and any unusual circumstances affecting performance of Work. Place emphasis on those areas where deficiencies occur.
    c. Review and comment on materials testing reports before that day's inspection.
    d. Construction performed without inspection and not capable of being inspected or tested in place.
6. Special Inspector shall supplement report with the following, when applicable:
    a. Special records (weld tests, welders' certificates, concrete tests, and related items).
    b. Documentation of changes made in field.
    c. Photographs.
7. Special Inspector shall review shop drawings that are clarifications of Contract Documents in order to allow inspection of details and other information.
8. Special Inspector shall notify Contractor immediately in person, and Designer by email and hard-copy (US Post Office) of non-conformance items. Special Inspector shall bring deficiencies (non-conformance items) observed to attention of Contractor for immediate correction. If discrepancies are not corrected in a timely manner, discrepancies shall be brought to attention of Designer.
9. Special Inspector shall maintain an up-to-date list on non-conforming items, with date of occurrence of item and date of resolution of non-conformance item.
10. Special Inspector shall submit daily field reports on a weekly basis to Contractor and Designer, under a cover letter signed and sealed (if applicable) by Special Inspector.
11. Special Inspector shall submit a final report of special inspections and corrections of any discrepancies to Owner and Designer, and Contractor at a time appropriate to stage of construction. Special Inspection shall issue final report in a manner so as not to delay issuance of Certificate of Occupancy or Substantial Completion.

PART 2 PRODUCTS (Not used)

PART 3 EXECUTION (Not used)

END OF SECTION

SECTION 015000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.2 TEMPORARY ELECTRICITY

A. Cost: By Contractor; provide and pay for power service required from utility source.

B. Provide power outlets for construction operations, with branch wiring and distribution boxes located as needed for construction purposes. Provide flexible power cords as needed for construction purposes.

C. Provide main service disconnect and overcurrent protection at convenient location.

D. Permanent convenience receptacles may be utilized during construction.

E. Do not "daisy-chain" temporary electrical wiring.

1.3 TEMPORARY WELDING

A. Ground welding equipment as near as possible to welding electrode. Take ground wire from welding equipment, along with positive wire, to work site. Wires shall be loosely twisted. Welding ground shall be within 5'-0" or length of member being welded, whichever is less.

B. Do not use single-phase transformer (buzz box) welding equipment.

C. Electric motor-generator type welding equipment is permissible. Restrict welding to within a fabricated wire cage that is grounded and used in conjunction with an inductive choke in series. Use a radio frequency interference (RFI) choke within 1.5m (4'-11").

D. Do not "daisy-chain" welding leads. Route welding leads directly to construction enclosure where they are to be used.

E. Connect conduit, pipes and ducts entering and leaving construction enclosure to shielding material.

1.4 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft.

B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.

C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails and lamps as needed to illuminate construction areas.

D. Maintain lighting and provide routine repairs.

E. Permanent building lighting may be utilized during construction.

1.5 TELEPHONE SERVICE

A. Provide, maintain and pay for telephone service to field office at time of project mobilization.

1.6 TEMPORARY WATER SERVICE

A. Provide, maintain and pay for service required for construction operations. Extend branch piping with outlets located so that water is available by use of hoses.

1.7 SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures.

B. Materials may be new or used, adequate for purpose, which will not create unsanitary conditions.

C. Toilet Facilities: Enclosed portable self-contained units or temporary water closets and urinals, secluded from public view. Provide separate facilities for men and women.

D. Provide facilities at time of site mobilization.

E. Clean areas of facilities daily, maintain in sanitary condition. Provide toilet paper, paper towels and soap in suitable dispensers.

F. Remove temporary facilities prior to Substantial Completion.

1.8 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.

B. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

C. Protect plant growth and trees scheduled to remain from injuries because of construction activities resulting in damage such as mechanical injuries and chemical poisoning. Provide a fenced in protection zone posted with signs to prevent activities within zone. Replace damaged plant life.
   1. If drip line is less than 9’-11” from trunk of tree, then provide protection zone with a 10 feet radius around tree.
   2. If drip line is 10 feet or more, then provide protection zone equal to limits of critical root zone or a minimum distance of one and one-half times drip line radius, as measured from trunk of protected tree.

D. Do not perform operations involving concrete or gypsum board such that run off from either of these will soak into existing tree root systems. Do not spill wood preservative products such as pentachlorophenol into tree root areas. Do not clean paint brushes and tools over tree roots. Keep trees free of nails, screw eyes, and other fastening devices. Use posts, not trees, for signs, electrical wires and pulleys.

1.9 FENCING

A. Construction: Contractor's option. Post "No trespassing" signs.

B. Provide fence around construction site.

C. Barbed Wire: Not permitted.

1.10 WATER CONTROL

A. Grade site to drain. Maintain excavations and site free of standing water. Provide and operate drainage and pumping equipment.

B. Protect site from puddling or running water.

C. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

D. Minimize quantity of bare soil exposed at one time. Provide temporary measures such as berms, dikes and drains, to prevent water flow.

E. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

F. Take appropriate measures to ensure that detergents, paints, solvents, adhesives, oils, and other toxic hazardous substances do not get into soil and sediment separators.

G. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

H. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.

1.11 PROTECTION OF INSTALLED WORK

A. Provide temporary and removable protection for installed products. Control traffic in immediate area to minimize damage.

B. Provide protective coverings at walls, projections, jambs, sills and soffits of openings. Protect finished floors and stairs from traffic, dirt, wear, damage or movement of heavy objects by protecting with durable sheet materials.

C. Prohibit traffic and storage on waterproofed and roofed surfaces and on lawn and landscaped areas.

1.12 SECURITY

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

B. Coordinate with Owner's security program.

C. Protect Work and existing premises from theft, vandalism, and unauthorized entry. Initiate program in coordination with Owner's existing security system at project mobilization.

D. Maintain program throughout construction period until Owner occupancy.

E. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1.13 ACCESS ROADS

A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area. Promptly clean mud and other spillage from public thoroughfares.

B. Extend and relocate from one position to another as Work progress requires. Provide detours necessary for unimpeded traffic flow.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Construction Exit: Stone-stabilized pad located at point(s) where traffic will be leaving site to public roadway.
   1. Excavate exit area 3” deep and clear area of vegetation and roots.
   2. Provide geotextile fabric full length and width of exit.
   3. Aggregate Size: TDOT #1 or #2 stone, washed and well graded
   4. Pad Thickness: 6 inches minimum.
   5. Pad Length and Width: Full width of all points of vehicular access, 20 feet minimum, by 50 feet long.
   6. On sites where grade toward public roadway is greater than 2%, provide a waterbar diversion, 6”–8” high with 3:1 side slopes, across construction exit foundation. Direct diverted run off to sediment trap or sediment basin.
   7. Inspect exit at end of each work day.
   8. Maintain exit in a condition that will prevent tracking or flow of material onto public rights-of-way.
   9. Immediately remove all materials spilled, dropped, washed, or tracked from vehicles or site onto roadways or into storm drains.

E. Designated existing on-site roads may be used for construction traffic.

F. Temporary roads shall follow natural contour of terrain where practical.

G. Do not cross streams without written permission from United States Army Corps of Engineers and appropriate state and local authorities.

H. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

1.14 PARKING

A. Arrange for temporary surface parking areas to accommodate construction personnel.

B. When site space is not adequate, provide additional off-site parking.

1.15 PROJECT IDENTIFICATION SIGN

A. Provide project identification sign, as indicated on Drawings.

B. Sign Materials: New or used structurally adequate structure and framing; exterior grade plywood surfaces with medium density overlay, minimum 3/4 inch thick, standard large sizes to minimize joints; galvanized, aluminum or brass rough hardware; two coats exterior quality paint and primers to Designer's design and colors; exhibit lettering using exterior paint by professional sign painter.

C. Install project identification sign within 30 days after date fixed by Notice to Proceed. Erect on site at location established by Designer. Erect supports and framing on secure foundations, rigidly braced and framed to resist wind loadings. Install sign surface plumb and level, with butt joints. Anchor securely. Paint sight-exposed surfaces of sign, supports and framing.

D. One painted sign, 48 sq ft area, bottom 6'-0" above ground.

E. Content:
1. Project number (if any), title, logo (if any) and name of Owner.
2. Names and titles of Authorities.
3. Names and titles of Designer and Consultants.
4. Name of Prime Contractor and major subcontractors.

F. Allow no other signs to be displayed.

G. Maintain sign and supports clean, repair deterioration and damages. Remove signs, framing, supports and foundations at completion of Project and restore area.

1.16 PROJECT INFORMATIONAL SIGNS

A. Painted informational signs of same colors and lettering as Project Identification sign, or standard products; size lettering to provide legibility at 100 foot distance.

B. Provide at each field office, storage shed and directional signs to direct traffic into and within site. Relocate from one location to another as Work progress requires.

C. Provide applicable municipal, state and other traffic agency directional traffic signs to and within site.

1.17 STORAGE AREAS AND SHEDS

A. Storage Sheds for Tools, Materials and Equipment: Weather tight, with heat and ventilation for Products requiring controlled conditions, with adequate space for organized storage and access and lighting for inspection of stored materials.

1.18 MAINTENANCE AND CLEANING

A. Maintain approach walks free of sand and mud, construction materials and vehicles.

B. Maintain site clean and litter free with daily cleanup. Keep stored materials in neat, well organized stacks. Maintain site free of weeds.

C. Maintain grass to maintain a reasonably neat appearance during the Project.

1.19 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to 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 and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 015713
EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. This Section describes temporary erosion and sediment control measures that are required for the Project. Apply provisions of this Section as they may be required by regulatory authorities, Drawings or by on-site conditions.

1.2 DEFINITIONS

A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perrenial Sorrel and Brome Grass.

B. Check Dam: Small temporary barrier, grade control structure, or dam constructed across a swale, drainage ditch, or area of concentrated flow; intended to:
   1. Minimize erosion rate by reducing storm water velocity in areas of concentrated flow.
   2. Capture larger soil particles.

C. Erosion Control Blanket/Matting: Protective blanket or soil stabilization mat used to assist in establishment of temporary vegetation on steep slopes, channels, or stream banks; intended to:
   1. Prevent erosion of soil surfaces.
   2. Promote seed germination.
   3. Protect young vegetation.
   4. Prevent erosion of seed.
   5. Prevent wind dispersal of seed or mulch
   6. Facilitate installation of seed and mulch

D. Geotextile: A geosynthetic fabric, either woven or non-woven, applied to soil surface or between materials; to reduce erosion by, and sediment found in, storm generated water by providing filtration, separation, or stabilization properties.

E. Silt Fence: Temporary sediment barrier made of woven, synthetic filtration fabric supported by steel or wood posts to prevent sediment carried by sheet flow from leaving site and entering natural drainage ways or storm drainage systems by slowing storm water runoff and causing deposition of sediment at structure.

1.3 PERFORMANCE REQUIREMENTS

A. Install measures before earthmoving operations; maintain measures throughout construction period. If inspections as required by TDEC indicate controls have been installed incorrectly or otherwise are not adequately controlling sediment, then install additional measures to prevent sediment discharge.

B. If sediment escapes these measures and accumulates downstream beyond construction limits, remove these sediment deposits before they are washed into receiving stream. Do not initiate remediation/restoration of a stream without consulting officials of TDEC.

C. Remove sediment from silt fencing, detention/sediment pond and inlet protection when design height/volume has been reduced by 50%. Reapply accumulated sediment to landscape before barrier is removed. Pick up litter, construction debris, and construction chemicals before anticipated storm events. Exercise good housekeeping measures to ensure construction items do not contribute to pollutant sources. In addition, remove erosion control measures, such as silt fences, upon site stabilization so they do not become a pollutant source.

D. Record and maintain records of major grading activities on site. Keep specific records of dates major grading activities begin, dates when construction activities cease temporarily or permanently, and dates when stabilization is initiated.

E. Provide stone construction entrance/exit on site to reduce transportation of soil onto public roadways. Provide temporary concrete truck washout.

F. Do not discharge material, including building materials, to waters of the United States except as authorized by a section 404 permit and/or Tennessee Aquatic Resource Alteration Permit. Do not discharge materials and sediment onto adjacent properties and public streets.

G. Hold water pumped from excavations and work areas in settling basins or filter said water before its discharge into surface waters. Discharge water through a pipe, well grassed or lined channels, or equivalent means so that discharge does not cause erosion or sedimentation.

H. Storm Water Pollution Prevention Plan (SWPPP) and all reports, permits, inspections, and data pertaining to storm water discharge shall be maintained for a period of three years from the date of Substantial Completion. Contractor shall make records available to and shall furnish copies to Owner and appropriate regulatory agencies during this three year period.

1.4 SUBMITTALS

A. Submit an erosion control plan including items such as sediment trap volume and embankment cross section.

B. Submit proof of Contractor personnel’s having completed required training courses in storm water management.

C. Submit a Notice of Termination on Owner-approved form after complete installation and successful establishment of the final stabilization activities at the site.

D. Submit date-stamped photos, inspection logs or reports, and descriptions of corrective action in response to problems on a monthly basis.

1.5 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging and location of packaging.

B. Be responsible for maintaining temporary erosion control measures as required by the weather and by construction operations.

1.6 NPDES PERMIT

A. Contractor shall obtain applicable permits and sign necessary documents such as Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) in order to obtain said permits.

B. Contractor shall provide inspector(s) to perform required National Pollutant Discharge Elimination System (NPDES) Permit inspections. Inspector(s) shall have completed State of Tennessee “Fundamentals of Erosion Prevention and Sediment Control, Level I” course successfully. Maintain a copy of certification or training record for inspector certification on site.

C. Contractor shall be responsible for reimbursing Owner for fines assessed by regulatory authority(ies) because of Contractor’s failure to comply with matters related to NPDES.

D. Contractor shall maintain temporary erosion and sediment control measures until Substantial Completion or such time that site has been stabilized and NPDES permit has been closed out, whichever occurs later.

E. For information only, Contractor shall copy Designer on all NPDES related items.

F. Storm Water Pollution Prevention Plan shall be incorporated into Contract Documents by reference.

1.7 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

B. Comply with Federal, State and Local agencies' requirements. In the event this Section conflicts with Federal, State, or Local agencies, the more restrictive regulations shall apply.

C. Comply with “Tennessee Erosion and Sediment Control Handbook, A Guide for Protection of State Waters through the use of Best Management Practices during Land Disturbances,” latest edition.

D. Comply with Storm Water Pollution Prevention Plan (SWPPP) and other reports, plans, or specifications filed in connection with this Project.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to site.

B. Deliver grass seed in original, sealed containers. Damaged packages are not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis and name of manufacturer.

1.9 SEQUENCING AND SCHEDULING

A. Make efforts to maintain natural covers as long as possible and to stabilize graded areas as soon as possible.

B. Limit amount of land cleared and grubbed to an area which will be filled within 30 days. Apply soil stabilization within 7 days to areas which reach final grade and areas where earthwork will not take place within 15 days.

C. The Construction Activity Sequence will be as follows:
1. Install silt fence and other erosion control structures before grading operations commence.
2. Limit clearing to an area where cut and fill operations will take place for an approximate 30 day period. Do not clear large areas which will remain stripped of vegetation for long periods of time and be susceptible to erosion. Vegetative ground cover shall not be destroyed, removed or disturbed more than 15 calendar days prior to grading or earth moving unless the area is seeded and/or mulched or other temporary cover is installed.
3. Strip topsoil and stockpile in a location designated by owner. Protect topsoil stockpile from erosion and collect sediment using silt barriers.
4. Begin site grading and storm water basin construction. Install additional silt fence, erosion control fabric on slopes steeper than 3:1, and ditch liner during the grading sequence as needed to maintain protection against offsite sediment discharge.
5. Once the sub-grades are prepared, install 4” of base stone to areas receiving asphalt.
6. Provide temporary seeding and permanent seeding to completed areas and areas where earthwork activity is not expected for a long duration.

1.10 MAINTENANCE SERVICE

A. Maintain disturbed areas for four months from Date of Substantial Completion or until establishment of satisfactory turf as defined in Section 329201.

B. Complete maintenance activities before next storm event, if possible, but not more than seven days after the need is identified.

C. Maintenance will include repairing damaged BMPs, removing accumulated sediment and debris, and installing new erosion and sediment measures, as needed.

PART 2 PRODUCTS

2.1 MATERIALS

A. Topsoil: Excavated from site and free of weeds.

B. Seed Mixture: Fast growing annuals according to the following table:

Seeding Dates	Grass Seed	Percentages
May 1 – July 15	Sudan – Sorghum	100%
May 1 – July 15	Starr Millett	100%
July 15 – January 1	Balboa Rye	67%
	Italian Rye	33%

C. Mulch: Oat or wheat straw, free from weeds and foreign matter detrimental to plant life and dry. Hay or chopped cornstalks are not acceptable.

D. Fertilizer: FS O F 241, type and grade recommended for grass, with 50 percent of elements derived from organic sources; of proportions necessary to eliminate deficiencies of topsoil to the following proportions: 18 percent nitrogen, 24 percent phosphoric acid and 6 percent potassium.

E. Lime: Ground limestone, dolomite type, minimum 95 percent carbonates.

F. Water: Clean, fresh and free of substance or matter which could inhibit vigorous growth of grass.

G. Stakes: 1 x 2 inches wood or equivalent metal with a minimum length of 3 feet.

H. String: Inorganic fiber.

I. Burlap: 10 ounce per square yard fabric.

J. Baled Straw Mulch: Straw containing five cubic feet or more of material; either wire-bound or string-tied.

K. Fill Material for Embankment: Materials that are free of roots or woody vegetation, organic material, large stones and other deleterious material.

L. Geotextile: Non-toxic to vegetation, inert to common chemicals, mildew and rot resistant; comply with ASSHTO M288 for strength, elongation, permittvity, apparent opening size, and ultraviolet stability.

M. Check Dam Materials:
1. Stone: Large aggregate (clean of fines) such as TDOT #1 or #2; minimum size of 1-1/2”.
2. Rock: Small riprap such as TDOT Class A-1 (clean of fines); from 2” to 15” size.
3. Sandbags: Sandbags filled with either aggregate or sand.

N. Other Materials: Chemical binders and tacks, nettings and plastic filter sheets.

2.2 EROSION CONTROL PRODUCTS

A. Erosion Control Blankets, General: Machine-produced, plastic netting which covers and is intertwined with a natural organic or manmade mulch; nontoxic to vegetation and to germination of seed; with consistent thickness with organic material evenly distributed over entire blanket area; minimum 48 inches wide.

B. Straw Blankets: Weed-free straw from agricultural crops formed into a blanket; top side of photo-degradable plastic mesh size of 5/16” x 5/16” sewn into straw with biodegradable thread; minimum thickness of 3/8” and minimum dry weight of 0.5 pounds per square yard.

C. Excelsior Blankets: Curled wood excelsior (80% of fibers are 6” long or longer) formed into a blanket; clear markings indicating top side of blanket; smolder resistant; photo-degradable plastic mesh with maximum mesh size of 1-1/2” x 3”; minimum thickness of 1/4” and minimum dry weight of 0.8 pounds per square yard. On slopes provide blanket with mesh on top side; in waterways provide blanket with mesh on both sides.

D. Coconut Fiber Blankets: Coconut fiber formed into a blanket; photo-degradable plastic mesh, maximum size of 5/8” x 5/8” sewn into fiber with breakdown resistant synthetic yarn; 2” on center maximum row

spacing and stitch pattern; minimum thickness of 1/4" and minimum dry weight of 0.5 pounds per square yard. In waterways provide blanket with mesh on both sides.

E. Wood Fiber Blankets: Reprocessed wood fibers that do not possess or contain any growth or germination inhibiting factors; photo-degradable plastic mesh with maximum mesh size of 5/8" x 3/4" bonded to top of mat; 2" on center maximum row spacing and stitch pattern; minimum dry weight of 0.35 pounds per square yard. Do not use wood fiber in waterways.

F. Jute Mesh: Woven root fiber or yarn, with regularly spaced openings between strands; minimum dry weight of 1.0 pounds per square yard.

G. Staples: As recommended by blanket manufacturer.

H. Sediment Filtration System: Product composed of 70% agricultural straw and 30% coconut fiber matrix evenly distributed over bottom netting area. Sediment filtration system shall consist of bottom netting and a 2 ft. top netting that covers matrix material on "splash apron" of Sediment filtration system. Construct netting from 100% biodegradable woven natural organic fiber netting. Netting shall consist of machine directional strands formed from two intertwined yarns with cross directional strands interwoven through twisted machine strands (commonly referred to as a Leno weave) to form an approximate 0.50 x 1.00 inch mesh. Sew blanket together on 1.50 inch centers (50 stitches per roll width) with biodegradable thread.
   1. Each Sediment filtration system shall yield a structure 50 lineal feet (15.2 m) in length, with an approximate finished diameter of 9 inches (0.23 m). Diameter of finished structure may be increased to meet individual project specifications by spreading loose straw, pine needles, wood chips, grass cuttings, and similar materials across width of sediment filtration system before rolling edge to edge.
   2. Material Content
      a. Matrix: 70% Straw Fiber, 1.225 lbs/yd^2, 30% Coconut Fiber 0.525 lbs/yd^2
      b. Netting: Bottom side, Leno woven 100% biodegradable natural organic fiber (9.30 lbs/1,000 ft^2 approximate weight) Top side, 2 ft. strip covering "splash apron" of sediment filtration system, Leno woven 100% biodegradable natural organic fiber (9.30 lbs/1,000 ft^2 approximate weight).
      c. Thread: Biodegradable
   3. Physical Specifications
      a. Width: 6.67 ft
      b. Length: 50 ft
      c. Weight: 65 lbs ± 10%
      d. Stitch Spacing: 1.5 inches
      e. Finished Structure Diameter: Approximately 9 inches

2.3 SILT FENCES

A. Fence Posts: Soft wood, oak, or steel in sizes and lengths appropriate for anticipated duration(s) of exposure and runoff flow(s) or velocity(ies).

B. Filter Fabric: AASHTO M288; pervious sheet of propylene, nylon, polyester or ethylene yarn; containing ultraviolet ray inhibitors and stabilizers; type(s) and size(s) appropriate for anticipated duration(s) of exposure and runoff flow(s) or velocity(ies).

Property	Type Fence		
	A	B	C
Tensile Strength (Lbs, Min.) (ASTM D4632)	Warp – 120 Fill - 100	Warp – 120 Fill - 100	Warp – 260 Fill – 180

Elongation (% max. (ASTM D4632)	40	40	40
AOS (Apparent Opening Size) (Max sieve size) (ASTM D4751)	#30	#30	#30
Flow Rate (Gal/Min/Sq ft) (GDT-87)	25	25	70
Ultraviolet Stability (ASTM D4632 after 300 hours weathering according to ASTM D4355)	80	80	80
Bursting Strength (PSI min) (ASTM D3786 Diaphragm Bursting Strength Tester)	175	175	175
Minimum Fabric Width	36	22	36
Exposure in Field	6 months or greater	Less than 6 months	6 months or greater

PART 3 EXECUTION

3.1 GENERAL

A. Control erosion on cut and fill operations, excavation, backfill and other construction activities within limits of construction site, easements and borrow site used during construction.

B. Coordinate temporary erosion and sediment control systems with permanent erosion control features as specified under Division 31 sections to ensure economical, effective and continuous erosion control throughout construction and post-construction period.

C. Conduct construction in a manner which minimizes soil erosion and resulting sedimentation.

D. Protect properties adjacent to site from land disturbances because of sediment deposition.

E. Construct cut and fill slopes in a manner which will minimize erosion.

F. Soil stabilization measures shall be appropriate for time of year, site conditions and estimated duration of use.

G. Stabilize or protect soil stockpiles with sediment trapping measures to prevent soil loss.

H. No non-storm water discharges shall be permitted in any portion of the project site.

3.2 INSPECTION SERVICES

A. Provide inspection services to ensure continued conformance with this Section. Inspections shall cover, at a minimum, all disturbed areas that have not undergone final stabilization, sediment control structures, outfall points, and the stream.

B. Contractor's inspector shall certify on a weekly basis on form as approved by Owner that inspection described herein has been performed and whether or not all of erosion and sediment control measures are installed and in working order. If during these inspections it is discovered that repair or maintenance is required of any temporary or permanent control measure, the action taken to correct the problem will be documented.

C. Contractor's inspector shall maintain a rain gage and a daily log of readings.

D. Inspections shall be documented and include scope of inspections, name(s) and title of personnel making inspections, date(s) of inspections, major observations relating to implementation of Storm Water Pollution Prevention Plan and actions taken in accordance with section 3.5.8 of the Tennessee General Permit and as summarized above.

E. Inspection documentation will be maintained on site and made available upon request to the Owner.

F. Inspections shall be performed by qualified personnel before anticipated storm events (or series of storm events such as intermittent showers over one or more days), within 24 hours after the end of a storm event of 0.5 inches or greater, and at least twice per week performed at least 72 hours apart.

G. Inspections will cover, at a minimum, all disturbed areas that have not undergone final stabilization, sediment control structures, outfall points, and the stream.

H. Inspections will cover, at a minimum, all disturbed areas that have not undergone final stabilization, sediment control structures, outfall points, and the stream.

3.3 RUNOFF CONTROL

A. Temporarily divert surface water which flows toward construction area around construction area.

B. Temporary Berms: Construct temporary berms of compacted soil, with a shallow ditch and grade to drain.
   1. Construct berms with a minimum height of 18 inches, maximum side slopes of 1.5:1 and a minimum base width of 4.5 feet. Provide channel behind berm with a positive grade to a stabilized outlet.
   2. Use temporary berms above newly constructed cut and fill slopes to prevent excessive erosion until more permanent control features are established.
   3. Apply seed and mulch to berm within 15 days of construction.
   4. After slope has stabilized, remove temporary berm.

C. Temporary Swales: Use temporary swales above and below disturbed areas to intercept runoff and divert runoff to a safe disposal area.
   1. Provide channel with a slope of 5 percent or less; otherwise use a temporary slope drain.
   2. Place straw bale barriers in drainage way every 150 feet or as needed to control sediment deposition.
   3. Remove temporary swale after disturbed area is permanently stabilized.

D. Temporary Slope Drain: Use a temporary slope drain to carry concentrated runoff down a slope prior to installation of permanent facilities or growth of adequate ground cover on slopes.
   1. Construct a temporary slope drain consisting of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half-round pipe, metal pipe, plastic pipe, sod or other materials to carry water down slopes and reduce erosion.
   2. Remove temporary slope drain after disturbed area is stabilized.

E. Check Dams: Use check dams at temporary swales or ditches in need of protection during establishment of grass linings. Use check dams at temporary swales or ditches that due to their short length of service cannot receive a non-erodible lining for an extended period. Do not use check dams in streams.

1. Drainage Area: Do not exceed one acre of drainage area behind a single stone check dam. Do not exceed 5 acres of drainage area behind a single rock check dam.
2. Spacing: For drainage areas larger than one acre, use two or more check dams in series. Space check dams in series such that upstream dam toe is at same elevation as downstream dam top.
3. Height: Install check dams such that center is at least 9" lower that outer edges. Do not install check dams higher than 2'-0" measured to center.
4. Side Slope: 2:1 maximum.
5. Use geotextile as a separator between graded stone or rock and soil base and abutments. Place geotextile immediately adjacent to subgrade with voids and 5'-0" beyond down stream toe of dam.
6. Rock Check Dams: Place an upstream layer of small aggregate for filtering. Place rock by hand or mechanically to achieve complete ditch or swale coverage. Key rock check dams into swale or channel bottom at a depth of 6 inches.
7. Sandbag Check Dams: Place sandbags in a staggered pattern, them stake and tie sandbags together. Provide overflow weir in channel center.

3.4 SEDIMENT CONTROL

A. Filter Barriers: Construct straw bale barriers consisting of a row of entrenched and anchored straw bales.
   1. Use straw bale barriers in disturbed areas subject to sheet and rill erosion.
   2. Drainage area shall be less than 1/8 acre per 100 feet of barrier length, maximum slope length behind barrier shall be 100 feet and maximum slope behind barrier shall be 2:1.
   3. Do not use straw bale barriers where there is possibility of a washout.
   4. Place bales in a single row, lengthwise on contour, with ends of adjacent bales tightly abutting one another.
   5. Install straw bales so that bindings are oriented around sides rather than along tops and bottoms of bales.
   6. Entrench and backfill barrier. Construct trench the width of a bale and length of proposed barrier to a minimum depth of 4 inches. After bales are staked and chinked, backfill excavated soil against barrier. Backfill shall conform to ground level on downhill side. Build up backfill to 4 inches against uphill side of barrier.
   7. Anchor bales with at least two stakes or reinforcing bars driven through bale. Drive first stake in each bale toward previously laid bale to force bales together. Drive stakes or re-bars deep enough into ground to securely anchor bales.
   8. Chink or fill by wedging gaps between bales with straw to prevent water from escaping between bales.
   9. Remove straw bale barriers when they have served their usefulness, but not before upslope areas have been permanently stabilized. Do not use straw bale barriers for more than 3 months.

B. Silt Fences: Use silt fences along downgrade edges of construction to prevent sediment from leaving construction site. Use only where sheet or overland flows are expected. Place silt fences along contours; never up or down a slope.
   1. Place silt fences on downgrade side of soil stockpiles. Turn ends of silt fence upslope so some storm water may be retained in front of fence. Stake hay or straw bales in place at end of silt fence as an emergency overflow.
   2. Install silt fence in one continuous roll to greatest extent possible. Where necessary, splice together joints at supporting posts and overlap 6 inches.
   3. Drainage area shall be less than 1/4 acre per 100 feet of silt fence length, maximum slope length behind barrier and maximum grade behind fence shall be according to the following table:

Land Slope (%)	Maximum Slope Length Above Fence (feet)
Less than 2	100
2 to 5	75

5 to 10	50
10 to 20	25
Greater than 20†	15
†In areas where slope is greater than 20%, provide a flat length of 10 feet between toe of slope and fence.	

4. Do not use silt fences where flows are likely to exceed 1 cfs. Do not install silt fences across streams, ditches, waterways, or other concentrated flow areas.
5. Install support posts at 4'-0" or 6'-0" on center as indicated.
6. Staple or wire filter fabric to fence. Extend 8 inches of fabric into trench. Do not staple filter fabric to existing trees.
7. Backfill trench and compact soil over filter fabric.
8. Remove sediment deposits when deposits reach one-half height of barrier.
9. Remove silt fences when they have served their useful purpose, but not before upslope area has been permanently stabilized.

C. Construct brush barriers consisting of brush, tree trimmings, shrubs, plants and approved refuse from clearing and grubbing to intercept and retain sediment. Use brush barriers in areas subject to sheet and rill erosion, where enough material is available to construct them.
1. Height of a brush barrier shall be a minimum of 3 feet; width of a brush barrier shall be a minimum of 5 feet at its base.
2. If a filter fabric is used, cut fabric into lengths sufficient to lay across barrier from its upslope base to just beyond its peak. Where joints are necessary, splice fabric together with a minimum 6-inch overlap and securely seal.
3. Excavate trench 6 inches wide and 4 inches deep along length of barrier and immediately uphill from barrier.
4. Drape lengths of filter fabric across width of barrier with uphill edge placed in trench and edges of adjacent pieces overlapping each other.
5. Secure filter fabric in trench with stakes set approximately 36 inches on center.
6. Backfill trench and compact soil over filter fabric.
7. Set stakes into ground along downhill edge of brush barrier and anchor fabric by tying twine from fabric to stakes.

D. Construct sediment traps consisting of a small, temporary ponding area, formed by constructing an earthen embankment with a gravel outlet, across a drainage swale to detain runoff from disturbed areas long enough to allow majority of sediment to settle out. Use below drainage areas of 5 acres or less.
1. Sediment traps shall not be used longer than 18 months.
2. Periodically remove sediment from trap.
3. When used, install sediment traps before land disturbance takes place in drainage area. Clear, grub and strip area under embankment of vegetation and root mat. Clear pool.
4. Compact embankment in 8-inch layers by traversing with construction equipment.
5. Seed earthen embankment within 15 days of construction.
6. Remove structure and stabilize area when upslope drainage area has been stabilized.
7. Cut and fill slopes shall be 2:1 or flatter.

3.5 TEMPORARY SEEDING

A. Stabilize soil surfaces that are not to be fine-graded for 30 days and longer by seeding disturbed areas. Such areas include but are not limited to soil stockpiles, dikes, dams, sides of sediment basins and temporary road banks.

B. Install necessary erosion control devices such as berms, waterways and basins, prior to seeding.

C. Where soils are acidic, pH 5.5 or lower, apply lime at rate of two tons per acre. Apply fertilizer at rate of 450 lbs per acre. Incorporate lime and fertilizer into top 4 inches of soil.

D. Where area is compacted or hardened, loosen soil surface by discing, raking, harrowing, or other acceptable means.

E. Apply seed evenly by hand or with a cyclone seeder, drill, cultipacker seeder, or hydroseeder. Plant small grains no more than one inch deep. Plant grasses and legumes no more than 1/4 inch deep. If sown by hand, rake in lightly to cover seed with soil.

F. Re-seed areas which fail to establish adequate vegetative cover and as required after storm events.

3.6 MULCH APPLICATION

A. Apply mulch to soil surface for temporary soil stabilization. Use mulch on graded or cleared areas for 6 months or less where seedings may not have a suitable growing season to produce an erosion resistant cover.

B. Immediately following seeding, apply mulch at the rate of 100 pounds per 1,000 sf. Spread mulch as evenly as possible to prevent layering. Maintain clear of shrubs and trees.

C. Final grading is not required prior to mulching. Mulch may be applied to final grade.

D. Install structural erosion control features prior to mulching.

E. Mulch seedings made in fall.

F. Mulch seedings made on slopes greater than 4:1 and during excessively hot or dry weather.

3.7 EROSION CONTROL BLANKET/MATTING

A. Temporarily protect areas as indicated from excessive run off with erosion control blankets/matting.

B. Stabilize areas as indicated on Drawings and the following areas with erosion control matting or blanket:
   1. Concentrated flow areas with a velocity less than 5 ft/sec,
   2. Slopes steeper than 2.5:1 with a height of 10 feet or greater, and
   3. Cuts and fills within stream buffers.

C. Install erosion control matting or blankets according to manufacturer’s instructions for orienting, overlapping, entrenching, and securing.

D. Install erosion control blankets vertically from top of slope to bottom. Trim blankets as required to fit area to be stabilized. For slopes shallower than 2:1, and with a height of twice the width of blanket roll or less, up to a maximum of 16 feet, blanket may be applied horizontally across slope. In concentrated flow areas, place blanket in direction of water flow.

E. Entrench blanket beyond top and bottom of slope and at any horizontal joint a minimum of 6 inches, or per manufacturer’s instructions. Overlap vertical joints at least 3 inches, or per manufacturer’s instructions.

F. Anchor temporary blankets with staples. Follow manufacturer's instructions for staple pattern and frequency.

G. Entrench blanket beyond top and bottom of slope and at any horizontal joint a minimum of 6 inches, or per manufacturer's instructions. Overlap vertical joints at least 3 inches, or per manufacturer's instructions.

H. Entrench blanket beyond top and bottom of slope and at any horizontal joint a minimum of 6 inches, or per manufacturer's instructions. Overlap vertical joints at least 3 inches, or per manufacturer's instructions.

3.8 MAINTENANCE

A. Inspect erosion and sediment control facilities immediately after each rainfall and at least daily during construction activities. Make required repairs immediately.

B. Should fabric on a silt fence decompose or become ineffective prior to end of expected usable life and barrier still be necessary, replace fabric promptly.

C. Remove sediment deposits after each storm event. Remove deposits when deposits reach approximately one-half height of barrier. Spread deposits on a stockpile area and allowed to dry.

D. Maintain silt fence sediment areas and ensure that water is not short circuiting filter cloth. Inspect downstream area for erosion caused by discharge from sediment area. Correct erosion problems no less than seven days after need is identified.

E. Dress, prepare and seed sediment deposits remaining in place after a silt fence is no longer required to conform with existing grade.

END OF SECTION

SECTION 016000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for
   1. Selection of products for use in Project;
   2. Product delivery, storage, and handling;
   3. Manufacturers' standard warranties on products;
   4. Special warranties;
   5. Product substitutions; and comparable products except as indicated.

1.2 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

B. Comply with Specifications and referenced standards as minimum requirements.

C. Components required to be supplied in quantity within a Specification section shall be the same and shall be interchangeable.

1.3 TRANSPORTATION AND HANDLING

A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

C. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct and products are undamaged.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:
   1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
   2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Store products with seals and labels intact and legible. Follow manufacturer's instructions. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.

D. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

E. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.

F. Arrange storage to provide access for inspection. Periodically inspect to ensure products are undamaged and are maintained under required conditions.

G. After installation, provide coverings to protect products from damage from traffic and construction operations, remove when no longer needed.

H. Moisture Stains: Materials with evidence of moisture damage, including stains, are not acceptable, including both stored and installed materials; immediately remove from site and properly dispose. Take special care to prevent accumulation of moisture on installed materials and within packaging during delivery, storage, and handling to prevent development of molds and mildew on packaging and on products.
1. Immediately remove from site and properly dispose of materials showing signs of mold and signs of mildew, including materials with moisture stains.
2. Replace moldy materials with new, undamaged materials.

PART 2 PRODUCTS

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 62 25
PRODUCT OPTIONS and SUBSTITUTIONS

PART 1 - GENERAL

1.01 ENVIRONMENTAL HAZARDOUS PRODUCTS, MATERIALS, OR WASTES

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.

1.02 SUBSTITUTIONS:

A. Requests for substitutions shall be submitted to Designer on the form exhibited as Section 01 62 32, or in a similar format which provides the same or more information. Substitute products should not be ordered and shall not be installed without written approval or acceptance from Designer. Contractor assumes all risks associated with premature ordering and installation of substitute products.

B. The specifically named manufacturers, products, and systems, and descriptive characteristics used in the Contract Documents normally serve only to establish a level of quality and a performance standard. Unless specific restriction is placed upon an item in the specifications, Contractor may submit proposals for substitutions. The Owner reserves the right to disallow substitutions. Contractor assumes risks associated with possible rejection of proposals for substitution submitted during the life of the contract.

C. Delays caused by tardiness of Contractor in preparing and forwarding submittals do not constitute an acceptable basis for consideration of substitute products. Delays due to factors which were in effect prior to project bidding do not constitute an acceptable basis for consideration of substitute products.

D. When making requests for substitutions, Contractor assumes the following reponsibilities:

1. To have personally investigated the proposed substitute product and determined it is equal or superior in all respects to that specified;
2. To provide the same warranty for substitute that Contractor would for that specified;
3. To provide complete cost data, and waive all claims for additional costs related to substitution which subsequently become apparent; and
4. To coordinate installation of the accepted substitute, making such changes as may be required for Work to be complete in all respects.

END OF SECTION

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SECTION 01 62 32
SUBSTITUTION REQUEST FORM

To:	**Project:**
Attn:	
Specified Item:	**Proposed Substitute:**

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

☐ **Complete Description** ☐ **Catalog**
☐ **Laboratory Tests** ☐ **Spec Data**

2. This substitution will have the following effects on dimensions, guages, 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 guarrantees for the substitute(s) and the specified product(s) are (check one):

☐ **the same** ☐ **different** (if different, explain below)

8. Information on the availability of maintenance services and replacement materials for proposed substitute(s) is provided on an attached sheet if applicable. This attachment is:

☐ **attached** ☐ **not applicable**

9. Names, addresses, and phone numbers of fabricators and suppliers for proposed substitute(s) are provided on an attached sheet if applicable. This attachment is:

☐ **attached** ☐ **not applicable**

10. 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)

11. License fees or royalties are pending on the proposed substitute.

☐ **No** ☐ **Yes** (if yes, explain below)

12. 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:

☐ **Accepted** ☐ **Rejected**

☐ **Accepted as noted** ☐ **Rejected (received too late)**

☐ **Rejected (submittal incomplete)**

Additional comments:

For the Designer: **Date:**

Signature here: _____ _____

HALE STADIUM RENOVATION
Tennessee State University
Nashville, Tennessee
SBC #166/001-02-2011
HFR #2011171.00
June 11, 2012

SECTION 016362
REQUEST FOR INFORMATION

Project

RFI No. _____

To HART FREELAND ROBERTS, INC.

7101 Executive Center Dr, Ste 300
Brentwood, TN 37027

Date _____

Re: HALE STADIUM RENOVATION
Tennessee State University
Nashville, Tennessee

Contract For _____

Specification Section: _____ Paragraph: _____ Drawing Reference: _____ Detail: _____

Request:

Signed by:

Response:

Attachments:

Response From: Hart Freeland Roberts, Inc. To: _____ Date Ret'd: _____

Signed by:

Copies: Owner Consultants _____ _____ _____ _____ File

SECTION 017000
EXECUTION REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cutting and patching.

B. Use of site.

C. Field engineering.

D. Project surveying.

E. Facility startup.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.3 SURVEYOR QUALIFICATIONS

A. Employ a Land Surveyor registered in the State in which Project is located and acceptable to Designer.

PART 2 PRODUCTS

2.1 MATERIALS FOR CUTTING AND PATCHING

A. Primary Products: Those required for original installation. Do not incorporate salvaged or used materials in new construction except with permission of Designer.

B. Product Substitution: For any change in materials, submit request for substitution.

C. New Materials: As specified in individual Product Sections. Match existing products and work for patching and extending work.

D. Decide type and quality of existing products by inspection and any necessary testing and workmanship by use of existing as standard. Presence of a product, finish, or type of work, requires

that patching, extending, or matching shall be done as necessary to make Work complete and consistent with existing quality.

PART 3 EXECUTION

3.1 EXAMINATION FOR CUTTING AND PATCHING

A. Inspect existing conditions, prior to commencing Work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing Work, inspect conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

C. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Designer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

3.2 PREPARATION FOR CUTTING AND PATCHING

A. Provide supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage. Provide protection from elements for areas which may be exposed by uncovering work. Maintain excavations free of water.

B. Cut, move or remove items as necessary for access to alterations and renovation Work to proceed. Replace and restore at completion. Remove unsuitable materials not marked for salvage, such as , rotted wood, rusted metals and deteriorated masonry and concrete. Replace materials as specified for finished work.
   1. Unbolt bolted connections. Unscrew screw connections.
   2. Do not pry apart members whose finish will thereby be damaged by chipping, crazing, or cracking, or whose structural integrity will thereby be impaired.
   3. Do not remove nails from woodwork from the finished or exposed side. Drive nails through or pull from the back so the head does not splinter the finished face.

C. Remove debris and abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring from concealed and exposed spaces. Prepare surfaces and remove surface finishes to provide for proper installation of new work and new finishes.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 CUTTING AND PATCHING

A. Execute cutting, fitting and patching including excavation and fill, to complete Work and to:
   1. Fit the several parts together, to integrate with other work.

2. Uncover work to install ill-timed work.
3. Remove and replace defective and non-conforming work.
4. Remove samples of installed work for testing.

B. Execute work by methods to avoid damage to other Work and which will provide proper surfaces to receive patching and finishing. Cut rigid materials using masonry or core drill. Pneumatic tools will not be allowed without prior approval.

C. Obtain Designer approval prior to cutting or fitting any area not indicated where appearance, strength and fire or smoke integrity of work may be impaired. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection. For an assembly, refinish entire unit.

D. Perform work on existing materials still under warranty in such a manner that does not void Owner's warranty. Coordinate work of alterations and renovations to expedite completion.

E. Perform cutting and removal work to remove minimum necessary and in a manner to avoid damage to adjacent work.

F. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent new finishes.

G. Install products as specified in individual Sections.

H. Inspect, repair, and/or replace existing accessible insulation within areas of renovation.

3.4 TRANSITIONS

A. When new Work abuts or finishes flush with existing work, make a smooth and even transition. Patched Work shall match existing adjacent Work in texture and appearance so that the patch or transition is invisible at a distance of five feet.

B. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and provide trim appropriate to finished surface. Where new openings are cut into existing masonry walls, tooth new masonry into existing masonry.

3.5 FINISHES

A. Finish surfaces as specified in individual Products Sections.

B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

C. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

3.6 USE OF SITE

A. Lands and Rights-of-Way: The Owner will furnish land and rights-of-way necessary for carrying out and completion of Work herein contemplated. The Owner will acquire said land and rights-of-way with reasonable promptness. If lands and rights-of-way are not obtained as herein contemplated before construction begins, then begin the Work upon such land and rights-of-way as the Owner may have acquired previously. No claim for damages at all will be allowed because of delay in obtaining remaining lands and rights-of-way.

B. Should the Owner be prevented or enjoined from proceeding with the Work, or from authorizing its prosecution, either before or after commencement, because of litigation, or because of the Owner's inability to obtain lands or rights-of-way for said Work, Contractor shall not be entitled to make or assert claim for damage because of said delay, or to withdraw from Contract except by consent of the Owner. Time for completion of Work will be extended to such time as the Owner decides will compensate for time lost by such delay, such determination to be set forth in writing.

3.7 WORK ON OR NEXT TO PRIVATE PROPERTY

A. Concerning Work done on or next to private property, take every precaution to avoid damage to owners' buildings, grounds and facilities. Be responsible for repair of damage to same. Carefully remove and protect fences, hedges, shrubs and other site items within construction limits. Install original hedges, shrubs and other site items when construction is completed.

B. Where ditches or excavations cross lawns, carefully remove sod before construction and replace sod when backfilling has been completed. If sod is damaged or not handled properly, replace it with new sod equal to existing sod at no additional expense to the Owner. Grade, fertilize and seed grassed areas, other than lawns, when construction is completed. Follow requirements set out in these Specifications. Restore private property owners' facilities and grounds to as good as or better than their original condition when construction is completed.

C. Remove large trees, or other facilities within actual construction limits that cannot be preserved and replaced. The Owner will assume responsibility for settling with property owner for loss of said trees or facilities within construction area. The trees and facilities to be removed will be designated on Drawings. Be solely and entirely responsible for damage to trees or facilities not so designated.

D. Support foundations next to an excavation that is to be carried below bottom of foundation by shoring, bracing, or underpinning. Be responsible for damage to said foundation.

3.8 WORK IN AN EASEMENT

A. Do not store equipment of any kind in easement without prior written consent of easement land owner. Be responsible for obtaining written approval from land owner and providing one copy to Owner.

B. Storage of equipment in easement shall be limited to period necessary to complete work on the line segment within easement.

C. Perform a pre-construction survey before beginning work in easement. Provide a copy of pre-construction survey with pictures to each effected property owner and Designer.

3.9 FIELD ENGINEERING

A. Maintain complete, accurate log of control and survey work as it progresses. Verify locations of survey control points prior to starting work. Promptly notify Designer of any discrepancies discovered.

B. Existing basic horizontal and vertical control points for the Project are those designated on Drawings.

C. Protect survey control points prior to starting site work and preserve permanent reference points during construction. Make no changes or relocations without prior written notice to Designer.

D. Promptly report to Designer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Designer.

3.10 PROTECTION

A. Protect existing finishes, equipment and adjacent work which are scheduled to remain, from damage.

3.11 PROJECT SURVEY REQUIREMENTS

A. Establish a minimum of two permanent bench marks on site, referenced to data established by survey control points. Record locations, with horizontal and vertical data, on Project Record Documents.

B. Establish 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 slopes and invert elevations.
   2. Batter boards for structures.
   3. Building foundation, column locations and floor levels.
   4. Controlling lines and levels required for mechanical and electrical trades.

C. Periodically verify layouts by same methods.

3.12 SURVEYS FOR MEASUREMENT AND PAYMENT

A. Perform surveys to decide quantities of unit cost and cost plus work, including control surveys to establish measurement lines. Notify Designer prior to starting of work.

B. Contractor's engineer shall sign surveyor's field notes or keep duplicate field notes and shall calculate and certify quantities for payment purposes.

3.13 FACILITY STARTUP - PRELIMINARY

A. Submit preliminary schedule listing times and dates for start-up of each item of equipment in sequence two weeks prior to proposed dates. Submit manufacturer's representative reports within one week after start-up, listing satisfactory startup dates.

B. When specified in individual Sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment installation prior to start-up; to supervise placing equipment in operation; and to provide a written report that equipment has been properly installed and lubricated, is in accurate alignment, is free from any undue stress imposed by connecting lines or anchor bolts and has been satisfactorily operated under full load conditions.

3.14 INSPECTION BY LOCAL GOVERNMENT AGENCIES

A. Be responsible for notification of government agencies to make required inspections. Notify Designer 24 hours prior to inspections.

END OF SECTION

SECTION 017405
CLEANING

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for the following:
   1. Progress cleaning.
   2. Final cleaning.

PART 2 PRODUCTS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.1 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

H. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.2 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

C. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
   1. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   3. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   4. Remove tools, construction equipment, machinery, and surplus material from Project site.
   5. Leave Project clean and ready for occupancy.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

SECTION 017600

PROTECTION OF INSTALLED CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes protection of installed construction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION

SECTION 01 77 70
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 PRE-CLOSEOUT SUBMITTALS

A. Submit required tabulations when Work reaches seventy-five percent completion; however, regardless of percent completion, submit not later than 30 days prior to the scheduled date on which Substantial Completion is required.

B. Submit tabulations of:

1. Equipment and systems for which the specifications require demonstrations or training, indicating relevant specification sections, scheduled time and place for demonstration and training sessions, and intended audience. Adjust schedule if instructed by Designer to do so.

2. Equipment and systems for which operating and maintenance data are required in the Operating and Maintenance Data Binders and related documents are required in the Project Data Binders.

3. Spare parts and extra materials required, indicating the relevant specification sections, and the appropriate party to whom the items are to be delivered.

1.02 REQUEST FOR CLOSEOUT INSPECTION

A. SUBSTANTIAL COMPLETION:

When Contractor considers Work substantially complete, Contractor shall submit to Designer:

1. written assertion that Work is Substantially Complete;

2. a list of items to be completed or corrected and dates scheduled for completion or correction of each item;

3. certification that orientation and training for facility maintenance personnel is complete or written assertion that such orientation and training will be certified prior to inspection;

4. written assertion that Operating & Maintenance Data Binders are complete and available or will be prior to inspection;

5. written assertion that Use and Occupancy Permit(s) are complete and available or will be prior to inspection; and,

6. written assertion that an application for payment will be prepared commensurate with the degree of completion and submitted at the Substantial Completion inspection.

B. FINAL INSPECTION:

When Contractor considers Work complete, Contractor shall submit to Designer:

1. certification that a qualified person authorized by Contractor has reviewed the Contract Documents and inspected the Work;

2. written assertion that the Work is complete and in accordance with Contract Documents and ready for Final Inspection;

3. written assertion that additional materials necessary to augment the Operating & Maintenance Data Binders with instructions for adding these to the Binders, or full replacement Binders, are complete and available or will be prior to inspection;

4. written assertion that Project Data Binders and Construction Record Documents are complete and available or will be prior to inspection; and,

5. an application for final payment

C. Upon receipt of an appropriate request for inspection, Designer will schedule an inspection meeting with Contractor, and Owner's representatives to determine the status of completion.

1.03 RESULTS OF CLOSEOUT INSPECTIONS

A. Should the Designer determine that Work is not complete to the degree asserted by Contractor, Designer will promptly notify Contractor in writing stating the deficiencies. Contractor shall take immediate steps to remedy deficiencies and make a request for Re-Inspection.

B. SUBSTANTIAL COMPLETION: Designer will prepare a Certificate of Substantial Completion accompanied by a list of items to be completed or corrected, and will submit Certificate to Contractor and to Owner for signature with an accounting of Liquidated Damages due, when Designer verifies that:

1. Work is Substantially Complete based on an inspection conducted pursuant to an appropriate request for Closeout inspection;
2. orientation and training for facility maintenance personnel is complete; and,
3. Operating & Maintenance Data Binders are complete and have been delivered to the Owner.

C. FINAL INSPECTION: Designer will certify that the Work is Complete, and will initiate Final Adjustments, when Designer verifies that:

1. Work is complete in accordance with Contract Documents based on an inspection conducted pursuant to an appropriate request for Closeout inspection;
2. orientation and training for facility maintenance personnel is complete; and,
3. additional materials necessary to augment the Operating & Maintenance Data Binders with instructions for adding these to the Binders, or full replacement Binders, are complete and have been delivered to the Owner.
4. Project Data Binders and Construction Record Documents are complete and have been delivered to the Designer.

1.04 RE-INSPECTION FEES: If the Work fails a Closeout inspection, and a subsequent inspection is requested and conducted based on Contractor assertion of the same stage of completion, Owner will compensate Designer for performing such Re-Inspection as additional services, and deduct the amount of such compensation from the Contract Sum by appropriate modification.

1.05 FINAL ADJUSTMENTS

A. When Designer has certified that the Work is complete, Designer will determine whether modification is needed to reflect appropriate adjustments to Contract Sum which were not previously effected. If such modification is needed, Designer shall assist the Owner in its preparation and deliver it to Contractor, who in the case of a change order, shall sign and return it to Designer.

B. When Designer has certified that the Work and needed modifications to the Contract are complete, and if necessary, Designer will instruct Contractor to submit a revised final application for payment.

1.06 ONE-YEAR CORRECTIVE INSPECTION

A. An inspection will be scheduled and conducted at project site prior to one year from date Substantial Completion was achieved, but as close to the end of that year as is reasonably possible.

B. The inspection will be attended by at least one representative each of Owner, Designer, and Contractor.

C. The inspection will confirm non-conforming items previously identified for correction by the Owner, and whether corrections have been completed or are still outstanding, and is intended to be an opportunity for Contractor to become aware of any outstanding corrections needed.

END OF SECTION

SECTION 01 78 21
CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.01 DATA BINDERS

A. Provide two complete sets in durable, commercial quality, plastic covered, three ring binders. Identify project and type of data on face and side.

B. Provide information required by Contract Documents, including:

1. Cover sheet giving complete project title and number, Contractor's name, address, phone number, superintendent's name, and related information.

2. Table of Contents identifying material in Binder, and identifying missing materials to be added later or certifying completeness of Binder.

C. OPERATING & MAINTENANCE DATA BINDERS

1. Provide Product Data, including: manufacturer; model number; names, addresses, and telephone numbers of suppliers, installers, and servicers; related information for repair, renovation, or additions.

2. Provide Operating and Maintenance Data, including: instructions and schedules for proper operation, maintenance, servicing, and lubrication with manufacturer's parts list, illustrations, assembly drawings, maintenance diagrams, and list of recommended lubricants and cleaning agents; as-installed control diagrams and coordination drawings with color coded piping and wiring diagrams; valve tag charts with numbers, locations, and functions; panel board circuit directories; and, list of materials and parts furnished for Owner. Review brochures and manufacturer's standard printed information for data pertaining to models other than those actually provided, and mark to clearly omit inapplicable information and identify units actually installed.

D. PROJECT DATA BINDERS

1. On the form exhibited as Section 01 78 88, provide a complete list of subcontractors and material suppliers, including dollar amount, company name, address, phone number, local representative, and information regarding minority-owned business status.

2. Provide Certificate of Substantial Completion, Use and Occupancy Permits, and Certificate(s) of Inspection or letter(s) of acceptance from governing authorities as apply.

3. Provide Contractor's warranty of the work.

4. Provide guarantees, warranties, bonds, certifications, maintenance agreements, service contracts, and related documents, including beginning date, duration, information about instances which might affect validity, and proper procedure in case of failure.

1.02 CONSTRUCTION RECORD DOCUMENTS: Keep the record copy of Contract Documents required by paragraph 3.11 of the Conditions in good condition and in the course of the Work, legibly mark these to record actual conditions of Work, including: location, depth, and identification of new and existing underground items, utilities, valves, tap points, equipment, service access, test points, and related features; field changes in dimensions and detail; changes by addenda or Modification; and, description and details of features for maintenance, service, replacement, or expansion of the Work.

END OF SECTION

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SECTION 01 78 25
DATA BINDER RECEIPT

PART 1 - GENERAL

1.01 RELATED SECTIONS
Section 01 29 76 Payment Procedures
Section 01 77 70 Close-Out Procedures
Section 01 78 21 Close-Out Submittals

1.02 CONTRACTOR PREPARATION AND USE OF THIS FORM

A. Use this form or a reasonable facsimile to verify delivery of Data Binders. Fill in the identifying information following this paragraph, then use the prepared form as a receipt, for signature by the person to whom Data Binders are delivered. Provide a copy of the receipt with the application for payment.

1. For the Application for Payment commensurate with Substantial Completion, provide a copy indicating delivery of Operating and Maintenance Data Binders.

2. For the Application for Payment commensurate with Final Completion, provide a copy indicating delivery of Project Data Binders.

B. Identifying Information:

1. For the Work:

Project Title: *(SBC project number, institutional location, and work name)*	

2. For the Data Binder(s), mark **only one** of the boxes below:

☐ ONLY Operating & Maintenance Data Binder
(due at substantial completion inspection)

☐ ONLY Project Data Binder
(due at final inspection)

☐ BOTH data binders

1.03 RECIPIENT SIGNATURE

A. By signature below, recipient acknowledges receipt of the Data Binder identified above, but does not certify the completeness or correctness of the Data Binder.

Recipient Signature:	
Legibly indicate recipient's name and title or affiliation with Owner or Designer	

END OF SECTION

SECTION 01 78 88
REPORT OF SUBCONTRACTORS AND SUPPLIERS

Project	SBC Project Number	Page
		of

Use first entry on first page for General Contractor

Work performed or Material Supplied, and Dollar Value	Firm name and address	Principal Contact and Phone	If a Minority-Owned Business, classification and certifying agency. If not, "NO".

SECTION 01 79 21
DEMONSTRATION and TRAINING

PART 1 - GENERAL: not used

PART 2 - PRODUCTS: not used

PART 3 - EXECUTION

3.01 Equipment Start-up / Commissioning

A. Conduct demonstration and instruction as soon as practicable upon installations, and prior to Substantial Completion inspection. Substantial Completion shall not be certified, nor shall Owner be required to assume responsibility for operating, maintaining, or insuring system, prior to complete demonstration and instruction.

B. Demonstrate operation of newly provided equipment and systems to Designer and to Owner's representative. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operating and maintenance data as the basis of instruction.

C. Make lists of persons witnessing equipment and systems demonstration, and persons receiving operating instruction, using a format similar to the form included in Section 01 79 25 with project, subject, trainer, session information, and attendees identified. Include copy of lists in the Operating and Maintenance Data Binders.

END OF SECTION

SECTION 01 79 25
DEMONSTRATION AND TRAINING VERIFICATION

PART 1 – GENERAL

1.01 Use a copy of this page as a planning form for demonstrations and training. Fill in the basic identifying information below:

SBC Project Number: _____

Institution/Location: _____

Project Name: _____

Required date of Substantial Completion

Owner's Facility Coordinator: _____ Phone: _____

Owner's Maintenance Contact: _____ Phone: _____

Contractor Contact: _____ Phone: _____

1.02 If a list of required demonstrations and training has been specified in Division 1, use that list as a starting point, review the project manual for other specifications that require training of the Owner's operators, and complete the list below. Check the box on left if Demonstration and Training is required on the standard listed subjects; add subjects as identified by review of the specifications and check the box to the left of each; and, schedule and indicate an target date for each. If the number of training subjects exceeds the available space provided here, replace or continue the list on a similarly formatted separate page. Submit the list with the initial Progress Schedule, and update as necessary during the Work to ensure that advance notice of the demonstration and training schedule is acceptable to the Designer.

	Spec Reference	Subject	Target Date	Actual Date
		Accessibility		
		Boiler		
		Chiller		
		Controls		
		Data Transmission		
		Electrical		
		Elevator / Conveying		
		Fire Alarm		
		Irrigation		
		Mechanical		
		Plumbing		
		Telecommunications		

PART 2 – PRODUCTS: not used.

PART 3 – EXECUTION

3.01 For each session conducted, use this page as a **Training Verification Report**.

A. Fill in the information below prior to the session ("End Time" may be filled in after):

SBC Project Number: _____

Institution/Location: _____

Project Name: _____

Subject Equipment / System:	
Spec Reference	

Demonstration and Training (by whom, where, when)	Trainer Name:	Company:		Phone:
	Place:	Date:	Start Time:	End Time:

B. Minimum Agenda Requirements:

☐ System Walk-through ☐ Operation ☐ Trouble-shooting ☐ Maintenance ☐ Safety

C. Attendance: Each person receiving the demonstration and training shall sign in below, or on a similarly formatted continuation page:

Initials	Legibly print your name	Unit and title or function

END OF SECTION

SECTION 024119

SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

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

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner, ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

E. Hazardous Materials: Friable asbestos, or asbestos containing materials, polychlorinated biphenyls (PCB(s)), petroleum products, natural gas, nuclear materials and by-products regulated by the Atomic Energy Act (42 U.S.C. (2011, et seq.), pesticides regulated under the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. (136, et seq.), and any hazardous waste, toxic or dangerous substance or related material, including any substance defined, determined or identified as hazardous waste, toxic substance, contaminant, or comparable term in any Environmental Law.

1.3 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

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

C. Pre-demolition Conference: Conduct conference at Project site. Review methods and procedures related to selective demolition including, but not limited to, the following:
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.4 REGULATORY REQUIREMENTS

A. Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection, and related items.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI A10.6 and NFPA 241.

D. Obtain required permits from authorities.

E. Do not close or obstruct egress width to any building or site exit.

F. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

G. Conform to procedures applicable when hazardous or contaminated materials are discovered.

1.5 EXISTING CONDITIONS

A. Conduct demolition to minimize interference with Owner's normal operations and with adjacent building areas. Maintain protected egress and access at all times.

B. Provide, erect and maintain temporary barriers and security devices.

C. Notify Designer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Cease operations immediately if structure appears to be in danger and notify Designer. Do not resume operations until directed.

E. Conduct demolition to minimize interference with adjacent and occupied building areas.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations. Maintain fire-protection facilities in service during selective demolition operations.

1.6 PROCEDURAL REQUIREMENTS FOR HAZARDOUS MATERIALS

A. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. If hazardous materials are suspected or encountered, immediately suspend work in suspected area of contamination, withdraw from area and notify Designer and Owner in writing.

2. Comply with requirements of EPA, Code of Federal Regulations, National Emissions Standards and OSHA regulations on hazardous materials and all other applicable Federal, State and local government regulations which are incorporated by reference.
3. Do not resume work in affected area except by written agreement of Owner if material is hazardous and has not been rendered harmless.
4. Resume work in affected area if material is found not to be hazardous materials or has been rendered harmless, by written agreement of Owner.
5. Contractor will not be required to perform Work relating to hazardous materials without appropriate Change Order.

1.7 WARRANTY

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

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products or materials before installation. Reject products or materials that are wet, moisture damaged, or mold damaged.

B. Verify that utilities have been disconnected and capped.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Designer.

F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.

a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.

B. Disconnect, remove and cap designated utility services within demolition areas. Arrange to shut off indicated utilities with utility companies.
1. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
2. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

C. Remove dead end piping (risers with no flow, branches with no fixture). Empty risers, mains, and branches for future use shall remain.

3.3 PREPARATION

A. Erect and maintain weatherproof closures for exterior openings as specified in Section 015000.

B. Erect and maintain temporary partitions to prevent spread of dust, fumes, noise and smoke to provide for Owner occupancy as specified in Section 015000.

C. Protect existing items which are not indicated to be altered.

D. Mark location of disconnected utilities. Identify and indicate capping locations on Project Record Documents.

3.4 SPECIAL TECHNIQUES, GENERAL

A. Demolish in an orderly and careful manner. Protect existing foundation, supporting structural members and utilities which are to remain.
1. Proceed with selective demolition systematically, from higher to lower level.
2. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
4. Dispose of demolished items and materials promptly.

B. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
1. Pre-water areas being disturbed and continue to water during activity that produces fugitive dust.
2. Appropriately match water application equipment size and rates to soil and site characteristics including area.
3. Water can be applied by any suitable means such as trucks, hoses, and/or sprinklers appropriate for site characteristics.
4. Decreased need when natural crust present.

C. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.

D. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect products.

E. Removed and Salvaged Items:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site.
5. Protect items from damage during transport and storage.

F. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

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

3.5 SPECIAL TECHNIQUES FOR SPECIFIC MATERIALS

A. Concrete: Use abrasive saws to remove portions of concrete slabs for achieving a clean, straight edge. Use core drilling for cutting openings in concrete to allow installation of new piping. The use of impact tools is prohibited.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from site as work progresses. Upon completion of work, leave areas of work in clean condition.
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

C. Do not burn or bury materials on site.

D. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 030500

BASIC CONCRETE MATERIALS AND METHODS

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

A. Shop Drawings: Submit placing drawings of reinforcing steel according to ACI Detailing Manual 315 and Manual of Standard Practice by the Concrete Reinforcing Steel Institute.

1. Indicate reinforcement sizes, spacings, locations and quantities of reinforcing steel and wire fabric bending and cutting schedules, splicing, supporting and spacing devices.
2. Indicate formwork dimensioning, materials, arrangement of joints and ties.

B. Product Data: Provide data on vapor barriers/retarders, curing compounds, joint devices, attachment accessories, admixtures and grout, and other products of this Section.

C. Submit proposed mix design per Chapter 5 of ACI 318-Latest Edition for each class of concrete prior to commencement of work. Report should be not more than six months old.

1.2 QUALITY ASSURANCE

A. Perform work according to ACI 318-Latest Edition, except as indicated.

B. Maintain copy of ACI 301 on site.

1.3 PRECONSTRUCTION TESTING

A. Testing and analysis of concrete shall be done by an ACI-certified Concrete Field-Testing Technician, Grade I.

B. Submit proposed mix design per Chapter 5 of ACI 318-Latest Edition for each class of concrete to Designer for review prior to commencement of work. Report should be not more than six months old.

C. Test of cement and aggregates will be done to ensure conformance with requirements stated herein.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM MATERIALS AND ACCESSORIES

A. Form Materials: Conform to ACI 301.

1. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
   a. Plywood, metal, or other panel materials.
2. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another material. Provide lumber dressed on at least two edges and one side for tight fit.

B. Form Release Agent: Colorless material which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete.

C. Construction Joints: Galvanized steel tongue and groove joint type profile, knockout holes to receive doweling.

D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

2.2 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615, 60 ksi yield grade, billet steel deformed bars; uncoated finish.

1. Reinforcing Bars, 3/8 inch Diameter: 40 ksi yield grade.

B. Welded Steel Wire Fabric: Plain type, ASTM A185; uncoated finish.

C. Fabricate concrete reinforcing according to ACI 315, ACI 318, and ASTM A185, and CRSI Manual of Practice.

D. Supports: Types appropriate for use that do not puncture vapor barrier/retarder.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150 normal - Type 1 Portland, gray.

B. Fine and Coarse Aggregates: ASTM C33.

C. Water: ASTM C 94, potable, clean, and not detrimental to concrete.

2.4 ADMIXTURES

A. Air Entraining Admixture: ASTM C260, with the following limits: 3 percent for maximum 2 inch aggregate, 5 percent for maximum 3/4 inch aggregate and 6 percent for maximum 1/2 inch aggregate.

2.5 VAPOR BARRIER/RETARDERS

A. Vapor Barrier/Retarder: ASTM E1745, Class A; include manufacturer's recommended tape and mastic; 10-mil.

2.6 CURING MATERIALS

A. Curing Water: Clean and drinkable.

B. Curing and Sealing Compounds: Clear, waterborne, membrane-forming curing and sealing compound: ASTM C 1315, Type 1, Class A; maximum VOC emissions of 200 g/L; 25% minimum solids, certified by curing compound manufacturer to not interfere with bonding of floor covering.

2.7 FLOOR SLAB TREATMENTS

A. Concrete Sealer: Acrylic, non-yellowing concrete sealer, minimum 24% solids; gloss finish; moisture vapor transmission per ASTM D1653 of 40 g/m^2 per 24 hours.

2.8 RELATED MATERIALS

A. Joint Filler: Either of the following:

1. ASTM D 1751; asphalt impregnated fiberboard or felt, 1/2 inch thick; tongue and groove profile.
2. Processed board product made from granular crumb rubber derived from discarded truck tires and various low density polymer products; 40 pcf density; fully compressible with recovery rate of minimum 95 percent.

B. Joint Sealant: Semi-flexible epoxy or polyurea joint filler designed, built, and installed to fill and waterproof joints in concrete; 690 psi minimum tensile strength per ASTM D638, 55 percent minimum tensile elongation per ASTM D638, 50 Shore A hardness per ASTM D2240. Color as selected by Designer from manufacturer's premium range.

2.9 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Mix concrete according to ASTM C94, Alternative No. 2.

B. Concrete:

1. Compressive Strength (28 days): 4,000 psi minimum
2. Slump: 4 inch.
3. Maximum Water-Cementitious Materials Ratio: 0.50.

C. Add air entraining agent ASTM C260 to mix for concrete.

D. Use water reducing admixtures.

E. Calcium Chloride: Admixtures shall not exceed 0.1 percent chloride ions.

PART 3 - EXECUTION

3.1 FORMWORK ERECTION

A. Verify lines, levels and measurement before proceeding with formwork.

B. Hand trim sides and bottom of earth forms; remove loose dirt.

C. Align form joints.

D. Do not apply form release agent where concrete surfaces receive special finishes which may be affected by agent.

E. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts.

F. Chamfer exterior corners and edges of permanently exposed concrete.

G. Reuse forms to greatest extent possible without damaging structural integrity of concrete and without damaging aesthetics of exposed concrete.

3.2 FOUNDATIONS

A. Make foundations in neat lines. Foundation excavations shall be free of loose or wet materials. Concrete may be placed directly against soil without forming.

B. Have foundation excavations inspected by a geotechnical engineer before placing concrete. Ensure bearing surfaces are consistent with design requirements.

C. Where soft areas are encountered, undercut area and replace with compacted fill or concrete. Place fill in layers not to exceed 8 inches and compact to 98% Standard Proctor Density (ASTM D698).

3.3 INSERTS, EMBEDDED COMPONENTS AND OPENINGS

A. Provide formed openings where required for work to be embedded in and passing through concrete members.

B. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts.

C. Install concrete accessories straight, level and plumb.

D. Place formed construction joint device in floor slabs. Provide #6 x 3'-0" smooth dowels at 12 inches on center across joint. Do not continue slab reinforcing across joint. Install keyways, reglets, recesses, and the like, for easy removal.

E. Place bond breaker at perimeter of floor slab, penetrations, isolation joints, and related items. Extend bond breaker from bottom of slab to within 1/4 inch of finished slab surface.

F. Install void forms according to manufacturer’s instructions. Protect forms from moisture before concrete placement and from crushing during concreting.

3.4 VAPOR BARRIERS/RETARDERS

A. Plastic Vapor Barriers/Retarders: Place, protect, and repair vapor barrier/retarders according to ASTM E 1643 and manufacturer's written instructions.

1. Level and tamp or roll granular base.
2. Please vapor retarder with longest dimension parallel with direction of concrete pour.
3. Lap joints 6 inches and seal with manufacturer's recommended tape. Seal all penetrations with a combination of vapor barrier/retarder, tape, and/or manufacturer's recommended mastic.
4. Lap vapor barrier/retarder over footings and/or seal to foundation walls.

5. Seal all penetrations (including pipes) per manufacturer's instructions. No penetration of vapor barrier/retarder is allowed except for reinforcing steel and permanent utilities.
6. If the vapor barrier/retarder membrane should be damaged, repair before placing concrete. Use vapor barrier/retarder material, lapping over damaged areas a minimum of 12 inches (304 mm) and seal.

3.5 REINFORCEMENT PLACEMENT

A. Place, support and secure reinforcement against displacement according to CRSI's "Manual of Standard Practice." Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

B. Do not cut or puncture vapor barrier/retarder. Repair damage and reseal vapor barrier/retarder before placing concrete

C. Locate reinforcing splices where indicated and required. At splices lap reinforcing steel 30 bar diameters with 2'-0" minimum and wire together.

D. Provide corner bars for bars meeting at intersections. Size and number of corner bars shall be equal to larger of bars intersecting.

E. Maintain concrete cover around reinforcing as follows:

1. Footings and Concrete Formed against Earth: 3 inches
2. Footings and Concrete with Formed Edges: 2 inches
3. Slabs on Fill: 3/4 inch

3.6 PLACING CONCRETE

A. Notify Designer minimum 24 hours prior to commencement of concreting operations.

1. Place concrete according to ACI 301.
2. Hot Weather Placement: ACI 305.
3. Cold Weather Placement: ACI 306.

B. Do not add water to concrete during delivery, at Project site, or during placement.

C. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete. Apply sealant in floor joints according to manufacturer's instructions.

D. Vibrate concrete with mechanical vibrators according to ACI 301. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Mixing equipment: Return excess concrete to supplier; minimize water used to wash equipment.

3.7 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Remove formwork progressively and according to code requirements.

3.8 FLOOR FINISHING

A. Place floor slabs in pattern as indicated on Drawings.

B. Control Joints: Saw cuts shall be 1/8 inch wide by 1/4th the slab thickness, one inch deep minimum. Commence saw cutting as soon as finished concrete can be cut and produce a smooth edge. Complete saw cuts before 8 hours have passed after placing. Provide reinforcement in continuous joints.

1. Provide saw cut control joints on centerlines of columns or at 15 feet on center whichever is smaller.
2. Provide diamond shaped isolation joints at columns.
3. Provide control joints at other locations as indicated on Drawings.
4. The proportion of length to width ratio shall not exceed 1.5:1.0.

C. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface and fill with epoxy or polyurea joint filler as specified in this Section.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

D. Fill sawn joints and construction joints with sealant. All sawed joints shall be filled to full depth. Construction joints shall be filled with silica sand to a depth that will allow for not less than one inch of joint filler. Follow manufacturer recommendations for mixing and placing and timing of installation. Razor cut bulging joints as required to finish joint flush with adjacent floor surfaces.

E. Finish surfaces as scheduled.

F. Apply floor slab treatment to interior concrete floors according to manufacturers' instructions.

G. Filling-In: Fill in holes and openings left in concrete, including passage of work by other trades.

3.9 CURING AND PROTECTING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, and other surfaces.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
    a. Use cure and seal curing compounds on concrete surfaces indicated to be “exposed” or “sealed concrete.”

3.10 TOLERANCES - FLATNESS AND LEVELNESS

A. On slab on grade floors place, consolidate, strike off and level concrete to an overall flatness and levelness value of F_F 30/F_L 20 and minimum local value of F_F 25/F_L 10 according to ASTM E1155.

B. Provide test results certified by an independent laboratory indicating actual flatness and levelness values achieved within 24 hours after floor is finished. Provide results of testing within 72 hours of tests.

C. Correct floor slabs failing flatness and levelness criteria by grinding, planing, skimming, re-topping, removal or replacement as required to bring flatness and levelness to within specified tolerances.

3.11 FIELD QUALITY-CONTROL

A. Special inspection and testing shall be done.

B. Testing agency shall perform the following per ASTM C172, ASTM C31, ACI 318: 318: 5.6, 5.8:

1. Four Concrete Test Cylinders: Not less than one test per day and taken for every 150 or less cubic yards of each class of concrete placed.
2. Slump Test: ASTM C 143/C 143M; one test at point of placement for each composite sample or set of cylinders, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample or set of cylinders, but not less than one test for each day's pour of each concrete mixture.

4. Weight Test: ASTM C 567, fresh unit weight of concrete; one test for each composite sample or set of cylinders, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample or set of cylinders.

C. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Continuously inspect the following:

1. Bolts installed in concrete before and during concrete placement where allowable loads have been increased.
2. Welding, Reinforcing Steel
   a. Resisting flexural and axial forces per AWS D1.4 and ACI 318, 3.5.2.
   b. Shear reinforcement per AWS D1.4 and ACI 318, 3.5.2.

E. Periodically inspect the following:

1. Reinforcing per ACI 318: 3.5, 7.1-7.7.
2. Welding of reinforcing steel per AWS D1.4 and ACI 318, 3.5.2.
3. Use of required mix design per ACI 318: Ch. 4, 5.2 – 5.4.
4. Maintenance of specified curing temperature and techniques per ACI 318: 5.11 – 5.13.
5. In-situ concrete strength per ACI 318: 6.2.
6. Formwork for shape, location, and dimensions per ACI 318: 6.1.1.
7. Welding, Reinforcing Steel: Verification of weldability of reinforcing steel other than ASTM A706 per AWS D1.4 and ACI 318, 3.5.2.

F. Provide Special Inspector advanced noticed of construction milestones as follows:

1. Reinforcing Steel: Not less than 24 hours before scheduled concrete placement.
2. Structural Concrete: Minimum of 24 hours before placement of structural concrete.
3. First Slab-on-Grade Pour: After slab reinforcing is placed and before pouring concrete on grade.

G. Test results shall be reported in writing to Designer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests will contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

H. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.12 CONCRETE SURFACE REPAIRS

A. Modify or replace concrete not conforming to required lines, details and elevations.

B. Defective Concrete: Repair and patch defective areas.

C. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

D. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension in solid concrete, but not less than 1 inch (25 mm) in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Designer.

E. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete

except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

F. Perform structural repairs of concrete, subject to Designer's approval, using epoxy adhesive and patching mortar.

G. Repair materials and installation not specified above may be used, subject to Designer's approval.

3.13 SCHEDULE OF FORMED SURFACES

A. Rough form finish at concrete surfaces not exposed to view.

B. Smooth form finish at concrete surfaces exposed to view and at surfaces that are to be covered with a coating material applied directly to concrete, such as waterproofing, dampproofing, painting or similar system.

3.14 SCHEDULE OF FLOOR SLAB FINISHES

A. Trowel finish at interior slabs.

B. Floor Slab Treatment(s):

1. Concrete Sealer at interior slabs.

END OF SECTION

SECTION 055213
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.1 ACTION SUBMITTALS

A. Shop Drawings: Indicate details, materials, connection and joining methods, expansion provisions, surface preparation and finishes and adjoining work.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. In addition to requirements indicated handrail assembly and attachments shall resist the following without damage or permanent set:
   1. A concentrated load of 250 pounds at any point and in any direction.
   2. A uniformly distributed load of 50 pounds per lineal foot (plf) applied in any direction.

B. In addition to requirements indicated guardrail assembly and attachments shall resist the following without damage or permanent set:
   1. A concentrated load of 250 pounds at any point and in any direction at the top of the guardrail.
   2. A uniformly distributed load of 50 plf applied horizontally at the required guardrail height and a simultaneous load of 100 plf applied vertically downward at the top of the guardrail.
   3. A 250 pound concentrated horizontal load applied on a one foot square area at any point in the system including intermediate rails or other elements serving this purpose.

2.2 MATERIALS

A. Rails and Posts: Maximum 1-1/2 inch outside diameter (actual dimension) steel pipe sections; welded joints.

B. Fittings: Elbows, T-shapes, wall brackets, escutcheons; cast or machined steel.

C. Mounting: Adjustable brackets and flanges, with steel inserts for casting in concrete or with steel brackets for embedding in masonry. Prepared backing plate for mounting in gypsum board partitioning.

D. Fasteners: Sizes and types appropriate for conditions and applied loads; hot-dipped galvanized for exterior and other locations as indicated; plated zinc coated fasteners will not be acceptable.

E. Splice Connectors: Steel concealed spigots or welding collars.

F. Primer, Metal, Surface Tolerant; performance equal to MPI #23 and as indicated: Solvent based, anti-corrosive metal primer for use on structural steel and misc. metal fabrications; 2.0 mils

minimum dry film thickness per coat or as recommended by manufacturer, whichever is greater; 250 g/L VOC's maximum; 37% volume solids minimum.

2.3 FABRICATION

A. Verify dimensions on site prior to shop fabrication. Gripping surfaces shall be continuous.

B. Fit and shop assemble sections in largest practical sizes, for delivery to site and installation.

C. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

D. Supply components required for secure anchorage of handrails and railings.

E. Accurately form components required for anchorage of railings to each other and to building structure.

F. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

G. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler or continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.

H. Grind exposed welds smooth and flush with adjacent surfaces. Make exposed joint butt tight, flush and hairline. Ease exposed edges to small uniform radius.

2.4 FINISHING

A. Clean surfaces to receive primer of rust, scale, grease and foreign matter prior to finishing by wire brushing, scraping or power tool cleaning. Shop prime steel.

B. Do not prime surfaces in direct contact bond with concrete or cementitious fireproofing materials or where field welding is required.

C. Finish Paint: Refer to Section 099000.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items to be cast into concrete, embedded in masonry and placed in partitions with setting templates and erection drawings to appropriate sections.

3.2 INSTALLATION

A. Install products of this Section according to approved shop drawings and manufacturer's instructions. Handrails shall not rotate within their fittings.

B. Erect work square and level, free from distortion or defects detrimental to appearance or performance.

C. Anchor hand railings to structure. Use toggle anchors only in masonry.

D. Field weld connections and grind smooth to complete assembly. Touch-up welds with primer. Touch-up damage to galvanized components with zinc-based paint according to ASTM A780.

E. Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

F. Assemble with spigots and sleeves to accommodate tight joints and secure installation.

END OF SECTION

SECTION 072100
BUILDING INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Insulation under slabs-on-grade.

1.2 ACTION SUBMITTALS

A. Product Data: Provide data on product characteristics, binders, performance criteria and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials.

B. Deliver materials in their original, unopened packages and store in an enclosed shelter providing protection from damage and exposure to the elements. Remove damaged or deteriorated materials from the premises.

PART 2 PRODUCTS

2.1 FOAM PLASTIC BOARD TYPE INSULATION

A. Rigid, Board Type Insulation, Polystyrene: ASTM C578, Type IV or X, CFC-free extruded cellular polystyrene; 5 year aged, minimum thermal resistance "R" value per inch of 5.0 at 75 degrees F; 1.35 pcf minimum density; 15 psi minimum compressive strength; square edges; thickness as shown on Drawings; 0.3 percent by volume maximum water absorption.

PART 3 EXECUTION

3.1 PREPARATION

A. Verify adjacent materials are dry and ready to receive installation.

B. Verify compatibility of insulation with soil poisoning materials.

3.2 INSTALLATION, GENERAL

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Provide a vapor retarder per Division 3 Concrete Section over graded, smooth, dry, well-tamped fill. Lap sheet 2 inches minimum and extend horizontally into building.

C. Lay insulation over vapor retarder, cutting to size when necessary, as shown on Drawings, 2'-0" minimum.

D. Pour concrete directly over insulation.

END OF SECTION

SECTION 099000

PAINTS AND COATINGS

PART 1 GENERAL

1.1 ACTION SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application to nomenclature indicated in this Section. Identify each material by manufacturer's catalog number and general classification.

2. Manufacturer's Information: Manufacturer's technical information, including label analysis for each coating material.

3. ***DO NOT submit Material Safety Data Sheets (MSDS)***. Submittals containing MSDS's will be rejected summarily without further consideration or review by the Designer.

1.2 DELIVERY, STORAGE AND HANDLING

A. Deliver paint materials in sealed original, labeled containers, bearing manufacturer's name, type of paint, brand name, color designation and instructions for mixing and reducing.

B. Provide adequate storage facilities. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F in well ventilated area or at temperature extremes as recommended by manufacturer.

PART 2 PRODUCTS

2.1 FINISHES AND COLORS

A. Refer to schedule at end of Section for surface finish. Unless Finish Legend indicates surface is not to receive a finish, all designated surfaces shall receive the indicated finish.

B. Colors shall be as selected by Designer from manufacturer's full range of colors.

2.2 PAINT MATERIALS

A. Alkyd, Exterior, Gloss; performance equal to MPI #9: Alkyd resins; intended for use on new and previously painted primed exterior wood and metal surfaces, trim, doors and frames; 2.0 mils minimum dry film thickness or as recommended by manufacturer, whichever is greater; 428 g/L VOC's maximum; 33% volume solids minimum.

B. Primer, Metal, Surface Tolerant; performance equal to MPI #23 and as indicated: Solvent based, anti-corrosive metal primer for use on structural steel and misc. metal fabrications; 2.0 mils minimum dry film thickness per coat or as recommended by manufacturer, whichever is greater; 250 g/L VOC's maximum; 37% volume solids minimum.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify that substrate conditions are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be painted prior to commencement of work. Report any condition that may potentially affect proper application. Do not commence until such defects have been corrected.

C. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove or mask electrical plates, surface hardware, fittings and fastenings, prior to painting operations. Carefully store, clean and replace these items on completion of work in each area. Do not use solvent to clean hardware that may remove permanent lacquer finish.

C. Correct minor defects and clean surfaces which affect work of this Section.

D. Steel and Iron Surfaces: Prepare steel and iron surfaces according to SSPC SP 1 – Solvent Cleaning by removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants.

E. Prepare steel and iron surfaces according to SSPC SP 2, Hand Tool Cleaning for concealed surfaces and SSPC SP 3, Power Tool Cleaning for exposed surfaces. Hand tool cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended

that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife).

3.3 APPLICATION

A. Apply products of this Section to surfaces as indicated in schedule at end of this Section and on Drawings. Follow manufacturer's instructions.

B. Do not apply finishes on surfaces that are not dry. Apply each coat to uniform consistency.

C. Unless indicated otherwise apply one prime coat and two finish coats to surfaces scheduled to receive finishes under this Section.

3.4 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration. Repair damage to other surfaces caused by work of this Section.

B. Furnish drop cloths, shields and protective methods to prevent spray or droppings from disfiguring other surfaces.

C. Remove empty paint containers from site.

3.5 CLEANING

A. As work proceeds and upon completion, promptly remove paint where spilled, splashed or spattered. During progress of work maintain premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris.

B. Collect cotton waste, cloths and material which may constitute a fire hazard, place in closed metal containers and remove from site daily. Upon completion of work leave premises neat and clean.

3.6 SURFACES TO BE FINISHED

A. Paint the surfaces described below under Schedule.

B. Refer to schedule at end of Section for surface finish. All designated surfaces shall receive the indicated finish.

3.7 SCHEDULE EXTERIOR SURFACES

A. Ferrous Metal, Shop Primed – Gloss:

1. One coat of Primer, Metal, Surface Tolerant; primer (touch up).

2. Two coats of Alkyd, Exterior, Gloss; finish coats.

END OF SECTION

SECTION 260100

GENERAL PROVISIONS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Secondary power wiring and distribution system.

B. Telephone system rough-in.

C. Lighting control equipment.

D. Electrical control systems and interlock wiring.

E. Video boards.

1.2 RELATED WORK

A. Foundations and pads required for equipment furnished under this division of the specifications.

B. Field painting, except such painting as is required to maintain shop coat painting and factory finish painting.

C. Electrical control systems and interlock wiring as required by mechanical drawings, specifications or manufacturer's schematics.

D. Flashing of conduits into roofing and outside walls.

E. Heating, ventilating, and air conditioning equipment.

1.3 QUALITY ASSURANCE

A. Comply with applicable local, state and federal codes.

B. Comply with applicable requirements of recognized industry associations which promulgate standards for the various trades.

C. Employ only qualified journeymen for this work. Employ a competent qualified electrician to supervise the work.

1.4 STANDARDS

A. Perform work specified in Division 26 in accordance with standards listed below including amendments or revisions. When these specifications are more stringent, they take precedence. In case of conflict, obtain a decision from the Designer.

B. National Fire Codes (NFPA) including, but not limited to following:
   1. NFPA-70 - National Electrical Code. 2008 Edition.
   2. NFPA-101 - Life Safety Code. 2007 Edition.

C. Applicable Codes:
   1. ANSI-A17.1: Elevators, Dumbwaiters, Escalators and moving walks.
   2. International Building Code. 2006 Edition.
   3. Americans with Disabilities Act.

D. Should any work be construed as being contrary to or not conforming to aforementioned codes, such alleged confliction to be brought to attention of Contractor in writing ten (10) days prior to bid date for review so that such point in question may be resolved. All work to be installed in strict conformity with applicable codes without additional cost to Owner.

E. Contractor to submit and/or file with proper authorities all necessary specifications and drawings as required by governing authorities.

1.5 SUBMITTALS

A. Within fifteen (15) days after contract has been awarded, Contractor to submit to Designer for review a complete list of materials, equipment, and accessories proposed for use, listing the item and manufacturer's name only.

B. Based upon aforementioned approved listing, Contractor to submit seven (7) copies of COMPLETE BROCHURES AND SHOP DRAWINGS OF ALL MATERIALS, FIXTURES, AND EQUIPMENT that he proposes to use giving the names of manufacturers, trade name and specific catalog numbers.

C. Brochures to be submitted in time to allow fifteen (15) days from date of receipt in Designer's office before final approval or disapproval is required to meet construction schedule. Submittals to bear Contractor's stamp of approval evidencing he has examined and checked same and information contained therein is in accordance with contract requirements, and any deviations to be clearly marked. Approval of shop drawings not to be construed as permitting departure from the contractual documents.

D. Above-mentioned brochures to be submitted and approved before any materials are ordered.

E. Brochures: Submit complete descriptions, illustrations, specification data, etc. of all materials, fittings, devices, fixtures, special systems, etc., including the following:
   1. Panelboards.
   2. Wiring devices and plates.
   3. Motor starters and contactors.
   4. Disconnect switches.
   5. Enclosed circuit breakers.
   6. Transformers.
   7. Lighting, including lamps.

F. Proposed items to be clearly indicated when other items are shown on same sheet. When proposing items other than those specified, brochures to contain both specified item sheets and proposed item sheets for ease of comparison. On request from Designer, samples shall be submitted and/or set up, as directed, for inspection and approval. Samples will be returned to Contractor.

G. Shop Drawings: Submit specific shop drawings for major materials including motor starters and contactors including custom wiring diagrams.

1.6 OPERATING AND MAINTENANCE MANUALS

A. Prior to final acceptance of the project, furnish to Owner complete bound sets of operation and maintenance manuals of instructions for operation and maintenance of all pieces of equipment and systems provided under this division of specifications.

B. Manuals to also include all submittal data on all materials and equipment. Clearly indicate items provided on this project. A list giving name and address of nearest supply house carrying spare parts and name of Installation Contractor to be given to Owner.

C. Verbally instruct Owner's representatives. Contractor to obtain letter signed by the owner's representative indicating that the in-service training has been completed.

D. Three sets of the following data are required:
1. Operating and maintenance instructions.
2. Spare parts lists.
3. Copies of approved submittal data.

E. Arrange each set of data in an orderly way, and bind each set in a separate 3-ring, hard-cover binder.

F. As soon as data accumulates, prepare one of the sets and deliver to the Owner's Representative, continuously updating this set as additional data is obtained.

G. At completion of work, submit two complete sets of data to the Owner's Representative for distribution to the proper parties.

1.7 DELIVERY AND STORAGE

A. Insofar as possible, deliver items in manufacturers’ original unopened packaging. Where this is not practical, cover items with protective materials, to keep them from being damaged. Use care in loading, transporting, unloading, and storage to keep items from being damaged.

B. Store items in a clean dry place and protect from damage.

C. All damaged painted surfaces of equipment to be touched up to match original paint.

1.8 RECORD DRAWINGS

A. Keep a set of blueline prints at the job site exclusively for recording deviations from the drawings.

B. Record locations and depths of buried and concealed conduits from fixed easily identifiable objects, such as building walls. Where conduits are concealed in walls, indicate distances off of building corners or other building features not likely to be disturbed by future alterations.

C. Mark deviations in colored pencils so that work of various systems can be easily identified.

D. When work is completed, record all deviations on clean sepia copies of drawings.

E. Submit three sepia copies of completed "record drawings" to Owner's Representative for distribution.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. All materials and equipment used in carrying out these specifications to be American made unless approved otherwise by the Owner and to be new and have UL listing, or listing by other recognized testing laboratory when such listings are available. Specifications and drawings indicate name, type, and catalog numbers of materials and equipment to be used as "standards" shall not be construed as limiting competition. Contractor may at his option, use materials and equipment when, in the judgment of the Designer, they are equivalent to that specified.

PART 3 EXECUTION

3.1 COORDINATION

A. Intent:
1. These sections of specifications and drawings form a complete set of documents for the electrical work of this project. Neither is complete without the other. Any item mentioned in one shall be as binding as though mentioned in both.
2. The intent of these specifications and drawings is to form a guide for a complete electrical installation. Where an item is reasonably necessary for a complete system but not specifically mentioned, such as pull boxes, fittings, expansion fittings, support hangers, etc., provide same without additional cost to Owner.
3. Electrical layouts indicated on drawings are diagrammatical only. Exact location of outlets to be governed by project conditions. The Designer reserves the right to make any reasonable changes (approximately 6 feet) in location of junction boxes, or equipment prior to roughing-in of such without additional cost to Owner.

B. Deviations:
1. No deviations from specifications and drawings to be made without full knowledge and consent of Designer.
2. Should Contractor find during progress of work that existing conditions make desirable a modification of the requirements of any particular item, report such item promptly to Designer for his decision and instructions.

C. Insofar as it is possible to determine in advance, leave proper chases and openings. Place all outlets, anchors, sleeves, and supports prior to pouring concrete or installation of masonry work. Should contractor neglect doing this, any cutting and/or patching required to be done is at this contractor's expense.

D. Visit site and be informed of conditions under which work must be performed. No subsequent allowance will be made because of error or failure to obtain necessary information to completely estimate and perform work involved.

E. Designer to be mediating authority in all design related deviations and disputes arising on the project.

F. Coordinate to assure that proper points of service transformer locations, voltage characteristics and capacity of service are in accordance with contract drawings.

3.2 CUTTING AND PATCHING

A. Repair or replace routine damage caused by cutting in performance of this contract.

B. Correct unnecessary damage caused due to installation of electrical work, brought about through carelessness or lack of coordination.

C. Holes cut through existing floor slabs to be core drilled with drill designed for this purpose. All openings, sleeves and holes in slabs between floors to be properly sealed, fire proofed and water proofed.

D. Repairs to be performed with materials which match existing materials and to be installed in accordance with appropriate sections of these specifications.

3.3 TRENCHING, EXCAVATION, BACKFILLING, AND REPAIRS

A. Provide trenching, excavation, and backfilling necessary for performance of electrical work.

B. Trenching and excavation to be unclassified. No extra will be paid in event that rock is encountered.

C. Backfilling to be carefully done using only clean earth thoroughly tamped and compacted below and above embedded items.

3.4 FOUNDATIONS AND PADS

A. Provide foundations and pads required for equipment provided under this division of specifications. Coordinate proper size and location of foundations, pads, anchor bolts, and other items to be built into structure.

B. Concrete to be in accordance with concrete division of these specifications.

3.5 TESTS

A. On completion of work, installation to be entirely free from grounds, short circuits, and open circuits. Perform a thorough operational test in presence of Owner or his representative. Balance all circuits so that feeders to panels be not more than 10% out of balance between phases with all available load energized and operating. Furnish all labor, materials and instruments for above tests.

B. Furnish Owner, as a part of closing file, a copy of such tests including identification of each circuit and readings recorded, also the main service ground test as described in Section 26 05 26 of these specifications. Test information to be furnished to Owner includes ampere readings of all panels and major circuit breakers, insulation resistance reading of motors and transformers.

C. Prior to final observation and acceptance, test, leave in satisfactory operating condition all electrical systems and equipment including but not limited to the following:
1. Electrical distribution system.
2. Ground fault protection system.
3. Emergency power generation system.
4. Transformers.
5. Fire alarm and smoke detection system.
6. Electric motors for all equipment.
7. Master clock system.
8. Electric safety devices.
9. Any alarm system, including narcotics, generator, door security, etc.
10. Isolation panel ground monitor.
11. CCTV system.

3.6 INSPECTION FEES AND PERMITS

A. Obtain and pay for all necessary permits and inspection fees required for electrical installation.

3.7 IDENTIFICATION OF EQUIPMENT

A. Properly identify all starters, contactors, relays, safety switches and panels with permanently attached black (normal power) or red (essential systems) phenolic plates with 1/4" white engraved lettering on the face of each attached, with two sheet metal screws. Starters and relays connected by the electrical tradesman to be identified by him whether furnished by him or others.

3.8 DEMOLITION

A. Contractor shall visit the site before submitting a bid to acquaint himself with existing conditions.

B. Work in existing buildings shall be scheduled well in advance with the Owner. Work shall be performed at such times and under such conditions as suit the convenience of the Owner. Plan the work to minimize disruption of formal operations.

C. In renovated areas, remove wiring devices, fixtures, components, electrical equipment, conductors, boxes, and conduits not required to remain in service when this project is complete.

D. Remove existing conduit and wire from areas to be remodeled, back to panelboard, cabinet or junction box.

E. Where a circuit is interrupted by removal of a device or fixture from that circuit, the contractor shall install wire, conduit, etc., as required to restore service to the remaining devices and fixtures on that circuit.

F. Lighting fixtures, wiring devices, panelboards, and conductors removed shall be offered to the Owner. If he chooses to retain these items or a part of these items, turn those chosen over to him. Items rejected by the Owner shall be removed from the project site by the contractor.

3.9 OBSERVATIONS

A. When field observation services are a part of the project scope, Engineer's office will provide periodic observation of the progress of work specified herein. Purpose of the observation is to ensure compliance of Contractor's work with specifications and drawings. Designer's office will also observe tests required of Contractor as called for in other sections of specifications.

B. Specifications and drawings represent work to be done in view of total project requirements. Final location of conduits, fixtures, panels, switchboards, etc., to eliminate possible conflict with other trades is responsibility of Contractor. Contractor to provide all supervision required for his personnel to ensure that installation is made in accordance with specifications and drawings and all safety rules and regulations are observed. In event of conflicts of work on project with other trades, Contractor to make every reasonable effort to resolve conflict through meetings and discussions with other parties involved, by preparation of drawings or other appropriate action. Only after this has been done shall the Engineer's assistance be requested.

C. When Designer is requested to visit project to aid in resolution of conflicts or for witnessing tests, he shall be given a minimum of 48 hours notice prior to time his presence is required at job site.

3.10 WARRANTY-GUARANTEE

A. Designer reserves right to accept or reject any part of installation which does not successfully meet requirements as set out in these specifications.

B. Contractor shall and hereby does guarantee all work installed under this division shall be free from defects in workmanship and materials for a period of one year from date of final acceptance, whichever is earliest. The above parties further agree that they will repair and replace any defective material or workmanship which becomes defective within the terms of this warranty-guarantee.

END OF SECTION 260100

SECTION 260534

RACEWAYS AND CONDUIT SYSTEMS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Provide a complete conduit system with associated couplings, connectors, and fittings.

B. Conduits shall be mechanically and electrically continuous from outlet to outlet and from outlets to cabinets, pull or junction boxes.

1.2 SUBMITTALS

A. Submittal for products furnished under this section is not required.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. IMC, RGS and EMT conduit shall be hot-dip galvanized, or electrogalvanized steel by Triangle, Raco, Allied, or approved substitute. Catalog numbers used below are those of Raco and shall be considered as standards.

B. Erickson couplings, Raco 1502-1516 for IMC and RGS, shall be used where neither length of conduit can be rotated.

C. IMC/RGS conduit connectors from 1/2” to 4” trade sizes shall use compression type, Raco 1802-1816.

D. EMT conduit connectors from 1/2” to 2” trade sizes shall use set screw type, Raco 2002-2008. EMT conduit connectors from 2-1/2” to 4” trade sizes shall use two set screw type, Raco 2140-2146.

E. Grounding bushings shall be Raco 1212-1296.

F. Insulated bushings shall be Raco 1402-1416.

G. Weatherproof hub shall be Raco 1702-1716, complete with sealing "O" ring or sealing locknuts.

H. Provide polyvinyl chloride (PVC) conduit, Type 40, and associated couplings, connectors, and fittings. PVC conduit shall be UL listed and 90 degrees C UL rated.

2.2 ELECTRICAL METALLIC TUBING (EMT)

A. Use Electric Metallic Tubing (EMT) for branch circuits installed overhead, both exposed and concealed, installed more than 6 feet above finished floor.

2.3 INTERMEDIATE METAL CONDUIT (IMC)

A. Use Intermediate Metal Conduit (IMC) for:
1. Panelboard feeders.
2. Branch circuits installed in hazardous areas.
3. Branch circuits and feeders installed in concrete slabs at ground floor.
4. Branch circuits installed exposed below 6 feet above finished floor.
5. Branch circuits installed in wet locations.
6. Pendant drops.

2.4 RIGID GALVANIZED STEEL (RGS)

A. Conduit Use:
1. Interior and exterior exposed primary service conduit.
2. Interior and exterior exposed secondary service conduit.
3. Exterior exposed branch circuits.

2.5 POLYVINYL CHLORIDE (PVC)

A. Use PVC for:
1. Service entrance conduits for power encased in concrete.
2. Service entrance conduits for telephone.
3. Exterior feeders encased in concrete.
4. Exterior underground branch circuits.
5. Primary power conduits encased in concrete.

B. PVC conduit shall not be used for feeders or branch circuits inside the building.

2.6 FLEXIBLE METAL CONDUIT

A. Provide a flexible metal conduit system for the termination points at equipment that may possibly vibrate such as motors, welders, etc. The length shall not exceed 6 feet.

B. Conduit shall be electrically continuous from outlet or conduit end to the utilization equipment.

C. The total length of flexible conduit in any circuit shall not exceed 6 feet.

D. Where exposed to continuous or intermittent moisture, conduit shall be liquid tight flexible type, U.L. Type EF.

PART 3 EXECUTION

3.1 INSTALLATION

A. Minimum size of conduits shall be 1/2 inch.

B. Conduit joints shall be cut square, threaded, reamed smooth, and drawn up tight so conduit ends will butt in couplings, connectors, and fittings.

C. Make bends or offsets with standard ells or field bends with an approved bender.

D. Run conduits concealed in floor slabs, below slabs, or in walls in direct line with long sweep bends or offsets. Run exposed conduits and conduits run above lay-in ceilings parallel to and at right angles to building lines. Group multiple conduit runs in banks.

E. Secure conduits to all boxes and cabinets with two locknuts and bushings so system will be electrically continuous from service to all outlets.

F. Cap ends of conduits to prevent entrance of water and other foreign material during construction.

G. Complete conduit systems before pulling conductors.

H. Conduits shall be divided according to voltage and amperage service level. Conduits of different voltage levels shall be physically separated by the following distances unless otherwise specified on the drawings by the electrical engineer or control system supplier.

1. Level 1 conduits shall contain low level input/output signal conductors including RTD cables, thermocouple cables, and 4-20 mA d.c. cables from field transmitters.
2. Level 2 conduits shall contain all conductors for 24 volts d.c. power and signal.
3. Level 3 conduits shall contain all conductors for 120 volt a.c. power to the PLC control cabinets, motor control circuits, field devices requiring 120-volt power, etc.
4. Level 4 conduits shall contain all conductors for 120 volts d.c. control power greater than 3 amps, all 120 volts a.c. power greater than 20 amps, and all power circuits with voltage ratings higher than 120 volts a.c. (277, 480, 4160, 13,200 volts etc.). Examples include 480-volt motor feeds, 5-kV feeders, and 120-volt lighting circuit and input/output devices such as limit switches and solenoid valves.
5. Conduits shall be physically separated from each other by the following distances:

SPACING REQUIREMENTS (IN INCHES) FOR METALLIC CONDUITS			
From Level	To Level 2	To Level 3	To Level 4
Level 1	Minimum 1"	Minimum 6"	Minimum 26"
Level 2	0"	Minimum 6"	Minimum 26"
Level 3	Minimum 6"	0"	Minimum 18"

6. Levels 1, 2, and 3 conductors shall additionally be routed away from sources of high voltage or RF radiation such as switchgear, transformers, radio transmitters, and repeaters. Minimum separation from these sources of interference shall be 5 feet.
7. Data highway communications cable are generally considered Level 1 conductors; however, special requirements apply for routing to assure a low noise environment. Refer to electrical drawings and controls supplier requirements for special considerations before routing these conduits.

I. Where conduits of different levels must cross, the minimum separations shall be maintained, and they shall cross at right angles.

J. Provide cable supports in conduits rising vertically in accordance with the National Electrical Code, Article 300-19.

K. Provide nylon pull cord in all empty conduits. Steel wire not acceptable as pull wire.

L. Conduits which pass through floor slabs (except ground floor) shall be sealed with concrete grout. Seal around conduits or other wiring materials passing through partitions, which extend to the underside of the slab above, and those passing through smoke partitions and fire-rated walls. Refer to appropriate details on architectural and mechanical drawings.

M. Conduits which enter crawl space, tunnels, and basements from outside the building shall be grouted-in to prevent entry of gases, vapors, insects, or rodents to these spaces from street mains.

N. Conduit not serving elevator equipment shall not be permitted to pass through elevator shafts or elevator equipment rooms.

O. Where IMC or RGS conduit is installed in a cabinet, junction box, pull box, or auxiliary gutter, conductors shall be protected by an insulated bushing. Locknuts shall be installed on conduit outside and inside enclosure.

P. In areas where enclosed and gasketed fixtures and weatherproof devices are specified, where rigid conduit enters a sheet metal enclosure, junction box and outlet box, and not terminated in a threaded hub, a steel, or malleable iron nylon insulated hub, complete with recessed sealing "O" ring or sealing locknut shall be used.

Q. Where conduits stub up in conduit space beneath switchgear and do not connect directly to equipment enclosures, use malleable iron nylon insulated ground bushing with a lay-in lug design complete with bonding screw, Raco 1212-1296.

R. Provide seal-off fitting in all conduits entering hazardous areas and any conduits entering a cold temperature area such as freezers and dry refrigerators.

S. In concrete slabs, block up conduit from forms and securely fasten in place. All conduits in slabs shall have a minimum of 1-1/2 inches concrete coverage above and below.

T. Encase in 4 inches of 1:2:4 mix concrete on all sides all feeder conduits laid below ground outside building foundation line.

U. Where conduits running overhead pass through building expansion joints they shall be connected by flexible metal conduit of same size with sufficient slack to allow conduits on either side of expansion joint to move a minimum of 3 inches in any direction. Provide supports as required on each side of expansion joint, all in accordance with seismic requirements of specific area.

V. Conduits for feeders and branch circuits shall be terminated directly into panelboard enclosure without the use of pull boxes, junction boxes, wireways, or auxiliary gutters, unless the panelboard enclosure does not provide sufficient surface area for all conduits. Where such cases exist, the contractor shall notify the Designer. In no case will splices in such boxes, wireways, etc., be permitted.

W. Failure to route conduit through building without interfering with other equipment and construction shall not constitute a reason for an extra charge. Equipment, conduit, and fixtures shall fit into available spaces in building and shall not be introduced into building

at such times and manner as to cause damage to structure. Equipment requiring servicing shall be readily accessible.

X. No conduit shall be installed in elevated slabs.

3.2 EMT

A. Do not use electric metallic tubing in cinder concrete or cinder fill where subject to permanent moisture unless protected on all sides by a layer of noncinder concrete at least 2 inches thick or unless the EMT is at least 18 inches under the fill. Use of set-screw fitting is not acceptable in concrete or in fill under slab.

3.3 PVC

A. Use threaded fittings for all connectors and adapters.

B. Provide code sized ground conductors in all power conduit runs.

C. Provide 1/4-inch nylon pull rope in all primary power and incoming telephone service entrance conduits.

D. Encase all PVC conduit in reinforced concrete with a minimum of 4-inch encasement on all sides except exterior branch circuits.

E. No PVC shall emerge from the ground or the concrete slab or encasement. PVC shall convert to galvanized rigid metal prior to its emergence.

F. Make bends with standard ells or with an approved heat bender.

3.4 FLEXIBLE METAL CONDUIT

A. Flexible metal conduits shall be 1/2 inch minimum size.

B. Where fittings for liquidtight flexible conduit are brought into an enclosure with a knock-out, a gasket assembly, consisting of one piece "O" ring, with Buna-N sealing material, Raco Series 3500, shall be installed on outside of box. Fittings shall be made of either steel or malleable iron only, and shall have insulated throats or insulated bushings.

C. In dry locations, where final connections to motors and other equipment may be made with flexible metal conduit, fittings shall be of steel or malleable iron only with insulated throats or insulated bushings, and shall be of wedge and screw type having an angular wedge fitting between convolutions of conduit.

D. An additional copper ground wire shall be installed inside of flexible conduit and bonded at each end to assure continuity of ground to lighting fixtures, controls, and other utilization equipment.

E. All recessed lighting fixtures shall be connected with flexible metallic conduit from outlet box to fixture. Rigid conduit connections to lighting fixtures are not acceptable.

F. Install liquidtight flexible conduit in such a manner as to prevent liquids from running on the surface toward fittings.

G. Allow sufficient slack conduit to reduce the effect of vibration.

END OF SECTION 260534

SECTION 312000

EARTHWORK

PART 1 GENERAL

1.1 UNIT PRICES

A. Part of the Work of this Section is under a Unit Price. Refer to Section 012213.

B. Excavating Soil and Rock Materials: By the cubic yard; the same price will be paid whether material removed is soil, rock, or soil/rock mixture.
   1. Soil: Includes general excavating to required elevations, loading and removing from site.
   2. Rock Removal: Includes preparation of rock for removal, mechanical disintegration of rock, removal from position, loading and removing from site.

C. Fill Material: By the cubic yard. Any of the following as approved by Geotechnical Engineer.
   1. Soil/Rock Mixture, Rock, Drainage and Aggregate Fills: Includes supplying fill materials, stockpiling, scarifying substrate surface, placing where required, and compacting.
   2. Concrete Fill: Includes supplying materials, forming, mixing and placing where required, and curing.

1.2 QUALITY ASSURANCE

A. Inspection and Testing: Provide inspection and testing.

B. Suitable Material: Fill material to be placed will be approved by testing agency.

1.3 PROJECT CONDITIONS

A. Existing Utilities: Locate existing underground utilities in areas of work prior to beginning any work or ordering any materials. Any materials ordered or work performed before the horizontal and vertical location of existing utilities is at Contractor's risk. Protect utilities indicated to remain in place. If uncharted or mischarted utilities are encountered, immediately notify Designer and utility owner. Keep services and facilities in operation under direction of utility Owner.

B. Repair damaged utilities to satisfaction of utility owner.

C. Do not interrupt existing utilities that are in use without written permission of Designer and then only after temporary services have been provided. Coordinate with utility owner for shutdown of service. Provide minimum 48 hour notice to Designer and receive written notice to proceed before interrupting any utility.

1.4 EXPLOSIVES

A. Use of explosives is not permitted.

1.5 PROTECTION OF PERSONS AND PROPERTY

A. Barricade open excavations occurring as part of this work and post warning lights. Operate warning lights as recommended by authorities having jurisdiction.

B. Protect structures, utilities, sidewalks, pavements and other facilities indicated to remain in place from damage caused from possible settlement, lateral movement, undermining, washout and other hazards created by excavation.

C. Protect plant growth and trees scheduled to remain.

PART 2 PRODUCTS

2.1 MATERIALS

A. Earth Fill: Soil free of roots and organic material, debris and other material considered deleterious by testing agency. Soil selected shall consist of residual clay with a plasticity index (PI) of less than 20. Sources may occur within designated borrow areas or within on-site areas which are to be excavated. Soil shall be free of rock fragments greater than 2 inches in maximum dimension.

B. Soil/Rock Mixture: Organic free, on-site or borrowed soil mixed with rock fragments less than 18 inches in maximum dimension. Percentage of rock within fill shall be limited by testing agency so as to maintain a satisfactory mixture which, when compacted, will form an essentially impervious and stable mass containing no significant voids.

C. Rock Fill: Well graded shot rock having a maximum fragment size of 30 inches. Rock fill shall be reasonably free of soil and should generally include a range of particle sizes from 30 inches downward to 1 inch in maximum dimension. Permissible quantity of material finer than 1 inch including soil, will be decided by testing agency based on stability of initial lifts of fill placed.

D. Drainage Fill: Washed, uniformly graded mixture of stone with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.

E. Aggregate Fill: Crushed stone, TDOT 903.05 "Class B" crusher-run.

F. Topsoil: Refer to 329201 - Seeding for finish grading, including preparing and placing topsoil and planting soil for lawns.

G. Lean Concrete:
1. Cement: ASTM C150 normal - Type 1 Portland.
2. Fine and Coarse Aggregates: ASTM C33.
3. Water: Clean and not detrimental to concrete.
4. Mix concrete to a compressive strength (28 days) of 3,000 psi according to ASTM C94, Alternative 2.

2.2 ACCESSORIES

A. Drainage Fabric: Lightweight, high impact polymeric core and filter fabric which allows water to pass freely into molded drain core where gravity draws water through flow channels to discharge system; designed for applications where drainage is needed only on one side; 15,000 psf core compressive strength per ASTM D1621 (Modified); 15 gal/min/ft width water flow rate per ASTM D4716-87; 0.38 inch core thickness per ASTM D1777.

B. Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
   1. Survivability: Class 2; AASHTO M 288.
   2. Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D 4751.
   3. Permittivity: 0.02 per second, minimum; ASTM D 4491.
   4. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

PART 3 EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Prepare subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface.

C. Protect and maintain erosion and sedimentation controls during earthwork operations.

D. Stripping of Topsoil: Strip topsoil and stockpile on site for respreading. Do not pile over 8 feet and protect from erosion. Strip organic matter

E. Examination of Conditions: Examine areas of work and notify Designer, in writing, of conditions that would hinder proper completion of work. Do not proceed until unsatisfactory conditions have been corrected.

F. In cases where gas, sewer, or other pipe is encountered, pipe shall not be displaced nor molested unless necessary, in which case it shall be replaced in good condition as promptly as is possible.

3.2 EXCAVATION

A. Excavation including rock removal is unclassified and includes excavation to subgrade elevations indicated, regardless of character of materials, abandoned or inactive infrastructures, or other obstructions encountered. Same price shall be considered for excavation whether it be earth, rock, or other obstructions.

B. Unauthorized Excavation: Removal of material beyond indicated elevations or dimensions without approval of Designer.
   1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable by Designer.
   2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise required by Designer or testing agency.

C. Additional Excavation: If unsuitable bearing is encountered at required elevations, continue excavation until acceptable bearing is found and replace excavated material as required by geotechnical engineer with testing firm.

D. Extra work for authorized excavation carried beyond elevations and dimensions indicated will be paid for by Owner based on unit prices indicated on Bid Form and based on quantities calculated on neat scheduled size of excavation under change order provisions of Division 1.

E. Stability of Excavations: Slope sides of excavations. Shore and brace where sloping is not possible. Maintain sides and slopes in safe condition until completion of backfilling.

F. Shoring and Bracing: Comply with applicable code requirements for shoring and bracing.
   1. Provide materials that are in good serviceable condition. Carry down shoring and bracing as excavation progresses and maintain in place as long as excavations are open.
   2. Where removal of shoring may permit lateral movement of soil under adjacent structures, provide steel or pressure treated wood sheet piling to be cut off and left in place.

G. Dewatering: Prevent water from flowing into excavations and from flooding site and surrounding areas. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation. Immediately remove accumulated water from excavations to prevent conditions detrimental to stability of subgrades and footings. Provide and maintain dewatering systems necessary to convey water away from excavations. Do not use utility trench excavations as temporary ditches.

H. Material Storage: Stockpile satisfactory material where indicated until required for backfill or fill. Place, grade and shape stockpiles for proper drainage. Do not stockpile material at edge of excavation. Dispose of excess soil and waste material.

I. Excavation for Structures: Conform to dimensions and elevations shown within a tolerance of plus or minus 0.10 feet. Extend a sufficient distance from footings and foundations to permit placing and removal of formwork, installation of services, other construction and for observation by Designer. Do not disturb bottom of excavations. Excavate by hand to final grade just before placing reinforcing. Trim bottoms to leave solid base for concrete.

J. Excavation for Pavements: Cut surface under pavements to comply with cross sections, elevations and grades.

3.3 EXCAVATION FOR TRENCHES

A. Excavate trenches uniformly to a width sufficient to provide working room.

B. Excavate trenches to depth indicated or required. Piping trenches to have ample depth to establish flow lines and inverts indicated.

C. Trench excavation for pipe lines shall be of sufficient width to allow for proper laying of pipe and caulking-up of joints and shall be of sufficient depth to give 2'-6" minimum cover over tops of hubs. If it is necessary to excavate deeper to avoid obstructions or to give a uniform grade, no extra charge will be allowed for the additional depth.

D. Care shall be taken to give piping a uniform bearing throughout its length. Holes for bells of pipe shall be excavated large enough so that bell or hub will clear the ground.

E. Where solid rock is encountered, carry excavation 6 inches below required elevation and backfill with a 6 inch layer of crushed stone or gravel before installing pipe.

F. Grade bottoms of trench by hand.

3.4 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
   2. Protect and clearly mark stockpiled topsoil.

3.5 BACKFILL AND FILL

A. Place acceptable fill in layers to required subgrade elevations, for each area classification listed below.
   1. For site filling, in excavations, under grassed areas, under walks or pavements, use satisfactory excavated or borrow material.

B. Backfill excavations as soon as work permits

C. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials and obstructions prior to placing fills. Break up slopes steeper than one vertical to four horizontal to ensure bonding of fill.
   1. Where fill is to be placed on slopes that are 2H:1V or greater, bench fill into existing slope a minimum of 2 feet horizontally for every 4 feet of vertical distance.
   2. Over build fill slopes that are to be 2H:1V or greater a minimum of 2 feet horizontally for full height of filled slope. Remove over-built fill upon completion to expose properly compacted fill.
   3. If existing ground is below required density, break up surface, condition to optimum moisture content and compact to required depth and percentage of maximum density.

D. Placement and Compaction: Place fill in 8 inch maximum layers for compaction with heavy equipment, 4 inch maximum layers for fill compacted with hand-operated tampers.
   1. Before compaction, if required, moisten or aerate each layer to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place fill on surfaces that are muddy, frozen, or contain frost or ice.
   2. Place backfill evenly adjacent to structures, to required elevations. Prevent wedging action against structures by carrying material uniformly around structure to approximately same elevation each lift.

E. Where below grade walls cannot be backfilled with stone, install drainage fabric. Follow manufacturer's installation instructions. Connect to storm sewer system.

3.6 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:
1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.7 COMPACTION

A. Before compacting and filling, proof-roll area with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding as directed by testing agency. Remove soft spots, fill and compact to required density. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.

B. Control soil compaction during construction providing minimum percentage of density specified for each area classification indicated below.

C. Percentage of Maximum Density Requirements: Compact soil to not less than the listed percentages of dry density for soils which exhibit a well-defined moisture density relationship, follow ASTM D698 (Standard Proctor); and not less than listed percentages of relative density, follow ASTM D4253, for soils which will not exhibit a well-defined moisture-density relationship.
1. Pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material at 98 percent maximum dry density or 90 percent relative dry density for cohesionless soil material.
2. Lawn or Unpaved Areas: Compact top 6 inches of subgrade and each layer of backfill or fill material at 90 percent maximum dry density.
3. Walkways: Compact top 6 inches of subgrade and each layer of backfill or fill material at 98 percent maximum dry density or 90 percent relative dry density.

D. Moisture Control: Where subgrade or layer soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.

E. Do not proof-roll wet or saturated subgrades. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

F. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value. Reuse stockpiled material only after dried to proper moisture content.

3.8 GRADING

A. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

B. Grading Outside Building Lines: Slope grade away from buildings to drain away water and prevent ponding.

C. Grading Tolerances: Finish subgrade surfaces free from irregular surface changes and to following tolerances above or below required subgrade elevations.
   1. Lawns and Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10 foot above or below required subgrade elevations.
   2. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10 foot above or below required subgrade elevations.
   3. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2 inch above or below required subgrade elevations when tested with a 10 foot straight edge.

D. Compaction: After grading, compact subgrade surfaces to depth and percentage of maximum density for each area classification.

3.9 FIELD QUALITY-CONTROL

A. Special inspection and testing will be done.

B. Continuous Inspection during Construction: Testing agency will inspect and approve or take other appropriate action on sub-grades and fill layers to ensure compliance with indicated materials, densities, and lift thicknesses during placement and compaction.

C. Periodic Inspection during Construction: Testing agency will inspect and approve or take other appropriate action on the following:
   1. Verify materials below footings are adequate to achieve design bearing capacity.
   2. Verify excavations are to proper depth and have reached proper material.
   3. Perform classification and testing of controlled fill materials.
   4. Before placement of controlled fill, observe subgrade and verify site has been prepared properly.

D. Testing agency will perform testing, according to ASTM D2922 (nuclear method).
   1. Check and adjust calibration curves if necessary by procedure described in ASTM D2922, paragraph, "ADJUSTING CALIBRATION CURVE." ASTM D2922 results in a wet unit weight of soil and when using this method use ASTM D3017 to decide moisture of soil.
   2. Check calibration curves furnished with moisture gages along with density calibration checks as described in ASTM D3017. Make calibration checks of both density and moisture gages at beginning of Project on each different type of material encountered and at intervals as required by testing agency.

E. Frequency of Compaction Testing:
   1. Footing Subgrade: For each strata of soil verify required bearing capacity with at least one test. Subsequent verification and approval of each footing subgrade may be based on visual comparison of each subgrade with related tested strata.

2. Paved Areas: One field density test of subgrade every 2,000 square feet, but not less than three tests. For each compacted fill layer, one field density test for every 2,000 square feet, but no less than three tests.

F. If compacted subgrade or fills which have been placed do not meet specified densities provide additional compaction and testing at no expense to Owner.

G. Eliminate standing water or pool areas.

3.10 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape and compact to required density prior to further construction.

D. Grade and reseed areas where soil is borrowed and where soils are dumped.

3.11 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Transport acceptable excess excavated material off Owner's property.

B. Transport waste material, including unacceptable excavated material, trash and debris off Owner's property and dispose of as indicated.

C. Materials excavated shall be disposed of so as to interfere as little as possible with public travel.

END OF SECTION

SECTION 312010
EARTHWORK UNDER THE BUILDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Earthwork included within building perimeter between neat scheduled lines of footings.

1.2 UNIT PRICES

A. Part of the Work of this Section is under a Unit Price. Refer to Section 012213.

B. Excavating Soil and Rock Materials: By the cubic yard; the same price will be paid whether material removed is soil, rock, or soil/rock mixture.
   1. Soil: Includes general excavating to required elevations, loading and removing from site.
   2. Rock Removal: Includes preparation of rock for removal, mechanical disintegration of rock, removal from position, loading and removing from site.

C. Fill Material: By the cubic yard. Any of the following as approved by Geotechnical Engineer.
   1. Soil/Rock Mixture, Rock, Drainage and Aggregate Fills: Includes supplying fill materials, stockpiling, scarifying substrate surface, placing where required, and compacting.
   2. Concrete Fill: Includes supplying materials, forming, mixing and placing where required, and curing.

1.3 QUALITY ASSURANCE

A. Inspection and Testing: Provide inspection and testing.

B. Suitable Material: Fill material to be placed will be approved by testing agency.

1.4 PROJECT CONDITIONS

A. Existing Utilities: Locate existing underground utilities in areas of work prior to beginning any work or ordering any materials. Any materials ordered or work performed before the horizontal and vertical location of existing utilities is at Contractor's risk. Protect utilities indicated to remain in place. If uncharted or mischarted utilities are encountered, immediately notify Designer and utility owner. Keep services and facilities in operation under direction of utility Owner.

B. Repair damaged utilities to satisfaction of utility owner.

C. Do not interrupt existing utilities that are in use without written permission of Designer and then only after temporary services have been provided. Coordinate with utility owner for shutdown of service. Provide minimum 48 hour notice to Designer and receive written notice to proceed before interrupting any utility.

1.5 EXPLOSIVES

A. Use of explosives is not permitted.

1.6 PROTECTION OF PERSONS AND PROPERTY

A. Barricade open excavations occurring as part of this work and post warning lights. Operate warning lights as recommended by authorities having jurisdiction.

B. Protect structures, utilities, sidewalks, pavements and other facilities indicated to remain in place from damage caused from possible settlement, lateral movement, undermining, washout and other hazards created by excavation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Earth Fill: Soil free of roots and organic material, debris and other material considered deleterious by testing agency. Soil selected shall consist of residual clay with a plasticity index (PI) of from 4 – 15 with a liquid limit of 30 or less. Sources may occur within designated borrow areas or within on-site areas which are to be excavated. Soil shall be free of rock fragments greater than 2 inches in maximum dimension.

B. Soil/Rock Mixture: Organic free, on-site or borrowed soil mixed with rock fragments less than 18 inches in maximum dimension. Percentage of rock within fill shall be limited by testing agency so as to maintain a satisfactory mixture which, when compacted, will form an essentially impervious and stable mass containing no significant voids.

C. Rock Fill: Well graded shot rock having a maximum fragment size of 30 inches. Rock fill shall be reasonably free of soil and should generally include a range of particle sizes from 30 inches downward to 1 inch in maximum dimension. Permissible quantity of material finer than 1 inch including soil, will be decided by testing agency based on stability of initial lifts of fill placed.

D. Drainage Fill: Washed, uniformly graded mixture of stone with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.

E. Aggregate Fill: Crushed stone, TDOT 903.05 "Class B" crusher-run.

F. Lean Concrete:
   1. Cement: ASTM C150 normal - Type 1 Portland.
   2. Fine and Coarse Aggregates: ASTM C33.
   3. Water: Clean and not detrimental to concrete.
   4. Mix concrete to a compressive strength (28 days) of 3,000 psi according to ASTM C94, Alternative 2.

2.2 ACCESSORIES

A. Drainage Fabric: Lightweight, high impact polymeric core and filter fabric which allows water to pass freely into molded drain core where gravity draws water through flow channels to discharge system; designed for applications where drainage is needed only on one side; 15,000 psf core compressive strength per ASTM D1621 (Modified); 15 gal/min/ft width water flow rate per ASTM D4716-87; 0.38 inch core thickness per ASTM D1777.

B. Conduit: ASTM D1785, polyvinyl chloride pipe, Schedule 40; ASTM D2466 for fittings.

C. Perforated Corrugated Polyethylene Pipe: ASTM 405 and F667; diameter as indicated with required fittings; with water pervious, 1005 polyester filter fabric, 2.5 ounces per square yard, water flow rate or 350 gpm at 3" head, 100 psi burst strength.

PART 3 EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Prepare subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface.

C. Protect and maintain erosion and sedimentation controls during earthwork operations.

D. Stripping of Topsoil: Strip topsoil and stockpile on site for respreading. Do not pile over 8 feet and protect from erosion. Strip organic matter.

E. Examination of Conditions: Examine areas of work and notify Designer, in writing, of conditions that would hinder proper completion of work. Do not proceed until unsatisfactory conditions have been corrected.

F. In cases where gas, sewer, or other pipe is encountered, pipe shall not be displaced nor molested unless necessary, in which case it shall be replaced in good condition as promptly as is possible.

3.2 EXCAVATION

A. Excavation including rock removal is unclassified and includes excavation to subgrade elevations indicated, regardless of character of materials, abandoned or inactive infrastructures, or other obstructions encountered. Same price shall be considered for excavation whether it be earth, rock, or other obstructions.

B. Unauthorized Excavation: Removal of material beyond indicated elevations or dimensions without approval of Designer. Unauthorized excavation, and remedial work required by Designer, shall be at Contractor's expense.

1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete or compacted fill may be used to bring elevations to proper position, when acceptable by Designer.
2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise required by Designer or testing agency.

C. Additional Excavation: If unsuitable bearing is encountered at required elevations, continue excavation until acceptable bearing is found and replace excavated material as required by geotechnical engineer with testing agency.

D. Extra work for authorized excavation carried beyond elevations and dimensions indicated will be paid for by Owner based on unit prices indicated on Bid Form and based on quantities calculated on neat scheduled size of excavation under change order provisions of Division 1.

E. Stability of Excavations: Slope sides of excavations. Shore and brace where sloping is not possible. Maintain sides and slopes in safe condition until completion of backfilling.

F. Shoring and Bracing: Comply with applicable code requirements for shoring and bracing.
1. Provide materials that are in good serviceable condition. Carry down shoring and bracing as excavation progresses and maintain in place as long as excavations are open.
2. Where removal of shoring may permit lateral movement of soil under adjacent structures, provide steel or pressure treated wood sheet piling to be cut off and left in place.

G. Dewatering: Prevent water from flowing into excavations and from flooding site and surrounding areas. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation. Immediately remove accumulated water from excavations to prevent conditions detrimental to stability of subgrades and footings. Provide and maintain dewatering systems necessary to convey water away from excavations. Do not use utility trench excavations as temporary ditches.

H. Material Storage: Stockpile satisfactory material where indicated until required for backfill or fill. Place, grade and shape stockpiles for proper drainage. Do not stockpile material at edge of excavation. Dispose of excess soil and waste material.

I. Excavation for Structures: Conform to dimensions and elevations shown within a tolerance of plus or minus 0.10 feet. Extend a sufficient distance from footings and foundations to permit placing and removal of formwork, installation of services, other construction and for observation by Designer. Do not disturb bottom of excavations. Excavate by hand to final grade just before placing reinforcing. Trim bottoms to leave solid base for concrete.

J. Excavation for Footings: Footings to bear on firm, undisturbed earth or engineered fill compacted to indicated rate. Do not bear footings on loose or wet materials, debris or topsoil. If rock in encountered in original earth, then excavate to 12” below bottom of footing and provide 12” of compacted earth fill.
1. Footings shall be inspected by soils engineer before placing concrete to insure bearing surfaces are consistent with soils engineer’s design recommendations.

3.3 EXCAVATION FOR TRENCHES

A. Excavate trenches uniformly to a width sufficient to provide working room.

B. Excavate trenches to depth indicated or required. Piping trenches to have ample depth to establish flow lines and inverts indicated.

C. Trench excavation for pipe lines shall be of sufficient width to allow for proper laying of pipe and caulking-up of joints and shall be of sufficient depth to give 2'-6" minimum cover over tops of hubs. If it is necessary to excavate deeper to avoid obstructions or to give a uniform grade, no extra charge will be allowed for the additional depth.

D. Care shall be taken to give piping a uniform bearing throughout its length. Holes for bells of pipe shall be excavated large enough so that bell or hub will clear the ground.

E. Where solid rock is encountered, carry excavation 6 inches below required elevation and backfill with a 6 inch layer of crushed stone or gravel before installing pipe.

F. Grade bottoms of trench by hand.

3.4 SUBSURFACE DRAINAGE

A. Hand trim excavations to required elevations. Correct over excavation with drainage fill material. Remove large stones or other hard matter which could damage drainage or impede consistent backfilling or compaction.

B. Install and join pipe and pipe fittings according to manufacturer's instructions.

C. Lay pipe to slope gradients noted on Drawings with maximum variation from true slope of 1/8 inch in 10 feet. Place pipe sleeve over piping.

D. Install coarse filter aggregate at sides, over joint covers and top of pipe. Provide top compacted thickness of 12 inches. Install filter aggregate at sides and top of pipe to finish surface elevation unless indicated otherwise in drawings.

E. Connect to storm sewer with un-perforated pipe through installed sleeves.

F. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches (300 mm) of final subgrade, in compacted layers 6 inches (150 mm) thick. Overlay drainage backfill with 1 layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches (150 mm).
   1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698 with a minimum of two passes of a plate-type vibratory compactor.
   2. Place and compact impervious fill over drainage backfill in 6-inch- (150-mm-) thick compacted layers to final subgrade.

3.5 BUILDING SLAB DRAINAGE COURSE

A. Drainage course consists of placement of drainage fill material, in layers of indicated thickness, over subgrade surface to support concrete building slabs free of mud, frost, snow, or ice.

B. Place drainage fill material under cast-in-place concrete slabs-on-grade on prepared subgrade in layers of uniform thickness; conform to indicated cross-section and thickness. Maintain optimum moisture content for compacting material during placement operations.

C. Where a compacted drainage course is shown to be 6 inches thick or less, place material in single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer more than 6 inches or less than 3 inches in thickness when compacted.

3.6 COMPACTION

A. Before compacting and filling, proof-roll area with heavily loaded double axle dump truck to identify highly plastic areas, soft pockets, and areas of excess yielding as directed by testing agency.
   1. Remove soft spots, fill and compact to required density. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph. Proofrolling shall be observed by a geotechnical engineer.
   2. Where soft areas, organic materials, and highly plastic clays are encountered, undercut and replace these areas with compacted engineered fill placed in layers not to exceed 8 inches.

B. Control soil compaction during construction providing minimum percentage of density specified for each area classification indicated below.

C. Percentage of Maximum Density Requirements: Compact soil to not less than the listed percentages of dry density for soils which exhibit a well-defined moisture density relationship, follow ASTM D698 (Standard Proctor); and not less than listed percentages of relative density, follow ASTM D4253, for soils which will not exhibit a well-defined moisture-density relationship.
   1. Structures: Compact top 12 inches of subgrade and each layer of backfill or fill material at 98 percent maximum dry density or 90 percent relative dry density.
   2. Building Slabs and Steps: Compact top 12 inches of subgrade and each layer of backfill or fill material at 98 percent maximum dry density or 90 percent relative dry density.

D. Moisture Control: Where subgrade or layer soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.

E. Do not proof-roll wet or saturated subgrades. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

F. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value. Reuse stockpiled material only after dried to proper moisture content.

3.7 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
   2. Protect and clearly mark stockpiled topsoil.

3.8 BACKFILL AND FILL

A. Place acceptable fill in layers to required subgrade elevations, for each area classification listed below.
   1. For site filling, in excavations, under grassed areas, use satisfactory excavated or borrow material.
   2. Under slabs and for below grade foundation walls, use drainage fill. Compact fill to 90 percent maximum dry density according to ASTM D698.

B. Backfill excavations as soon as work permits

C. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials and obstructions prior to placing fills. Break up slopes steeper than one vertical to four horizontal to ensure bonding of fill.
   1. Where fill is to be placed on slopes that are 2H:1V or greater, bench fill into existing slope a minimum of 2 feet horizontally for every 4 feet of vertical distance.
   2. Over build fill slopes that are to be 2H:1V or greater a minimum of 2 feet horizontally for full height of filled slope. Remove over-built fill upon completion to expose properly compacted fill.
   3. If existing ground is below required density, break up surface, condition to optimum moisture content and compact to required depth and percentage of maximum density.

D. Placement and Compaction: Place fill in 8 inch maximum layers for compaction with heavy equipment, 4 inch maximum layers for fill compacted with hand-operated tampers.
   1. Before compaction, if required, moisten or aerate each layer to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place fill on surfaces that are muddy, frozen, or contain frost or ice.
   2. Place backfill evenly adjacent to structures, to required elevations. Prevent wedging action against structures by carrying material uniformly around structure to approximately same elevation each lift.

E. Where below grade walls cannot be backfilled with stone, install drainage fabric. Follow manufacturer's installation instructions. Connect to storm sewer system.

F. Place geotextile fabric on compacted subgrade before backfilling. Follow manufacturer's instructions.

3.9 GRADING

A. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

B. Grading Outside Building Lines: Slope grade away from buildings to drain away water and prevent ponding.

C. Grading Tolerances: Finish subgrade surfaces free from irregular surface changes and to following tolerances above or below required subgrade elevations. Finish areas to within not more than 0.10 foot above or below required subgrade elevations.

D. Compaction: After grading, compact subgrade surfaces to depth and percentage of maximum density for each area classification.

3.10 FIELD QUALITY-CONTROL

A. Special inspection and testing will be done according to Sections 014000 and 014533.

B. Continuous Inspection During Construction: Testing agency will inspect and approve or take other appropriate action on sub-grades and fill layers to ensure compliance with indicated materials, densities, and lift thicknesses during placement and compaction.

C. Periodic Inspection During Construction: Testing agency will inspect and approve or take other appropriate action on the following:
1. Verify materials below footings are adequate to achieve design bearing capacity.
2. Verify excavations are to proper depth and have reached proper material.
3. Perform classification and testing of controlled fill materials.
4. Before placement of controlled fill, observe subgrade and verify site has been prepared properly.

D. Testing agency will perform testing according to ASTM D2922 (nuclear method).
1. Check and adjust calibration curves if necessary by procedure described in ASTM D2922, paragraph, "ADJUSTING CALIBRATION CURVE." ASTM D2922 results in a wet unit weight of soil and when using this method use ASTM D3017 to decide moisture of soil.
2. Check calibration curves furnished with moisture gages along with density calibration checks as described in ASTM D3017. Make calibration checks of both density and moisture gages at beginning of Project on each different type of material encountered and at intervals as required by testing agency.

E. Frequency of Compaction Testing:
1. Inspection: Each column foundation and wall foundation shall be inspected and tested and approved before concrete is placed.
2. Footing Subgrade: For each strata of soil verify required bearing capacity with at least one test. Subsequent verification and approval of each footing subgrade may be based on visual comparison of each subgrade with related tested strata.
3. Drill one 6'-0" deep test holes in bottom of each column footing excavation. Drill one 6'-0" deep test hole in each wall footing excavation at not over 22'-0" on center along continuous footings.
4. Building Slabs: One field density test of subgrade every 2,000 square feet, but not less than three tests. For each compacted fill layer, one field density test for every 2,000 square feet, but no less than three tests.

F. If compacted subgrade or fills which have been placed do not meet specified densities provide additional compaction and testing at no expense to Owner.

G. Make accurate measurements of penetration depth into bearing strata. Submit report documenting penetration.

3.11 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape and compact to required density prior to further construction.

D. Grade and reseed areas where soil is borrowed and where soils are dumped.

3.12 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Transport acceptable excess excavated material off Owner's property.

B. Transport waste material, including unacceptable excavated material, trash and debris off Owner's property and dispose of as indicated.

C. Materials excavated shall be disposed of so as to interfere as little as possible with public travel.

END OF SECTION

SECTION 313116

TERMITE CONTROL

PART 1 GENERAL

1.1 ACTION SUBMITTALS

A. Product Data: For termiticide.

1. Include the EPA-Registered Label for termiticide products.

1.2 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 system manufacturer to install manufacturer's products.

B. Regulatory Requirements: Formulate and apply termiticides according to the EPA-Registered Label.

C. Revise paragraph below if bait station, termiticide, or borates are from different manufacturers.

D. Retain paragraph below to ensure treatment of critical areas and to avoid physical and chemical hazards during application according to termiticide label statements.

1.3 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.

B. Applications shall not be performed when average wind speed exceeds 16 km or 10 miles per hour. The termiticide shall not be allowed to enter water systems, aquifers, or endanger humans or animals.

1.4 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

2.1 PERFORMANCE REQUIREMENTS

A. Service Life of Soil Treatment: Soil treatment by use of a termiticide that is effective for not less than five years against infestation of subterranean termites.

2.2 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.

B. Select non-repellant termiticide for maximum effectiveness and duration after application. The selected termiticide shall be suitable for the soil and climatic conditions at the Project site.

PART 3 EXECUTION

3.1 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.

3.2 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.

3.3 APPLICATION, GENERAL

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.4 APPLYING SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute treatment evenly.

1. Slabs-on-Grade and Basement Slabs: Underground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before vapor retarders, 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. 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.

END OF SECTION

SECTION 321216
BITUMINOUS CONCRETE PAVING

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Hot-mix asphalt paving.

1.2 DEFINITIONS

A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

1.3 ACTION SUBMITTALS

A. Submit proposed mix design for:
   1. Mineral Aggregate Base
   2. Hot-Mix Asphalt Surface or wearing Course

B. Include gradations of aggregates and intended temperature of complete mixture for each course (between 250 and 325 degrees F) at time it is dumped from mixer.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Follow Tennessee Department of Transportation (TDOT) specifications Highway Standards.
   1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

B. Ensure that ramped or sloped sidewalks designed for pedestrian traffic are no longer than 30 feet, no steeper than 8.33% with a cross slope (perpendicular to path of travel) is no greater than 2%.

C. Conform to applicable sections of appropriate Department of Transportation for State in which Project is located. In the event of conflicts between this Specification and the appropriate State standards, the State standards shall take precedence.

1.5 CONNECTIONS TO PUBLIC ROADS

A. Obtain required permit, post bond and show evidence of carriage of Public Liability Insurance in kind and amount as required by governmental authority having jurisdiction.

B. Construct connections to public roads, thoroughfares, sidewalks, gutters and similar items, in a manner and with materials that will meet approval of governmental authority having jurisdiction.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Weather Limitations: Apply prime coat only when ambient temperature is above 50 degrees F and when temperature has not been below 35 degrees F for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

B. Construct asphalt concrete surface or wearing course for unmodified mixes only when atmospheric temperature is above 45 degrees F and when base is dry. Base course for unmodified mixes may be placed when air temperature is above 40 degrees F and rising.

C. No frozen materials will be permitted. No paving may be applied on frozen surfaces.

PART 2 PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Aggregate for Base Course: According to TDOT 903.05 for crushed stone Type A Base, Grade "D"

C. Aggregate for Hot-Mix Asphalt Surface or Wearing Course: According to TDOT Section 903.1

D. Mineral Filler: ASTM D 242, finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.
   1. The addition of limestone screedings or agricultural-limestone, in a maximum quantity of 20 percent by weight of mineral aggregate may be required to comply with this section. A maximum of five percent mineral filler meeting requirements of TDOT 903.16 may be substituted for an equal quantity of limestone fines.
   2. If mixture does not comply with design criteria, another source of aggregate shall be required.

2.2 ASPHALT MATERIALS

A. Asphalt Cement: Follow TDOT Standards.

B. Primer: Homogeneous, medium curing, liquid asphalt.

C. Tack Coat: Homogeneous, medium curing, liquid asphalt.

D. Water: Potable.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

B. Sand: ASTM D 1073 or AASHTO M 29, Grade Nos. 2 or 3.

C. Joint Sealant: ASTM D 6690 or AASHTO M 324, Type I, hot-applied, single-component, polymer-modified bituminous sealant.

2.4 PAVING MIXES AND MIX DESIGN

A. Use dry materials to avoid foaming. Mix uniformly.

B. Base Course: Zero percent of asphalt cement by weight in mixture according to TDOT 303 Highway Standards.

C. Surface or Wearing Course: 4 - 8 percent of asphalt cement by weight in mixture according to TDOT 411-E (PG 64-22) Highway Standards.

D. Submit proposed mix design of each class of mix for review prior to beginning of work.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify compacted subgrade is dry and ready to support paving and imposed loads.

B. Dress up sub-grade by filling low spots, compacting soft spots and cutting down high areas as necessary to ensure that elevations and grading of sub-grade is correct, to allow specified thicknesses of materials specified to be installed and to meet finished grades indicated on Drawings.

C. Verify gradients and elevations are correct. Establish and maintain required lines and elevations. Beginning of installation means acceptance of substrate.

3.2 PLACING MINERAL AGGREGATE BASE

A. After sub-grade is prepared, install a mineral aggregate base course.

B. Waterbind, apply, and roll base course with not less than a 10-ton roller. Calcium chloride will not be permitted. Construct base course in compacted thickness(es) as indicated on Drawings. Apply base course in two layers of equal thickness, not to exceed 4 inches each. Follow TDOT 303 Highway Standards.

C. Repair damage to subgrade or base before asphalt is installed.

D. Prime coat entire surface of base course as indicated on Drawings.

E. Apply primer according to manufacturer's instructions. Use clean sand to blot excess primer. Apply primer to contact surfaces of curbs and gutters and sidewalk headers. Coat surfaces of manhole and catch basin frames with oil to prevent bonding with asphalt paving.

3.3 PLACING ASPHALT PAVEMENT

A. Place hot-mix asphalt course within 24 hours of priming base surfaces.

B. Place hot-mix asphalt surface or wearing course consisting of minimum compacted thickness(es) as indicated on Drawings. Follow TDOT Section 411 Highway Standards.

C. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

D. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.4 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked

3.5 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Compacted Scheduled Thickness:
   1. If average thickness is deficient by no more than 1/4" and no individual measurement is deficient by more than 5/8", then pavement meets design requirements.
   2. If average thickness is deficient by more than 1/4", or if individual thickness determination is deficient by more than 5/8", then pavement thickness does not meet design requirements.

C. Variation from True Elevation: Within 1/2 inch.

3.6 PATCHING EXISTING PAVEMENT AND CLEAN-UP

A. Restore paved surfaces, concrete curbs and asphalt curbs damaged by construction to meet approval of local authorities having jurisdiction and Designer.

B. Remove debris and clean-up working area.

3.7 FIELD QUALITY-CONTROL

A. Perform inspection and field analysis. One test will be performed for each of the indicated criteria for every 1,000 square yards.

B. Testing Agency: A qualified independent testing and inspecting agency will perform field tests and inspections and prepare test reports.
   1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

D. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

E. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

F. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.
   1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
   2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.8 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury until Substantial Completion.

END OF SECTION

SECTION 321313
PORTLAND CEMENT CONCRETE PAVING

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Exterior Stairs
   2. Concrete Slabs
   3. Curbs and gutters
   4. Walkways
   5. Ramps

1.2 ACTION SUBMITTALS

A. Product Data: Include data on joint filler, admixtures, and curing compounds,.

B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.
   1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
   1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.

C. ACI Publications: Follow ACI 301 and ACI 302.

D. Concrete Testing Service: Engage and pay for a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

E. Obtain cementitious materials from same source throughout.

F. Ensure that ramped or sloped sidewalks are no longer than 30 feet, no steeper than 8.33% with a cross slope (perpendicular to path of travel) is no greater than 2%.

G. Conform to applicable sections of appropriate Department of Transportation for State in which Project is located. In the event of conflicts between this Specification and the appropriate State standards, the State standards shall take precedence.

H. Provide detectable warning devices according to “Draft Public Rights-of-Way Accessibilities Guidelines,” June 17, 2002, ADAAG.
   1. Locate detectable warning surfaces so edge nearest curb line or other potential hazard is 6” minimum to 8” maximum from curb or other potential hazard.
   2. Detectable warnings shall be 24” in direction of travel and extend to width indicated on drawings.

1.4 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 PRODUCTS

2.1 FORMS

A. Plywood, metal, metal-framed plywood, or other panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces; conform to ACI 301. Use flexible or curved forms for curves with a radius 100 feet (30.5 m) or less.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surface.

2.2 REINFORCEMENT

A. Reinforcing Steel: ASTM A615; 60 ksi yield grade; deformed billet steel bars, unfinished.

B. Welded Steel Wire Fabric: Plain type, ASTM A185; in flat sheets or coiled rolls; unfinished.

C. Tie Wire: Annealed steel, minimum 16 gage size.

D. Dowels: ASTM A615; 40 ksi yield grade, plain steel, unfinished.

E. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

F. Hook Bolts: ASTM A307, Grade A (ASTM F568M, Property Class 4.6), internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

G. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.3 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Aggregate for Sub-base Course: According to TDOT 903.05 for crushed stone Type A Base, Grade "D" Highway Standards.

2.4 CONCRETE MATERIALS

A. Cement: ASTM C150 Air Entraining-Type IA, Portland type, gray color.
   1. Fly Ash: ASTM C 618, Class F.

B. Fine and Coarse Aggregates: ASTM C33; Class 4S, uniformly graded.

C. Water: Clean and not detrimental to concrete.

D. Air Entrainment: ASTM C260, 6 percent.

E. Chemical Admixture: ASTM C494, Type A - water reducing type.

2.5 CURING MATERIALS

A. Clear Waterborne Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B.

B. Water: Clean and not detrimental to concrete.

2.6 ACCESSORIES

A. Expansion- and Isolation-Joint Filler:
   1. Processed board product made from granular crumb rubber derived from discarded truck tires and various low density polymer products; 40 pcf density; fully compressible with recovery rate of minimum 95 percent.

B. Sealant: Polyurethane base, ASTM C920, Type S, single component; Grade P, Use T, self-leveling type; moisture curing; withstand movement of plus or minus 50 percent of joint width; Shore A hardness of 15 to 50; non-staining; non bleeding; color as selected by Designer from manufacturer's premium range.

C. Cleaning: Dilute acid etch solution consisting of a 5:1 mixture of water and hydrochloric (muriatic) acid.

2.7 DETECTABLE WARNINGS

A. Detectable Warning Devices, General: Materials shall be an integral part of walking surface and shall contract visually with adjoining surfaces.

B. Size: Truncated domes in a detectable warning surface shall have a base diameter of 0.9” to 1.4” maximum, a top diameter of 50% of base diameter minimum to 65% of base diameter maximum, and a height of 0.2 inches.

C. Alignment: Domes shall be aligned on a square grid in predominate direction of travel to permit wheels to roll between domes.

D. Spacing: Truncated domes shall have a center-to-center spacing of 1.6” minimum and 2.4” maximum, and a base-to-base spacing of 0.65” minimum, measured between the most adjacent domes on square grid.

E. Visual Contrast: Visual contrast between detectable warning and an adjoining surface shall be either light-on-dark or dark-on-light. Material used to provide contrast shall be an integral part of detectable warning surface.

2.8 CONCRETE MIXTURES

A. Mix concrete according to ASTM C94, Alternative 2. Furnish batch certificates for each batch discharged and used in the Work. On site batch mixing will not be permitted.

B. Provide concrete of the following characteristics:
1. Compressive Strength: As indicated on Drawings.
2. Air Entrainment: 5 to 8 percent.
3. Slump Range: 8 inch for concrete with Type A admixture; 3 inch for other concrete.
4. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.

C. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements.

D. Use accelerating admixtures in cold weather only when approved by Designer. Use of admixtures will not relax cold weather placement requirements.

E. Use set-retarding admixtures during hot weather only when approved by Designer.

F. Use calcium chloride only when approved by Designer.

G. Add air entraining agent to concrete mix for concrete work exposed to exterior.

2.9 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

2.10 SOURCE QUALITY-CONTROL

A. Provide mix design.

B. Submit proposed mix design of each class of concrete to appointed firm for review prior to commencement of work.

C. Tests on cement and aggregates will be done to ensure conformance with specified requirements.

D. Test samples according to ACI 301.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted subgrade and granular base are ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

C. Proof-roll prepared sub-base below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.
1. Completely proof-roll sub-base in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a loaded 10-wheel tandem-axle dump truck weighing not less than 15 tons.
3. Sub-base with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch require correction according to requirements in Section 312000 Earthwork.

D. Moisten base to minimize absorption of water from fresh concrete.

E. Notify Designer minimum 24 hours prior to commencement of concreting operations.

F. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 FORMING

A. Place and secure forms to correct location, dimension and profile.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint fillers vertical in position, in straight lines. Secure to formwork during concrete placement.

3.4 STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement. Place steel reinforcement at mid-height of slabs-on-grade.

D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Interrupt reinforcement at contraction joints.

F. Place dowels to achieve slab and curb alignment as detailed.

G. Provide dowelled joints 16 inches o.c. at interruptions of concrete with one end of dowel set in capped sleeve to allow longitudinal movement.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.

B. Place expansion joints at 20 foot intervals or as indicated on the plans to correct elevation and profile. Align curb, gutter and sidewalk joints.

C. Place joint filler between paving components and building or other appurtenances. Recess top of filler 1/2 inch for sealant.

D. Provide hand troweled scored joints at 5 foot intervals, between sidewalks and curbs, between curbs and gutters, and as indicated.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch (6-mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.6 PLACING CONCRETE

A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

H. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.

I. Screed pavement surfaces with a straightedge and strike off.

J. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

K. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.

L. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.

M. Hot Weather Placement: Comply with ACI 305.

N. Cold Weather Placement: Comply with ACI 306.

O. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

P. Place concrete continuously between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

Q. Place concrete to pattern indicated. Hand trowel contraction joints at best time after finishing, leaving a 2inch smooth finish along borders. Cut 1/4 into depth of slab.

3.7 FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

C. Paving: Heavy broom.

D. Sidewalk Paving: Heavy broom, radius to 1/2 inch radius and trowel joint edges.

E. Curbs and Gutters: Heavy broom.

F. Inclined Vehicular Ramps: Broom perpendicular to slope.

G. Place curing compound on exposed concrete surfaces immediately after finishing. Follow manufacturer's instructions.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing..

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
   1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.

c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.9 PAVEMENT TOLERANCES

A. General: Comply with tolerances of ACI 117.

B. Slope (in direction of travel): Plus 0.5 percent, no requirement for minus

C. Cross slope (perpendicular to travel): Plus 0.5 percent, no requirement for minus.

D. Abrupt Changes in Elevation: 1/4 inch, maximum.

3.10 DETECTABLE WARNINGS

A. Prepare substrate surfaces and place or cast detectable warning devices according to indicated requirements and manufacturer's instructions.

B. Build in or apply detectable warnings to ramp from landing to roadway as shown on Drawings. Locate detectable warning surfaces so edge nearest curb line or other potential hazard is 6” minimum to 8” maximum from curb or other potential hazard.

3.11 FIELD QUALITY-CONTROL

A. Testing agency will take cylinders and perform slump and air entrainment tests following ACI 301.

B. One additional test cylinder will be taken during cold weather and be cured on site under same conditions as concrete it represents.

C. One slump test will be taken for each set of test cylinders taken.

D. One air entrainment test will be taken for each set of test cylinders taken.

E. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature and test samples taken. Submit with record documents.

F. Pay for subsequent tests made necessary by failure of work to conform to Contract requirements.

3.12 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section..

B. Drill test cores, where directed by Designer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from premature drying, excessive hot or cold temperatures, mechanical injury, and other damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 321723
PAVEMENT MARKING

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes solvent based, alkyd type, pavement marking paint for use in traffic lanes, parking lots, and barrier lines on bituminous or concrete paving.

1.2 ACTION SUBMITTALS

A. Provide product data on products.

1.3 QUALITY ASSURANCE

A. Applicator: Company specializing in commercial painting and finishing with five years experience.

B. Paint shall be in containers of at least five gallons. Each batch of paint shall be accompanied by a certificate stating compliance with applicable publication.

C. Furnish glass beads in containers suitable for handling and of sufficient strength to prevent loss during shipment. Each batch of beads shall be accompanied by a certificate stating compliance with this section.

D. Conform to applicable sections of appropriate Department of Transportation for State in which Project is located. In the event of conflicts between this Specification and the appropriate State standards, the State standards shall take precedence.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver paint materials in sealed original, labeled containers, bearing manufacturer's name, type of paint, brand name, color designation and instructions for mixing and reducing.

B. Provide adequate storage facilities. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F in well ventilated area or at temperature extremes as recommended by manufacturer.

C. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Install pavement markings when temperatures are between 40 and 110 degrees F or other environmental conditions are within limits as established by manufacturer.

B. Do not apply markings during rain or snow.

PART 2 PRODUCTS

2.1 MATERIALS

A. General: MPI #97 Latex Traffic Marking Paint; color: White.

B. Paint Physical Characteristics:
1. Pigment Content: Between 58% and 65% by weight.
2. Total Non-Volatile Content: 76% minimum by weight.
3. Vehicle Non-Volatile Content: 41% by weight.
4. Viscosity: Between 78 and 95 Kreb units when tested at 77+/- degrees F according to ASTM D562.
5. Drying Time: Dry to a no-tracking condition in 3 – 20 minutes when applied at 15 +/- 1 mil wet film thickness with a bead application rate of 6 lbs/gal, with pavement temperature between 40 and 120 degrees F at 80% RH maximum.
6. Dry Opacity (Contrast Ratio): Minimum of 0.95 per Federal Mtd. Test 141C.

C. Pigmented Binder: Provide homogeneous products containing pigments well dispersed in an oil modified alkyd vehicle; properly formulated and manufactured from first grade materials; free of defects that might adversely affect application and serviceability of finished product.

D. Provide well ground binder that will not settle excessively or cake in container, thicken, thin, liver or curdle or otherwise change in consistency while in storage; nor form a skin when stored in full tightly sealed containers.

E. Provide product that can receive and hold glass beads for producing reflectorized traffic markings.

F. Primer/Sealer: As recommended by coatings manufacturer.

G. Glass Beads: Provide product which meets or exceeds requirements of AASHTO M 247 Floatation.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify that substrate conditions are ready to receive work as instructed by product manufacturer.

B. Examine surfaces scheduled to be painted prior to commencement of work. Report any condition that may potentially affect proper application. Do not commence until such defects have been corrected.

3.2 PREPARATION

A. Correct minor defects and clean surfaces which affect work of this Section.

B. Asphalt Pavement: Allow asphalt to age as recommended by manufacturer. Remove foreign particles to permit adhesion of finishing materials. Apply compatible sealer or primer.

C. Concrete Pavement: Allow concrete to cure as recommended by manufacturer. Remove contamination. Remove laitance by use of acid etching. Apply liberally, then rinse thoroughly by scrubbing with fresh water and allow to dry. Ensure required acid-alkali balance is achieved. Remove form release oils and bond breakers by sandblasting before applying coatings.

D. Beginning of installation means acceptance of existing substrate.

3.3 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration. Repair damage to other surfaces caused by work of this Section.

B. Furnish shields and protective methods to prevent spray or droppings from disfiguring other surfaces.

C. Remove empty paint containers from site.

3.4 APPLICATION

A. Apply products according to manufacturer's instructions. Do not apply finishes on surfaces that are not dry.

B. Apply coat or coats as required to meet indicated minimum dry film thickness to uniform consistency. Allow each coat of finish to dry before following coat is applied, unless directed otherwise by manufacturer.

C. Do not apply paint over chalk line, wire or cord. Offset guide marks to line to be painted.

D. Do not apply paints to areas of pavement when moisture remains on surface, or wind conditions are such as to cause a film of dust to be deposited on line areas after these areas have been prepared for painting.

E. At areas to receive reflectorized appearance, apply drop-on glass beads to painted surfaces at rate of not less than 6 lbs per gallon of paint applied.

F. Apply products to achieve general appearance of clearly delineated lines and areas with minimum crooked and waving appearance, due consideration being given to contours an roughness of pavement.

3.5 CLEANING

A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered. Using a permanently opaque paint product identical in color to surface on which paint was applied, block out and eliminate traces of splashed, tracked and spilled pavement marking paint from background surfaces.

B. During progress of work maintain premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris.

C. Collect cotton waste, cloths and material which may constitute a fire hazard, place in closed metal containers and remove from site daily.

D. Upon completion of work leave premises neat and clean.

3.6 PROTECTION

A. Protect finished installation.

B. Provide traffic cones, barricades and other devices needed to protect paint until it is sufficiently dry to withstand traffic. Damaged portions of markings shall be effaced and replaced by Contractor at no additional cost to Owner.

END OF SECTION

SECTION 323113
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following.
   1. Chain-Link Fences: Industrial.
   2. Gates: Swing.
   3. Concrete post concrete fill.

1.2 ACTION SUBMITTALS

A. Product Data:
   1. Fence and gate posts, rails, and fittings.
   2. Chain-link fabric, reinforcements, and attachments.
   3. Gates and hardware.

B. Submit proposed mix design per Chapter 5 of ACI 318-95 for each class of concrete to Designer for review prior to commencement of work. Report should be not more than six months old.

1.3 QUALITY ASSURANCE

A. In general conform to standards of the CLFMI.

B. Installation: ASTM F567 and as indicated.

C. All welds on gate frames shall conform to Welding Procedure Specification and Procedure Qualification Record to insure conformance to AWS D1.2 Structural Welding Code.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site, store and protect products.

B. Protect wire fabric from moisture in transit, in storage and prior to installation by covering with water resistant covering.

PART 2 PRODUCTS

2.1 FENCE FABRIC MATERIALS

A. Fence Fabric: Commercial grade woven wire fabric 2 inch diamond mesh steel wire, interwoven, with core wire of 9 gage, 0.148 inch diameter, 1,290 pounds breaking load. Fabrics shall be knuckled at both selvages. Twisted selvages will not be permitted.
   1. ASTM A392, Class 1 zinc coating, galvanized after weaving, 1.2 oz/sf of uncoated wire surface..

B. Primer for Galvanized Touch-up: Organic zinc rich primer; lead and chromate free; 45% solids by volume minimum; 82% minimum metallic zinc content by weight in dry applied film; 3.49 maximum lbs/gal VOC; color to match adjacent area.

2.2 FRAMING MATERIALS

A. Framework: Type II, ASTM F1043, cold-formed, steel pipe; minimum yield strength of 50,000 psi. Coat external surfaces with a 1.0 +/- 0.1 oz/sf coating of zinc, 30 +/-15 micrograms of chromate per square inch and clear, high performance, verifiable polymer. Coat internal surfaces per ASTM F1234, Type B, zinc 0.9 oz/sf minimum or Type D, zinc-rich based organic coating having a 91 per cent zinc powder loading, 0.3 mils thick minimum.

2.3 CONCRETE MIX

A. Concrete: ASTM C94, Alternative 2; normal Portland Cement; 3000 psi at 28 days; 3 inch slump; 3/4 inch sized aggregate.

2.4 COMPONENTS

A. Intermediate Line Posts: Steel pipe in sizes as follows:
   1. Up to 6'-0" High Fabric: 2.00 inch minimum outside diameter.
   2. Up to 8'-0" High Fabric: 2.38 inch minimum outside diameter.
   3. Over 8'-0" up to 12’-0” High Fabric: 2.88 inch minimum outside diameter.

B. End, Corner and Terminal or Pull Posts: Steel pipe in sizes as follows:
   1. Up to 6'-0" High Fabric: 2.38 inch minimum outside diameter.
   2. Over 6'-0" up to 12’-0” High Fabric: 2.88 inch minimum outside diameter.

C. Top, Bottom, and Brace Rail: 1.66 inch diameter, plain end, sleeve coupled steel pipe.

D. Tension Wire: ASTM A824; Marcelled (spiralled or crimped) 7 gage minimum thickness steel, single strand, Type I aluminum coating of 0.40 oz per sq ft or Type II zinc coating of 1.20 oz per sq ft.

2.5 ACCESSORIES

A. Caps: Cast steel or malleable iron, galvanized; sized to post dimension, set screw retained; designed, built, and installed to exclude moisture from posts.

B. Sleeves, Bands, Clips, Rail Ends, Tension Bars, Fasteners and Fittings: Galvanized steel; ASTM F626; peen ends of bolts or score threads to prevent removal.

C. Wire Ties: ASTM F626; 9 gage aluminum or 11 gage galvanized steel wire.

D. Hinges: One hundred eighty degree gate hinges per leaf of adequate strength for gate and with large bearing surfaces for clamping in position.
   1. Provide hinges that are self-closing (spring-loaded), tension adjustable, made from non-corrosive materials, and warranted against rust, binding, sagging and staining.

E. Latches: Plunger bar arrangement to use center stop except that for single gate openings 10'-0" wide and less a fork type latch may be provided. Arrange latches for locking; accessible from both sides of gate.
   1. Provide latches that have no resistance to closing; incapable of resting on latching mechanisms; cannot be locked in “open” position; vertically and horizontally adjustable; unable to be opened with implements such as popsicle sticks, pencils, or screwdrivers; cannot be disengaged by pulling, shaking or twisting gate; release knob works independent or latch bolt.

F. Stops: Provide a center stop consisting of a device arranged to be set in concrete and to use plunger bar of latch of double gates.

G. Fence Signs: None permitted.

2.6 SWING GATES

A. Swing Gates: Comply with ASTM F 900 for swing gate types.
   1. Metal Pipe and Tubing: Galvanized steel; comply with ASTM F 1043 and ASTM F 1083 for materials and protective coatings.

B. Gates with Latches: If latching device is less than 54" from gate bottom, locate release mechanism 3" below gate top on side facing pool. If fence is 60" tall or higher, install latching device 54" from gate bottom. Gate and fence shall have no opening greater than 1/2" within 18" of latch release.

C. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 900 and the following:
   1. Gate Fabric Height: 2 inches (50 mm) less than adjacent fence height.
   2. Leaf Width: As indicated.
   3. Frame Members: Tubular steel, 1.66 inches (42 mm) round for 6’-0” wide or less; 1.90 inches (48 mm) round for over 6’-0” wide.

D. Frame Corner Construction: Welded and 5/16-inch- (7.9-mm-) diameter, adjustable truss rods for panels 5 feet (1.52 m) wide or wider. Touch up welds with zinc rich paint per ASTM F900.

E. Gate Filler: Chain link fence as specified in this Section. Gate filler shall extend entire gate length (including clear opening and counterbalance) and shall be secured at each end of gate frame by

standard fence industry tension bars and tied at each vertical member with standard fence industry ties. Welding will not be permitted for attachment of fence fabric to frames.

F. Hardware: Latches permitting operation from both sides of gate, hinges, center gate stops and keepers for each gate leaf more than 5 feet (1.52 m) wide. Fabricate latches with integral eye openings for padlocking; padlock not included; padlock accessible from both sides of gate.

G. Swing Gate Posts: Steel pipe in sizes as follows:
1. Up to 6'-0" Wide Gate Leaf: 2.88 inch minimum outside diameter, 4.64 lb/ft minimum weight.
2. Up to 13'-0" Wide Gate Leaf: 4.00 inch minimum outside diameter, 8.65 lb/ft minimum weight.
3. Up to 18'-0" Wide Gate Leaf: 6.63 inch minimum outside diameter, 18.02 lb/ft minimum weight.
4. Up to 23'-0" Wide Gate Leaf: 8.63 inch minimum outside diameter, 27.12 lb/ft minimum weight.

2.7 FABRICATION TOLERANCES

A. Nominal Height of Fabric: Plus or minus one inch.

B. Mesh Size: Plus or minus 1/8 inch.

C. Wire Diameter: Plus or minus 0.005 inch; decided as average of two readings measured to nearest 0.001 inch taken at right angles to each other on straight portion of parallel sides of mesh.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install framework, fabric, accessories and gates according to ASTM F567 and more stringent requirements specified.

B. Provide fence of height indicated.

C. Space line posts at intervals not exceeding 10 feet.

D. Set posts plumb, in concrete footings, with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.
1. Footing Diameter: Four times largest cross section of post.
2. Footing Depth Below Finish Grade: 24 inches plus an additional 3 inches for each 1'-0" increase in fence height over 4'-0."

E. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

F. Bottom Rails: Install, spanning between posts.

G. Brace each gate, corner, pull and end post back to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail, one bay from end and gate posts.

H. Install center and bottom brace rail on corner posts.

I. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567. Locate terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more and at intervals of 400 feet maximum.

J. Install fabric on side of fence toward playfields in one, continuous piece without joints of any kind.

K. Position bottom of fabric 2 inches above finished grade.

L. Fasten fabric to top rail, braces and bottom tension wire with wire ties spaced at maximum 24 inches on center. Fasten fabric to line posts with wire ties maximum 14 inches on center. Bend end of wire ties to minimize hazard to persons and clothing.

M. Attach fabric to end, corner and gate posts with 3/16 by 3/4 inch tension bars and heavy 11 gage tension bar clips spaced 14 inches on center. Attach fabric to top rail at 24 inches on center.

N. Install bottom tension wire stretched taut between terminal posts.

O. After installation, touch-up field cuts, scratched and damaged surfaces with primer. Touch-up damage to galvanized components with zinc-based paint according to ASTM A780.

3.2 GATE INSTALLATION

A. Install gates with fabric to match fence. Install latch, catches, drop bolt, foot bolts and sockets, torsion spring retainer, retainer and locking clamp, and three hinges per leaf.

B. Provide concrete center drop to foundation depth and drop rod retainers at center of double gate openings.

END OF SECTION

SECTION 323119
ORNAMENTAL METAL FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following.
   1. Steel ornamental fences, 7'-0" high.
   2. Manually operated swinging gates.
   3. Concrete post concrete fill footings.

1.2 ACTION SUBMITTALS

A. Submit shop drawings and product data. Include plan layout, grid, spacing of components, accessories, fittings, hardware, anchorages and schedule of components.

B. Product Data:
   1. Fence and gate posts, rails, and fittings.
   2. Gates and hardware.

C. Samples: Provide samples 12 inches (300 mm) in length for linear materials.

1.3 QUALITY ASSURANCE

A. Provide fence framework and related accessories as a complete system, as the products of a single manufacturer and as material produced inside the United States.

B. Completed sections (i.e., panels) shall be capable of supporting a 600 lb. load applied at midspan without permanent deformation. Panels shall be biasable to a 25% change in grade.

PART 2 PRODUCTS

2.1 ACCEPTABLE FENCE MANUFACTURER

A. "Montage II Genesis," Ameristar Fence Products, Inc., Tulsa, OK (basis of design)

B. Iron World Manufacturing, LLC, Laurel, MD.

C. Jamieson Manufacturing, Co., Dallas, TX.

D. Master Halco, Inc., La Habra, CA.

E. Omega II Fence Systems, Quebec, Canada.

F. Substitutions: None permitted.

2.2 FENCE MATERIALS – STEEL

A. Steel Fence Framework (Pickets, Rails, and Posts): Coil steel having a minimum yield strength of 45,000 psi. steel shall be galvanized to meet requirements of ASTM A526 or ASTM A653 with a minimum zinc coating weight of 0.90 ounces per square foot (coating Designation G-90), hot-dip process.

B. Fence Pickets: Tubing, 1" square x 16 gage. Cross-sectional dimensions shall be 1.75" square and a minimum thickness of 14 gage. Post spacing shall be as shown on Drawings. Picket retaining rods shall be 0.125" dia. galvanized steel. Rubber grommets shall be supplied to seal all picket-to-rail intersections. Provide PVC grommets to seal picket-to-rail intersections.

C. Fence Posts: Minimum 4" square x 12 gage

D. Finish: Galvanized framework shall be given a six stage pretreatment/wash (with zinc phosphate) followed by an electrostatic spray application of a two coat powder system. Base coat shall be a thermosetting epoxy powder coating with a minimum thickness of 2-4 mils. Top coat shall be a "no-mar" TGIC polyester powder coat finish with a minimum thickness of 2-4 mils. Color shall be as selected by Designer from manufacturer's premium range. Coated galvanized framework shall have a salt spray resistance of 3,500 hours using ASTM B117 without loss of adhesion.

2.3 SWING GATES

A. Swing Gates: Comply with ASTM F 900 for swing gate types as shown.
   1. Metal Pipe and Tubing: Galvanized steel; comply with ASTM F 1043 and ASTM F 1083 for materials and protective coatings.

B. Gates with Latches: If latching device is less than 54" from gate bottom, locate release mechanism 3" below gate top on side facing pool. If fence is 60" tall or higher, install latching device 54" from gate bottom. Gate and fence shall have no opening greater than 1/2" within 18" of latch release.

C. Frames and Bracing: Fabricate members from square, galvanized steel tubing with outside dimension and weight according to ASTM F 900 and the following:
   1. Gate Height: As indicated.
   2. Leaf Width: As indicated.

D. Frame Corner Construction: Welded and 5/16-inch- (7.9-mm-) diameter, adjustable truss rods for panels 5 feet (1.52 m) wide or wider. Touch up welds with zinc rich paint per ASTM F900.

E. Gate Filler: Same fence material as specified in this Section. Gate filler shall extend entire gate length (including clear opening and counterbalance) and shall be secured at each end of gate frame and at each vertical member with manufacturer's recommended method.

F. Hardware: Latches permitting operation from both sides of gate, hinges, center gate stops and keepers for each gate leaf more than 5 feet (1.52 m) wide. Fabricate latches with integral eye openings for padlocking; padlock not included; padlock accessible from both sides of gate.

2.4 FENCE ACCESSORIES

A. Fence Fasteners: Stainless steel; size and type to suit condition; heads painted to match fence. Aluminum or carbon steel nails and fasteners will not be permitted.

B. Anchors: Toggle bolt type for anchorage to hollow masonry, expansion shield type for anchorage to solid masonry or concrete, or bolts or ballistic fasteners for anchorage to steel as applicable.

2.5 CONCRETE MIX

A. Concrete: ASTM C94, Alternative 2; normal Portland cement; 2500 psi at 28 days; 3 inch slump; 0.75 inch sized aggregate.

2.6 FABRICATION

A. When horizontal members are less than 45" apart, spacing of vertical pickets shall not exceed 1-3/4" in width.

B. When horizontal members are greater than 45" apart, spacing of vertical pickets shall not permit the passage of a 4" diameter sphere.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install framework accessories and gates according to approved shop drawings and manufacturer's written instructions.

B. Construct framing members full length without splices unless approved by Designer.

C. Provide fence of height indicated.

D. Set terminal, gate and line posts plumb, in a gravel footing, and then install concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.. Provide footing depth below finish grade as indicated on Drawings or the following whichever is more strict.
   1. Footing Diameter: Four times largest cross section of post.
   2. Footing Depth Below Finish Grade: 24 inches plus an additional 3 inches for each 1'-0" increase in fence height over 4'-0."

E. Distribute concrete evenly around posts, periodically kneading them to work out air pockets. Overfill hole and form a concrete collar sloping away from post.

F. Provide concrete center drop to foundation depth and drop rod retainers at center of double gate openings.

3.2 GATE INSTALLATION

A. Install gates to match fence. Install latch, catches, drop bolt, foot bolts and sockets, torsion spring retainer, retainer and locking clamp, and three hinges per leaf.

3.3 TOLERANCES

A. Set line, corner, terminal and gate posts plumb to within 5 degrees, (+/- 1 degree) in two planes.

B. Set corner, terminal and gate posts to resist 70 pound force applied to top of post with no more than 1 inch deflection.

C. Set line posts to resist 38 pound force applied to top of post with no more than 1 inch deflection.

D. Set line and gate posts to correct position plus or minus ½ inch.

END OF SECTION

SECTION 329201
SEEDING

PART 1 GENERAL

1.1 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.2 QUALITY ASSURANCE

A. Soil-Testing Laboratory Qualifications: An independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.

B. Bulk Materials:
   1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   3. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

1.4 PROJECT CONDITIONS

A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

B. Permanent seed shall be spread within seven (7) days of attaining final grades. Verify recommended application periods for seed mixture.

1.5 MAINTENANCE SERVICE

A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than 20 days from date of substantial completion.

PART 2 PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Mixture for Tennessee: Grass mixture of 90% turf type tall fescue, 10% rye; Turf Type Tall fescue seed shall be any variety listed in the top 25 from the 2010 National Turfgrass Evaluation Program.

2.2 FERTILIZERS

A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
   1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.3 PLANTING SOILS

A. Topsoil: ASTM D5268,natural, fertile, agricultural soil typical of locality, that sustain vigorous plant growth, from well drained site free of flooding, not in frozen or muddy condition, not less than 6 percent organic matter and pH value of 5 to 7.0. Free from deleterious materials such as lead, subsoil, slag, clay, stones 1 inch (25 mm) or larger in any dimension, lumps, live plants, roots, sticks, weeds, broken glass, paint chips, plastic, and other foreign matter to the extent indicated.
   1. Topsoil Source: Reuse surface soil stockpiled on-site. Amend existing in-place surface soil to produce topsoil. Verify suitability of stockpiled surface soil to produce topsoil.
   2. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient.
   3. Soluable salts shall be no higher than 500 parts per million.
   4. Topsoil shall not contain more than15% by volume of gravel, stones, and rocks.
   5. Materials passing the No. 4 (4.75 mm) sieve
      a. Organic material: 2 to 20
      b. Sand content: 20 to 60
      c. Silt and clay content: 35 to 70
   6. Total permissible deleterious materials: 5% by mass.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

2.5 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

C. Erosion-Control Mats: Cellular, non-biodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of 3-inch (75-mm) nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
   3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. Limit turf subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make change in grade gradual. Blend slopes into level areas.

1. Protect existing underground improvements from damage.
2. Remove foreign materials, undesirable plants and their roots, stones 1 inch (25 mm) or larger in any dimensionand debris, from site. Do not bury foreign material. Remove rocks larger than one inch particle size.
3. Remove contaminated subsoil and foreign materials collected during cultivation
4. Cultivate to depth of 3 inches, area to receive topsoil. Repeat cultivation in areas where equipment has compacted subgrade.
5. Spread topsoil to depth of 6 inches over area to be seeded. Place during dry weather and on dry, unfrozen subgrade. Provide imported topsoil if a sufficient quantity is not available on site.
6. Cultivate topsoil to depth of 6 inches with mechanical tiller. Cultivate inaccessible areas by hand. Rake until surface is smooth.

C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
2. Loosen surface soil to a depth of at least 6 inches (150 mm). Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches (100 mm) of soil. Till soil to a homogeneous mixture of fine texture.
3. Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, trash, and other extraneous matter.
4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.

D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
1. Do not use wet seed or seed that is moldy or otherwise damaged.
2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

B. Sow seed at a total rate of 5 lb/1000 sq. ft. (0.9 kg/92.9 sq. m).

C. Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly, and water with fine spray.

D. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre (42 kg/92.9 sq. m) to form a continuous blanket 1-1/2 inches (38 mm) in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

3.5 MAINTENANCE

A. Mow grass at regular intervals to maintain at a maximum height of 4 inches. Do not cut more than 1/3 of grass blade at any one mowing.

B. Neatly trim edges and hand clip where necessary.

C. Immediately remove clippings after mowing and trimming.

D. Watering shall be started immediately after completing each day of installing seed. Water shall be applied at least 3 times per week to supplement rainfall, at a rate sufficient to ensure moist soil conditions to a minimum depth of 1 inch. Run-off, puddling, and wilting shall be prevented. Unless otherwise directed, watering trucks shall not be driven over turf areas. Watering of other adjacent areas or plant material shall be prevented.

E. Roll surface to remove minor depressions of irregularities.

F. Control growth of weeds. Apply herbicides according to manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

G. Immediately replace seed to areas showing root growth failure, deterioration, bare or thin spots and eroded areas.

H. Protect seeded areas with warning signs during maintenance period.

3.6 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

C. Remove non-degradable erosion-control measures after grass establishment period.

END OF SECTION

SECTION 329223
SODDING

PART 1 GENERAL

1.1 ACTION SUBMITTALS

A. Submit data for grass species and location of grass source. Include classification, botanical name, common name, mixture percentage of species, percent purity, quality grade, field location and state certification.

1.2 QUALITY ASSURANCE

A. Turfgrass SOD Producer: Company specializing in turfgrass sod production and harvesting with minimum five years experience and certified by the State in which Project is located.

B. Turfgrass Sod: Minimum age of 18 months, with root development that will support its own weight, without tearing, when suspended vertically by holding the upper two corners. Each shipment of turfgrass sod shall be accompanied by an invoice or sales slip indicating whether the material is of a single variety, a blend, or a mixture and the quality.

1.3 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle products of this Section.

B. Deliver turfgrass sod in rolls. Protect exposed roots from dehydration.

C. Do not deliver more turfgrass sod than can be laid within 24 hours. Do not lay turfgrass sod more than 36 hours old.

1.5 MAINTENANCE SERVICE

A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than 20 days from date of substantial completion.

PART 2 PRODUCTS

2.1 MATERIALS

A. Turfgrass Sod: Approved Number 1 Quality/Premium, including limitations on thatch, weeds, diseases, nematodes, and insects, complying with TPI's "Specifications for Turfgrass Sod Materials" in its "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted. “Field turfgrass sod” and “pasture turfgrass sod” will not be permitted. “Commercial grade” turfgrass will be permitted if it meets the mowing and density requirements of Number 1 sod and contains no more than 10 percent undesirable species and no more than 10 weeds per 50 square feet.

B. Grass Types: Refer to Section 329201.

C. Topsoil: Refer to Section 329201.

D. Fertilizer: Refer to Section 329201.

E. Water: Clean, fresh and free of substance or matter which could inhibit vigorous growth of grass.

2.2 ACCESSORIES

A. Wood Pegs: Softwood; sufficient size and length to ensure anchorage of sod on slope.

2.3 HARVESTING SOD

A. Machine cut turfgrass sod and load for transport according to ASPA guidelines.

B. Cut turfgrass sod approximately 18" wide by 3'-0" long, with minimum 1/2 inch and maximum one inch topsoil base.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify that prepared soil base is ready to receive the work of this Section.

B. Beginning of installation means acceptance of existing site conditions.

3.2 PREPARATION OF SUBSOIL

A. Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make change in grade gradual. Blend slopes into level areas.

B. Remove, foreign materials and undesirable plants and their roots. Do not bury foreign material beneath areas to be sodded. Remove contaminated subsoil. Remove rocks larger than one inch particle size.

C. Scarify subsoil to a depth of 4 inches, where topsoil is to be placed. Repeat cultivation areas where equipment has compacted subgrade.

3.3 PLACING TOPSOIL

A. Spread topsoil to a minimum depth of 4 inches over area to be sodded.

B. Place topsoil during dry weather and on dry, unfrozen subgrade.

C. Remove vegetative matter and foreign non-organic material while spreading.

D. Grade to eliminate rough, low or soft areas where ponding may occur according to Section 312000.

E. Remove small loose rocks, stones 1 inch (25 mm) or larger in any dimension and debris, using a mechanical rock remover, and dispose of offsite.

3.4 SOIL AMENDMENTS

A. Apply fertilizer according to manufacturer's instructions and as indicated by soil tests.

B. Apply after smooth raking of topsoil and prior to installation of turfgrass sod.

C. Apply fertilizer 3 - 7 days before laying turfgrass sod.

D. Mix thoroughly into upper 2 inches of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.5 LAYING SOD

A. Moisten prepared surface immediately prior to laying turfgrass sod to wet soil 6 inches deep. Do not lay turfgrass sod on dry soil.

B. Lay turfgrass sod immediately on delivery to site to prevent deterioration.

C. Lay turfgrass sod tight with no open joints visible and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap turfgrass sod pieces.

D. Lay smooth. Align with adjoining grass areas. Place top elevation of turfgrass sod 1/2 inch below adjoining paving and curbs.

E. Where turfgrass sod is used on slopes 3:1 and steeper and at ditch linings, lay turfgrass sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of turfgrass sod.

F. Prior to placing turfgrass sod, on slopes exceeding 8 inches per foot or where indicated, place wire mesh over topsoil. Securely anchor in place with wood pegs sunk firmly into ground.

G. Water sodded areas immediately after installation. Saturate turfgrass sod to 4 inches of soil.

H. After turfgrass sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities. Roll sodded areas in two directions perpendicular to each other with roller weighing a minimum of 200 pounds.

3.6 MAINTENANCE

A. Mow grass at regular intervals to maintain at a maximum height of 4 inches. Do not cut more than 1/3 of grass blade at any one mowing.

B. Neatly trim edges and hand clip where necessary.

C. Watering shall be started immediately after completing each day of installing turfgrass sod. Water shall be applied at least 3 times per week to supplement rainfall, at a rate sufficient to ensure moist soil conditions to a minimum depth of 1 inch. Run-off, puddling, and wilting shall be prevented. Unless otherwise directed, watering trucks shall not be driven over turf areas. Watering of other adjacent areas or plant material shall be prevented.

D. Roll surface to remove minor depressions of irregularities.

E. Top dress with fine sand after laying turfgrass sod if gaps and voids are present. Drag sodded areas after top dressing to fill voids in seams.

F. Control growth of weeds. Apply herbicides according to manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

G. Immediately replace turfgrass sod to areas showing root growth failure, deterioration, bare or thin spots and eroded areas.

H. Protect sodded areas with warning signs during maintenance period.

END OF SECTION

SECTION 334100
STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.1 SUBMITTALS FOR REVIEW

A. Shop Drawings: Submit shop drawings indicating conduit sizes, locations, elevations and slopes for horizontal runs. Include details of manholes, underground structures, metal accessories, fittings and connections.

B. Product Data: Provide data indicating pipe, pipe accessories and gaskets.

1.2 PROJECT RECORD DOCUMENTS

A. Accurately record location of pipe runs, connections, catch basins, cleanouts and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.3 FIELD MEASUREMENTS

A. Verify that field measurements and elevations are as indicated.

PART 2 PRODUCTS

2.1 SEWER PIPE MATERIALS

A. Polyvinyl Chloride Pipe: ASTM D3034, Type PSM, SDR 35, bell and spigot style with resilient gasket complying with ASTM D1869.

1. Minimum Pipe Stiffness (F/AY) at 5 percent Deflection: 46 psi for sizes when tested according to ASTM D2412.

2. Minimum thickness shall be as follows:

NOMINAL SIZE	MIN WALL THICKNESS
6	0.180"
8	0.240"
10	0.300"
12	0.360"

B. High Density Polyethylene (HDPE) Pipe: AASHTO M-294 or ASTM F667; circumferentially corrugated; with resilient gaskets.

2.2 PIPE ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

B. Filter Fabric: Non-biodegradable, high modulus, non-woven fabric; designed for use under rip rap armor stone protection systems; 4.5 ounce per square yard; 105 lbs grab strength per ASTM D4632-86; 50 percent elongation per ASTM D4632-86; 40 lb trapezoid tear strength per ASTM D4533-86; 210 psi Mullen burst strength per ASTM D3786-87; 65 lbs puncture strength per ASTM D4833-86; 45 mils thick; 170 gal/min/sf water flow rate per ASTM D4491-85.Water pervious type.

C. Lean Concrete:

1. Cement: ASTM C150 normal - Type 1 Portland.

2. Fine and Coarse Aggregates: ASTM C33.

3. Water: Clean and not detrimental to concrete.

4. Mix concrete to a compressive strength (28 days) of 3,000 psi according to ASTM C94, Alternative 2.

2.3 CATCH BASINS

A. Lid and Frame: Cast iron construction, traffic bearing,

1. Lid Design: As shown.

2. Nominal Lid and Frame Size: Size as indicated on Drawings.

B. Catch Basin Construction: Reinforced precast concrete pipe sections, lipped male/female dry joints, nominal size as indicated on Drawings.

2.4 CLEAN OUTS

A. Gray-Iron Cleanouts: 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,

1. Nominal Lid and Frame Size: Size as indicated on Drawings.

2.5 PLASTIC, CHANNEL DRAINAGE SYSTEMS

A. Description, General: Modular system of plastic channel sections, grates, and appurtenances; designed so grates fit into frames without rocking or rattling. Include number of units required to form total lengths indicated.

B. PE Systems: Include the following components:

1. Channel Sections: Interlocking-joint, PE modular units, 12 inches wide, with end caps. Include rounded bottom, with level invert and with outlets in number, sizes, and locations indicated.
2. Grates: Heel Proof longitudinal ductile iron, Class E rating.
3. Color: Gray, unless otherwise indicated.
4. Drainage Specialties: Include the following PE components:
   a. Catch Basins: 24-inch- square plastic body, with outlets in number and sizes indicated. Include PE slotted grate

2.6 BEDDING MATERIALS

A. Bedding: Drainage fill as specified in Section 312000.

2.7 MANHOLE MATERIALS

A. Manhole Sections: Reinforced precast concrete, ASTM C478, with ASTM C923, gaskets.

B. Non-Shrink Grout: ASTM C1107, Corps of Engineers CRD-C621, non-metallic aggregate, cement, water reducing and plasticizing agents; non-gaseous; consistency as needed for use; 5000 psi minimum compressive strength at 28 days in fluid consistency.

C. Reinforcement: Formed steel wire, 9 gage thick, galvanized finish.

D. Lid and Frame: ASTM A48, Class 30B Cast iron construction, machined flat bearing surface, removable lockable lid, closed lid design; sealing gasket; lid molded with the words, "STORM SEWER." Fabricate castings free from blow holes, shrinkage, distortion, or other defects. Coat castings with an asphalt paint.

E. Manhole Steps: Formed aluminum rungs; 3/4 inch diameter. Formed integral with manhole sections.

F. Base Pad: Cast-in-place concrete of type specified, leveled top surface.

G. Strap Anchors: Zee-shaped bent steel shape, 1-1/2 inch wide x 1/4 inch thick x 24 inches long with a 2 inch 90 degree bend at each end, hot dip galvanized to ASTM A123 finish.

H. Drop Inlet Assemblies: Stacks placed adjacent to manhole supported by poured concrete, as indicated on Drawings.

I. Shaft Construction: Concentric with concentric cone top section; lipped male/female dry joints; sleeve to receive pipe and related sections.

J. Shape: Cylindrical.

K. Clear Inside Dimensions: 48 inch diameter, minimum, unless indicated otherwise.

L. Design Depth: As indicated.

M. Clear Lid Opening: As indicated.

N. Pipe and Conduit Entry: Provide openings as indicated.

O. Steps: As indicated.

2.8 CONCRETE MATERIALS

A. Form Materials: Conform to ACI 301.

B. Reinforcing Steel: ASTM A615, 60 ksi yield grade, billet steel deformed bars; uncoated finish.

C. Welded Steel Wire Fabric: Plain type, ASTM A185; uncoated finish.

D. Cement: ASTM C150 normal - Type 1 Portland.

E. Fine and Coarse Aggregates: ASTM C33.

F. Water: Clean and not detrimental to concrete.

G. Air Entraining Admixture: ASTM C260, with the following limits: 3 percent for maximum 2 inch aggregate, 5 percent for maximum 3/4 inch aggregate and 6 percent for maximum 2 inch aggregate.

H. Concrete Used for Water/Sewer Work: Such as manholes and manhole bases, encasement of sewer lines, man-hole drop connections and inverts, catch basin base pads, valves bases for PVC pipe and cleanout base pads.

1. Minimum Cement Content: 5.0 bags (470 lbs.) per cubic yard.

2. Minimum 28-Day Compressive Strength: 3,000 psi - average of any three cylinders.

3. Slump: 4 to 6 inches.

I. Add air entraining agent ASTM C260 to mix for concrete exposed to freeze-thaw cycling.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine areas and conditions under which storm sewer system work is to be installed. Notify Architect/Engineer in writing of conditions detrimental to proper and timely completion of the work.

B. Verify that trench cut is ready to receive work and excavations, dimensions and elevations are as indicated on layout drawings.

C. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

D. Inspect pipe before installation to detect any apparent defects. Mark defective materials with white paint and promptly remove from site.

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate or lean concrete.

B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

C. After inspection and at least 48 hours before installation, apply a high-build bituminous coating to external surfaces of cast iron soil pipe. Apply in a single coat according to manufacturer's instructions to attain a dry-film thickness of not less than 12 mils.

D. Beginning of installation means acceptance of existing conditions.

3.3 BEDDING

A. Excavate pipe trench according to Section 312000 for Work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place bedding material at trench bottom, level materials in continuous layers not exceeding 6 inches compacted depth.

C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 CONCRETE WORK

A. Verify lines, levels and measurement before proceeding with formwork. Hand trim sides and bottom of earth forms; remove loose dirt. Align form joints. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts.

B. Provide formed openings where required for work to be embedded in and passing through concrete members. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts. Install concrete accessories straight, level and plumb.

C. Place, support and secure reinforcement against displacement. Locate reinforcing splices where indicated and required. At splices lap reinforcing steel 30 bar diameters with 2'-0" minimum and wire together.

D. Place concrete according to ACI 301. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads. Remove formwork progressively and according to code requirements.

3.5 INSTALLATION - PIPE

A. Install plastic pipe, fittings and accessories according to manufacturer's instructions. Seal joints watertight.

B. Lay pipe beginning at low point of a system, true to grades and alignment indicated with unbroken continuity of invert.

C. Place bell ends or groove end of pipe facing upstream.

D. Install gaskets according to manufacturer's instructions for use of lubricants, cements and other special installation requirements.

E. Clear interior of pipe of dirt and other superfluous material as work progresses. Maintain a swab or drag in the line and pull past each joint as it is completed. In large, accessible pipe, brushes and brooms may be used for cleaning.

F. Place plugs in ends of uncompleted pipe at end of the day or whenever work stops.

G. Flush lines between manholes if required to remove collected debris.

H. Connect roof drains to storm drain.

I. Install trace wire continuous; buried 6 inches below finish grade, above pipe line; coordinate with Section 312000.

3.6 CLOSING ABANDONED UTILITIES

A. Close open ends of abandoned underground utilities which are indicated to remain in place. Provide sufficiently strong closures to withstand any hydrostatic or earth pressure which may result after ends of abandoned utilities have been closed.

1. Close open ends of concrete or masonry utilities with not less than 8 inch thick brick masonry bulkheads.

2. Close open ends of pipe with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type material being closed. Wood plugs are not acceptable.

3.7 TAP CONNECTIONS

A. Make connections to existing pipes and underground structures, so that Work will conform as nearly as practicable to requirements specified for new work.

B. Use commercially manufactured wyes for branch connections. Field cutting into pipe will not be permitted. Spring wyes into existing line and encase entire wye, plus 6 inch overlap, with not less than 6 inch of 3000 psi 28-day compressive strength concrete.

C. Branch connections made from side into existing 12 inch to 21 inch pipe shall have a wye sprung into existing line and entire wye encased with not less than 6 inches of 3000 psi 28-day compressive strength concrete.

D. For branch connections from side into an existing 24 inch or larger pipe or to underground structures, cut an opening into unit sufficiently large to allow 3 inches of concrete to be packed around the entering connection. Cut ends of connection passing through pipe or structure wall to conform to shape of and be flush with the inside wall, unless otherwise indicated. On outside of pipe or structure wall, encase entering connection in 6 inches of concrete for a minimum length of 12 inches to provide additional support or collar from

connection to undisturbed ground. Use an epoxy bonding compound as an interface between new and existing concrete and pipe materials.

E. Prevent concrete and debris from entering the existing pipe or structure. Remove debris, concrete and other extraneous material which may accumulate.

3.8 BACKFILLING

A. Install aggregate at sides and over top of pipe. Provide top cover to minimum compacted thickness of 12 inches, compact to 95 percent.

B. Backfill trenches with lean concrete, where they are within 18 inches of structure footings and which are carried below bottoms of such footings or which pass under footings. Place concrete level with bottom of adjacent footings.

C. Use care in backfilling utility trenches to avoid damage or displacement of pipe systems.

D. Refer to Drawings for manhole requirements.

E. To minimize local area traffic interruptions, allow no more than 100 feet between pipe laying and the point of complete backfilling.

3.9 INSTALLATION - CATCH BASINS AND CLEAN OUTS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base pad, with provisions for storm sewer pipe end sections.

C. Level top surface of base pad to receive concrete shaft sections.

D. Establish elevations and pipe inverts for inlets and outlets as indicated.

E. Install catch basin device according to manufacturer’s directions in locations as indicated. Remove grate and place sack in opening. Hold out approximately 6" of sack outside frame. Replace grate to hold sack in place.

3.10 MANHOLE AND CATCH BASIN GRADE RING ADJUSTMENT UNITS

A. Provide adjustment riser units between concrete frame of manholes, catch basins and metal grate or cover. Each manhole and catch basin shall contain at least one adjustment riser to form final surface for installation of frame of manhole or catch basin. Each manhole and catch basin shall contain one adjustment riser.

B. Adjustment risers shall be bonded to adjacent surfaces by laying a continuous bead, 5/16" thick cold applied joint sealant compound conforming to ASTM-D 1850, ASTM C-920 Type S, ASTM C638-5, ASTM D412, and ASTM C661 on top surface of concrete or brick course or bottom surface of riser, on a diameter 1" smaller than outside diameter of riser.

C. Seat adjustment riser firmly in place, ensuring it is centered over opening. Apply a second continuous strip of sealant to top surface of adjustment riser, as specified in paragraph “B” above.

D. Rubber adjustment riser shall form final surface for seating of frame and grate cover assembly. Bricks or concrete adjustment units shall not form final surface for seating frame.

E. If more than one adjustment riser is required, apply a continuous bead of sealant between each unit in the same manner as in paragraph “B” above. A continuous bead of sealant shall also be placed on top surface of concrete or brick course or on bottom surface of bottom riser and to top surface of top adjustment riser, so as to bond rubber riser to iron frame.

F. Set frame firmly in place ensuring that it is properly centered over structure opening and is firmly contacting rubber riser through sealant.

3.11 FIELD QUALITY CONTROL

A. Field inspection and testing shall be done.

B. Request inspection prior to and immediately after placing aggregate cover over pipe.

C. Interior Inspection: Inspect pipe to decide whether line displacement or other damage has occured.

1. Make inspections after lines between manholes, or manhole locations, have been installed and approximately two feet of backfill is in place and at completion of project.

2. If the inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects, take whatever steps are necessary to correct such defects.

D. Compaction testing will be done according to ASTM D698 (Standard Proctor).

E. If tests indicate Work does not meet specified requirements, remove Work, replace and retest..

3.12 PROTECTION

A. Protect finished Work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION